Programs & Services Committee Report

City of Newton
In City Council

Wednesday, September 17, 2025

Present: Councilors Humphrey (Vice Chair), Farrell, Malakie, and Lobovits

Absent: Councilors Krintzman, Oliver, Micley, and Baker

Also Present: Councilor Leary

City Staff: Chief of Police George McMains and Assistant Director of Human Services Meri Haas

All agendas and reports, both past and present can be found at the following link: Programs & Services Committee | City of Newton, MA (newtonma.gov)

For more information regarding this meeting, a video recording can be found at the following link: https://www.youtube.com/watch?v=5qtF0awNeY8&list=PLqJiDbsvfNjWrNbMO43imvzNSUJfdURqQ

#244-25 **Appointment of Chloe Lyons to the Youth Commission**
HER HONOR THE MAYOR appointing Chloe Lyons, of Newton North High school, Newtonville as a member of the Youth Commission for a term of office set to expire on September 15, 2028. (60 Days: 11/01/2025)
Action: **Programs & Services Approved 4-0**

Note: Items #244-25, #245-25, #246-25, and #247-25 were considered together. Please see note for #247-25.

#245-25 **Appointment of Hanano Futai to the Youth Commission**
HER HONOR THE MAYOR appointing Hanano Futai, Newton South High school, Newton as a member of the Youth Commission for a term of office set to expire on September 15, 2028. (60 Days: 11/01/2025)
Action: **Programs & Services Approved 4-0**

Note: Items #244-25, #245-25, #246-25, and #247-25 were considered together. Please see note for #247-25.

#246-25 **Appointment of Simbarashe Makura to the Newton Youth Commission**

HER HONOR THE MAYOR appointing Simbarashe Makura, Roxbury Latin School, Boston as a member of the Newton Youth Commission for a term of office set to expire on September 15, 2028. (60 Days: 11/01/2025)

Action: **Programs & Services Approved 4-0**

Note: Items #244-25, #245-25, #246-25, and #247-25 were considered together. Please see note for #247-25.

#247-25 Appointment of Gassia Minassian to the Youth Commission

HER HONOR THE MAYOR appointing Gassia Minassian, Newton North High School, Newtonville as a member of the Youth Commission for a term of office set to expire on September 15, 2028. (60 Days: 11/01/2025)

Action: **Programs & Services Approved 4-0**

Note: The Vice Chair read items #244-25, #245-25, #246-25, and #247-25 into the record.

A councilor asked the four appointees why they were interested in serving on the Youth Commission and one issue of importance to them. Chloe Lyons shared her passion for making sure youth voices are part of conversations that shape the Newton community. Ms. Lyons noted one important issue for her is mental health and stress. Hana Futai shared her passion for getting into the behind-the-scenes work to make events and proposals happen. Ms. Futai also noted mental health as an important issue for her, especially the effect the student-parent relationship can have on that. Simba Makura shared that he wanted to be more involved in deciding what issues should be brought up for discussion. Mr. Makura noted one important issue for him was working on finding more opportunities for youth in the City through job or volunteer opportunities. Gassia Minassian shared that she thought youth lack accessible leadership opportunities and that she plans to study government in college. Ms. Futai also noted youth reliance on technology as an important component of youth mental health and stress.

The Vice Chair noted the Council offers a small competitive scholarship to students planning to study government in college.

Councilors asked the appointees to elaborate on the issue of mental health, stress, and pressure in young people's lives. Ms. Futai noted last year the Youth Commission was looking at the student-parent relationship and found there is a lot of miscommunications on how the two groups envision a student's future. She shared plans for an event that would be a student panel discussion for parents of incoming freshmen high school students around communication. Mr. Makura shared that social media has a big effect on student mental health. Ms. Minassian noted student's comparison to their peers causes stress and pressure.

A councilor thanked all the appointees for their willingness to serve and asked how the Council could be more helpful in their efforts on the Youth Commission. Ms. Minassian noted the Commission talked about creating more communication with the Council last year.

A councilor asked what steps could be taken to give young people more say in their lives and participate in wider society. Multiple appointees noted opportunities like the Youth Commission are important steps for young people to be able to learn, develop, and make connections with adults.

Councilor Lobovits motioned to approve #244-25, #245-25, #246-25, and #247-25 which passed 4-0.

#205-25 Request for a Home Rule Petition
HER HONOR THE MAYOR requesting authorization to petition the General Court for special legislation to increase the maximum age for new police officers from 31 to 39 years old.
Action: **Programs & Services Approved 4-0**

Note: Chief of Police George McMains joined the committee to discuss the item. Chief McMains explained that currently in the City, once a person turns 32 years old, they are no longer allowed to take the civil service test to become a police officer. He shared that by raising the age, the City gets more applicants who have more life experience as well.

A councilor asked if everyone in the Police Department is required to take the civil service exam. Chief McMains said just police officers are required to take the exam. The same councilor noted that this is being done in other municipalities and that 39 years old would be in the upper range nationally. Chief McMains confirmed that they would probably not want to go higher than 40 years old. The same councilor asked if there were still discussions about moving away from civil service exams as part of the process. Chief McMains explained that this is a bargaining issue, and the police unions have closed contracts currently.

A councilor asked why there is declining interest in becoming a police officer and Chief McMains noted there is not specific data on this trend, but the recent social media climate has put a damper on it. He said they have presented at the high schools, nearby colleges, and trade schools.

A councilor asked if the residency preference is a bargaining issue and Chief McMains said that it was not, but they would talk with the unions before making any changes.

A councilor asked for clarification if cities that have over 100,000 people, police officers are required to take the civil service exam. Chief McMains said that was his understanding of the law. The same councilor asked what other communities had raised the maximum age and if they had seen an increase in applications. Chief McMains noted that Boston, Cambridge, and Somervile along with others.

Councilor Malakie motioned to approve which passed 4-0.

#240-25 **Resolution in Support of State Legislation to Establish a Climate Change Superfund**
COUNCILORS LEARY, OLIVER, MALAKIE, LUCAS, HUMPHREY, DANBERG, WRIGHT, KRINTZMAN, AND FARRELL requesting a resolution in support of HB.1014/S.588 Establishment of a "Superfund" to aid communities to adequately fund climate adaptation and resilience projects, as well as repairs and recovery from the impacts of a warming climate including extreme heat, flooding, poor air quality and other extreme weather events.

Action: **Programs & Services Approved 4-0 as Amended Adding Councilor Lobovits as a Co-Docketer**

Note: Lead docketer Councilor Leary joined the committee to discuss this item. She explained that there is a bill in the state legislature that would help to fund storm-related events and mitigation, and this resolution would signal the Council's support for the bill. The bill, "Make the Polluters Pay", is based on the idea of superfunds for toxic waste sites. It is estimated the bill will raise approximately $25 billion over the next 25 years from the profits of the biggest greenhouse gas emitters. Councilor Leary noted that both Vermont and New York have successfully passed climate superfund bills in 2024.

A councilor asked if either of the Vermont or New York bills had been tested in court and if they had collected any money. Councilor Leary said she did not have that data, but she could get it to the committee. Demie Stathoplos, a member of the public working with Councilor Leary on this, noted that the money had not been collected yet because it has been challenged in court.

A councilor noted that a state representative had been left off the resolution. Councilor Lobovits motioned to amend the resolution to include the name of the state representative which passed 4-0.

Councilor Lobovits motioned to amend the docket language to include himself as a co-docketer which passed 4-0.

Councilor Malakie motioned to approve which passed 4-0.

#248-25 **Reappointment of Randall Johnson to the Parks and Recreation Commission**
HER HONOR THE MAYOR reappointing Randall Johnson, 267 Upland Road, Newton as a member of the Parks and Recreation Commission for a term of office set to expire on September 30, 2028. (60 Days: 11/01/2025)

Action: **Programs & Services Held 4-0**

Note: The Vice Chair read items #248-25 and #250-25 into the record. Please see note for #250-25.

#250-25 **Reappointment of Marjorie Butler to the Newton Election Commission**
HER HONOR THE MAYOR reappointing Marjorie Butler, 33 Andrew Street, Newton Highlands as a member of the Newton Election Commission for a term of office set to expire on March 31, 2029. (60 Days: 11/01/2025)
Action: **Programs & Services Held 4-0**

Note: The Vice Chair read items #248-25 and #250-25 into the record.

A councilor expressed a desire to invite reappointments to attend the meetings where their reappointments are being considered by the committee.

A councilor asked if Marjorie Butler was the Democratic appointee to the Election Commission. The Vice Chair confirmed that she was. The same councilor expressed interest in asking Ms. Butler about the certification of the elections results from 2021 with missing data.

Councilors discussed holding the items to invite the reappointees to a future committee meeting.

Councilor Malakie motioned to hold items #248-25 and #250-25 which passed 4-0.

The meeting adjourned at 8:20 pm.

Respectfully Submitted,
Bill Humphrey, Vice Chair

#240-25

Dear Colleagues,

I am asking for your thoughtful consideration for the Resolution in support of H.1014/S. 588, “An Act establishing a climate change superfund,” also known as the Climate Superfund Bill, currently before the Joint Committee on the Environment. This Bill is co-sponsored by Newton's Reps Sangiolo and Schwartz. I believe that passage of this bill is critical for all Massachusetts communities to have access to the resources to fund important initiatives necessary for successfully navigating the challenges that come with a changing climate. In particular, this would be a critical funding source for the City of Newton in order to meet climate goals and protect our residents from flooding which is a significant threat that has not been adequately addressed.

We need comprehensive flood management and mitigation strategies to prepare for emergencies and reduce risks proactively. The cost of stormwater projects like culvert upgrades or green infrastructure, can easily run into millions of dollars depending on the scale and complexity. But we also have to focus on a more holistic approach that includes nature-based solutions. Please see attached the NAC stormwater report that finds that healthy ecosystems are critical to an effective response to mitigate flooding impacts.

The Healey Administration recently awarded the city of Newton $1.24 million to address flooding at Cheesecake Brook. This will involve the construction of a large, underground infiltration system to intercept and store stormwater runoff and reduce flooding and erosion. The stream bank will be transformed from sterile lawn into a meadow of native shrubs supporting fish and wildlife. We need many more of these projects but we also need to widen our scope. Though structural infrastructure is important we must also prioritize nature-based solutions and community-led action that build resilience by protecting and preserving healthy urban forests, increasing biodiversity and optimizing our parks and open spaces (such as Edmands Park) into natural water absorbing areas that help protect our residents from flooding.

Warm regards,

BETTER FUTURE PROJECT

Climate Change Superfund Fact Sheet and FAQ's

H.1014/S.588

H.1014/S.588*, "An Act establishing a climate change superfund" (shorthand: "Make Polluters Pay" or "Climate Superfund")* is a bill in the MA legislature introduced by Sen. Jamie Eldridge, Rep. Steve Owens, and Rep. Jack Lewis, that requires the worst carbon emitters to contribute to a Superfund to pay for climate-related damages in Massachusetts. Fossil fuel companies have **knowingly** endangered our world for decades, putting our lives and livelihoods at risk – they should be responsible for the damages. The **Climate Adaptation Superfund will provide funding for projects** across the Commonwealth that keep our communities safe from the impacts of climate change.

- The Climate Superfund will raise **billions of dollars over 25 years** from the profits of the biggest greenhouse gas emitters.
- The required contributions to the Superfund by responsible fossil fuel corporations will be proportional to their share of emissions from fossil fuels extracted between 1995 - 2024.
- The Superfund will support climate change adaptation projects statewide, with **40% of the funding directly benefiting environmental justice communities**.
- Large Superfund projects will make use of apprenticeship programs, abide by fair labor standards, pay according to prevailing wage requirements, and use American-made steel.
- The Superfund provides funding for preventive health care programs and medical care to treat illness or injury caused by the effects of climate change.
- **Both Vermont and New York successfully passed Climate Superfund bills in 2024,** setting a powerful precedent for Massachusetts to join.
- Holding polluters responsible for the damage they have caused is wildly popular across the political spectrum: **77% of Americans support holding big oil and gas companies accountable with a one time fee. 61% support those companies compensating low-income communities and communities of color** on the front lines of climate impacts**.**
- One flood event in Western Massachusetts in the summer of 2023 caused **$39 million of damages to public infrastructure**. Climate change will only increase the frequency and intensity of these disasters, including hurricanes, droughts, heat waves, blizzards, severe storms, wildfires, and other extreme weather events.
- **On average, Massachusetts towns have only a $5,000 budget for disaster response**, which is woefully little compared to the cost of disasters. State aid can sometimes help mitigate costs arising from disasters, but there is currently no plan to fund climate adaptation at the scale required.
- This legislation will allow Massachusetts to properly prepare **for the inevitable impacts of climate change due to legacy emissions.** This bill is designed to hold those responsible for climate change accountable and fund projects that protect our communities.

BETTER FUTURE PROJECT

Frequently Asked Questions

Q: How much money will the Climate Superfund generate? Where will that money go?
A: We estimate that the Climate Superfund Bill will raise billions of dollars over the next 25 years. The amount raised will be determined by the Executive Office of Energy and Environmental Affairs based on costs faced by the state.

Q: What will the Climate Superfund pay for?
A: The Superfund will help fund projects such as coastal protections, wetland restoration, urban tree canopy, defensive upgrades to transit infrastructure, and building weatherization. **Projects will be chosen by the Executive Office of Energy and Environmental Affairs with input from the public, labor and environmental justice leaders, and relevant stakeholders.**

Q: Will costs be passed on to consumers?
A: The Climate Superfund Bill is designed to avoid passing costs on to consumers. Since we are only targeting the largest fossil fuel corporations, they will still have to compete with other companies and thus will not be able to raise their prices without illegal collusion. Further, we are only targeting these companies for greenhouse gases *already* emitted and harm *already* caused. This one-time fee, therefore, will be paid for from profits already earned and should not affect future costs of production.

Q: Is there any precedent for this?
A: The Polluters Pay Principle follows clear precedent in environmental regulation. It is employed in all of the major US pollution control laws including the Clean Air Act, Clean Water Act, and original Superfund program (cleanup of abandoned waste sites). Additionally, holding big polluters accountable for climate change is included in the majority of international climate treaties. **The Climate Superfund Bill would set up a similar legal structure to support adaptation efforts statewide.**

Q: Which companies would be held responsible by the Climate Superfund Bill?
A: The Bill targets top polluters statewide. Even as climate costs rise, fossil fuel profits continue to soar. The payors into the Climate Superfund will be U.S.-based and foreign-owned fossil fuel extractors with ties to Massachusetts that were responsible for at least 1 billion metric tons of carbon dioxide and methane gas emissions between January 1, 1995, and December 31, 2024. **This will limit the total number of payors to the biggest polluters, with those who polluted the most paying the most.**

Q: How is this different from carbon pricing?
A: The Climate Superfund Bill is a one-time fee, while carbon pricing would continue indefinitely. Carbon pricing is a market-based solution that would put a price on each unit of carbon dioxide emitted into the air. The Climate Superfund Bill doesn't put a price on future emissions, but instead asks big polluters to pay a fee based on their share of historic emissions. **While carbon pricing is easily passed on to consumers, this Climate Superfund targets the biggest oil and gas companies to ensure costs come from profits already earned.**

Q: How does the bill hold up under legal challenges by fossil fuel companies?
A: The Climate Superfund Bill clearly follows legal precedent around preemption of the Clean Air Act, and respects fossil fuels companies' right to Due Process. **Massachusetts has the power to pass and implement the Climate Superfund Bill and will successfully defend it in court.**

Sources: Polling Data | Cost of Damages and Disaster Response

TO: Joint Committee on Environment and Natural Resources

FROM: Paul Shorb

RE: Whether H.1014/S.588 Violates Any Limits on Retroactivity Set by the Massachusetts Constitution

DATE: September 15, 2025

QUESTION PRESENTED

Would H.1014/S.588 ("the Bill") violate any limits on retroactivity set by the Massachusetts Constitution?

SHORT ANSWER

The Bill clearly operates retroactively, because it would require certain entities to pay money based on their extraction of fossil fuels in a time window prior to enactment of the Bill.[1] However, any challengers to the Bill if enacted are very unlikely to be able to carry their heavy burden of proof[2] that the Bill violates any of the three kinds of limits on retroactivity set by the Massachusetts Constitution as interpreted by the Supreme Judicial Court. Specifically, courts are very likely to conclude that the Bill:

- is not punitive, but rather is remedial in nature, and therefore would not unconstitutionally punish pre-enactment behavior;
- does not direct an unconstitutional "taking"; and
- is not so unreasonable on its face as to violate constitutional substantive due process rights.

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SUMMARY OF THE BILL

H.1014 and S.588 are titled "An act establishing a climate change superfund." Major elements of the Bill are summarized below.

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[1] Massachusetts courts treat a statute as operating retroactively when it "attaches new legal consequences to events completed before its enactment." Moe v. Sex Offender Registry Bd., 467 Mass. 598, 607 (2014), quoting Landgraf v. USI Film Prods., 511 U.S. 244, 270 (1994).

[2] The Supreme Judicial Court has stated that, "Because we presume that statutes are constitutional, the petitioners bear the substantial burden of proving a constitutional violation." [citations omitted]. Fitchburg Gas and Electric Light Company v. Department of Public Utilities, 467 Mass. 768, 772 (2014).

Purpose. The Bill would add a new Chapter 21P to the Massachusetts General Laws, to be titled “Climate Change Adaptation Cost Recovery Act”. Its primary stated purpose is to “secure compensatory payments from responsible parties, based on a standard of strict liability, to provide a source of revenue for climate change adaptation projects within the state”.[3] It would define a “climate change adaptation project” as a project “designed to avoid, moderate, repair or adapt to negative impacts of climate change or to assist communities, households and businesses in preparing for future climate change-driven disruptions.”[4] I understand that this approach is intended to help fund reasonably necessary projects and to avoid the costs of such projects falling entirely on taxpayers.

Responsible parties. The “responsible parties” from whom the Bill would seek to recover payment are essentially any party (A) that extracted fossil fuels in the period 1995 through 2024 (B) in an amount to which more than one billion metric tons of covered greenhouse gas emissions are attributable and (C) who is subject to the jurisdiction of the Commonwealth for purposes of such cost recovery demands.[5] I understand that the start year of 1995 was chosen because that was when the first United Nations climate change Conference of the Parties, or “COP”, was held, which reflected a global consensus that emissions from burning fossil fuels would cause significant harm and damages, and that the year 2024 was chosen as a recent year for which data on fossil fuel extraction amounts is publicly available.

Proportional liability. The Bill would impose strict liability on the basis summarized above, but unlike the Federal “Superfund” law on which the Bill is in some ways modeled, it would not impose joint and several liability. Rather, each responsible party would be asked to pay only its proportionate share (calculated based on the factors summarized at (A) through (C) above) of a total amount sought to be recovered.[6] I understand that this approach is intended to make the impact on each responsible party fair and reasonable.

Climate change total costs. The total amount sought to be recovered would be determined by a “climate cost study” due to be completed within one year after the Bill is enacted and updated at least every two years thereafter. That study would start by providing “a reasonable estimate of the total costs to the commonwealth and its residents of the emission of greenhouse gases” and also “a reasonable estimate of the costs that have been incurred and are expected to be incurred by the commonwealth through December 31, 2045 to avoid, moderate, repair, or adapt to negative impacts of climate change, including potential qualifying expenditures under this chapter, as reasonable responses to the emission of greenhouse gases.”[7] I understand that this approach seeks to quantify in dollar terms the total cost of climate change on the Commonwealth and its inhabitants, both in terms of state budget expense and otherwise.

[3] Subsection 2(b)(1).
[4] Section 1.
[5] See the definition of “responsible party” in Section 1.
[6] Section 2(e).
[7] Section 2(c)(1)-(2).

Recoverable costs. The climate cost study would be required to then reduce the above dollar total through two additional steps. First, it would determine what share of the above cost total can be attributed to emissions from fossil fuels extracted during the covered period, as opposed to arising from fossil fuels extracted at other times and other sources of greenhouse gases, including non-anthropic sources. Second, the resulting number then would be further reduced by multiplying it by 80 per cent. I understand that the 80 per cent is intended to represent a legislative judgement about who should in fairness bear what share of the costs of climate change adaptation projects; *i.e*., that although it is fair to impose most of those costs on fossil fuel extractors, other parties also benefited from the extraction of fossil fuels in the covered period, such as end-users of the fossil fuels products.

Main implementation processes. The Bill would authorize and require a range of administrative processes for implementing the above, including (1) identifying, publishing, and updating a list of responsible parties; (2) preparing and updating the climate cost study; (3) calculating dollar amounts to be demanded from responsible parties and issuing cost recovery demands to them; (4) accepting payments from, pursuing collection efforts against, and negotiating settlements with responsible parties; (5) identifying and selecting climate change adaptation projects to fund; and (6) using a "climate change adaptation fund" to receive moneys through cost recovery demands and issuing funds only for qualifying expenditures.

Related processes. The Bill includes numerous provisions consistent with traditional due process principles and good administrative practices, including (1) promulgating regulations to implement the Chapter; (2) opportunities for public notice and comment in developing such regulations and the climate cost study; (3) preparing a "statewide climate change adaptation master plan" to guide dispersal funds; (4) right to judicial review for responsible parties; and (5) periodic independent evaluations of the effectiveness of the overall climate change adaptation cost recovery program.

ECONOMIC ANALYSIS

Multiple experts who have estimated the economic effects of legislation filed in New York similar to the Bill reached consistent conclusions that such legislation would not raise consumer prices and would not have such adverse impacts on responsible parties as to lead to bankruptcy or consolidation.[8] One of those experts reached the same conclusions with regard to a bill, very

[8] *See* Robert D. Plattner, "Coping with the Costs of Climate Change: Make the Polluters Pay", Tax Notes State, Vol. 105 at 973 (Aug. 29, 2022); Peter Howard, PhD, Minhong Xu, Phd, "Enacting the "Polluter Pays" Principle: New York's Climate Change Superfund Act and Its Impact on Gasoline Prices", Institute for Policy Integrity, New York University School of Law (Nov. 2022); Peter Howard (NYU), Michael A. Livermore (University of Virginia School of Law), and Mark Paul (Bloustein School of Planning and Public Policy, Rutgers University), Letter to Governor Hochul, Speaker Heastie & Majority Leader Stewart-Cousins (March 19, 2024); Joseph Stiglitz, PhD, Columbia University, Letter to The Honorable Kathy Hochul (Sept. 16, 2024); Rockefeller Family Fund, memorandum to Interested Parties, "Considerations for Creating State-Level Climate Superfund Statutes" (Feb. 25, 2025).

similar to the New York bill, that was filed in the Massachusetts Legislature in 2023[9], and presented them at a briefing for Massachusetts legislators on June 6, 2023.[10]

That 2023 analysis concluded that in the "short run"[11], responsible parties that are required to make compensatory payments will be prevented by competitive pressure from raising their prices to consumers, for several reasons:

- The compensatory payments are fixed costs arising from past production; they do not increase the cost of a firm's current production.
- There is sufficient competition in the national and global energy markets and in the state-level retail markets for gasoline and other fossil fuels to lure competitors to undercut a responsible party that raised its prices.
- Antitrust laws presumably would prevent responsible parties from agreeing to all raise their prices.

The 2023 analysis also concluded that even in the "long run",[12] bankruptcy or consolidation of responsible parties due to the bill was unlikely. (That conclusion is relevant to the question of consumer prices because prices tend to be higher in a market that has only a few sellers ("oligopoly") and even more so if it becomes a "duopoly" or a "monopoly".) The 2023 analysis concluded that the bill was unlikely to cause bankruptcy or consolidation of relevant firms, mainly because:

- The bill in question would seek to collect a total of $75 billion over 25 years, or $3 billion per year.
- By comparison, recent data showed that U.S. oil firms alone had (A) total market capitalization of $1.3 trillion, (B) total revenue averaging $158 billion per year, and (C) total profits averaging $55 billion per year. These totals would be even larger if the other categories of responsible parties (e.g., extractors of natural gas and coal) were included.
- Subtracting only $3 billion per year from total profits that are so much larger is unlikely to lead to bankruptcy or consolidation of any responsible parties.

The above analysis and conclusions seem applicable also to the Bill at issue here.[13] The most relevant difference for the above economic analysis is that the New York bill and last session's Massachusetts bill each would have set the total climate costs to be recovered at $75 billion, whereas the current Bill instead directs a state agency to calculate a "reasonable estimate" of certain climate costs, as noted above. However, that difference is unlikely to be material. That difference would be material only if the climate costs that Massachusetts eventually sought to be collected under the Bill were so much larger than the $75 billion assumed in the prior analyses

[9] H.872 /S.481, An Act Establishing a Climate Change Superfund Promoting Polluter Responsibility.
[10] Peter H. Howard, PhD, "The Impact of Climate Change Adaptation Cost Recovery Act on Consumer Fuel Prices" (May 10, 2023).
[11] The "short run" refers to the time period in which market structure remains constant, *i.e,* no fossil fuel extraction firms exit or enter the industry. Howard and Xu, *supra* n.8, p.7.
[12] The "long run" refers to the time period when firms can exit or enter the industry. *Id*, p.10.
[13] It therefore seems likely that at least one of the experts who opined on the prior bills would be willing and able to provide a written evaluation of the current Bill that would reach essentially the same conclusions.

as to lead to bankruptcy and/or consolidation of responsible parties. Whether Massachusetts would seek to recover much larger climate adaptation costs is highly speculative at this time. Further, although the prior analyses did not attempt to quantify how large a climate cost assessment would be enough to cause any bankruptcy or consolidation of responsible parties, they suggest that it would be difficult to cause such effects, in light of the huge scale of responsible parties and their profits.[14]

CONSTITUTIONALITY

I. Whether the Bill would improperly impose retroactive punishment

For the reasons summarized below, there is essentially no evidence that the Bill is punitive in either its intent or effect. Therefore it would not violate the Massachusetts Constitution's prohibitions against imposing punishment for things done prior to enactment.

A. Constitutional provisions

Massachusetts courts have consistently held that it is unconstitutional for a legislature to impose criminal liability or other punishment on persons retroactively.[15] The relevant Articles in the Massachusetts Constitution Bill of Rights are quoted below.

- Article 24 states:

  Laws made to punish for actions done before the existence of such laws, and which have not been declared crimes by preceding laws, are unjust, oppressive, and inconsistent with the fundamental principles of a free government.

- Article 12 states:

  No subject shall be held to answer for any crimes or offence, until the same is fully and plainly, substantially and formally, described to him; or be compelled to accuse, or furnish evidence against himself. And every subject shall have a right to produce all

[14] *See* Howard and Xu, *supra* n.8, p. 20 (" Empirical evidence shows that total compensatory payments for emissions from 2000 to 2018 are relatively small compared to oil company revenue, market capitalization, and profits. Therefore, the Act is unlikely to result in consolidation or bankruptcy within the industry."); Howard, Livermore, and Paul, *supra* n.8, p. 1 ("Firms that will be covered by the assessment all enjoy significant operating revenue and very large market capitalizations. Even a substantial assessment could be absorbed by these firms without causing significant disruptions in their operations."); Stiglitz, *supra* n. 8, p.2 ("the companies likely to be covered by the Superfund assessment can easily afford these costs.").

[15] The U.S. Supreme Court has consistently reached the same conclusion based on the U.S. Constitution, based on Article I, Section 9, Clause 3 (which states that "no Bill of Attainder or ex post facto Law shall be passed") and Article I, Section 10, Clause 1 (which states that "No State shall . . . pass any Bill of Attainder, ex post facto Law, or Law impairing the Obligation of Contracts, . . ."). The Articles quoted above have been held to equally prohibit ex post facto laws and bills of attainder (two kinds of retroactive imposition of criminal liability), even though not using those terms.

> proofs, that may be favorable to him; to meet the witnesses against him face to face, and to be fully heard in his defense by himself, or his council at his election. And no subject shall be arrested, imprisoned, despoiled, or deprived of his property, immunities, or privileges, put out of the protection of the law, exiled, or deprived of his life, liberty, or estate, but by the judgment of his peers, or the law of the land.
> And the legislature shall not make any law, that shall subject any person to a capital or infamous punishment, excepting for the government of the army and navy, without trial by jury.

B. Whether the Bill would impose criminal liability

The Bill if enacted clearly would not punish through criminal liability; rather, the burden it creates is only for certain entities to pay money into the Fund. The Bill would not (1) retroactively criminalize actions that were legal when they occurred, (2) increase the punishment for crimes after they were committed, or (3) alter the rules of evidence to make conviction easier for past offenses. Further, a wrongful refusal to pay would be subject to only civil enforcement by the state, not criminal penalties.[16]

C. Whether the Bill would otherwise impose punishment

Even civil sanctions can be considered punitive in some cases, and if so, run afoul of constitutional prohibitions against retroactively imposing punishment. For example, the U.S. Supreme Court concluded that lifetime prohibitions against serving in certain professions because one had supported the Confederacy in the Civil War were punitive, and thus unconstitutional.[17]

In a 1998 opinion[18], the Supreme Judicial Court stated that it would follow a 1997 Supreme Court precedent in determining when civil sanctions constitute punishment:

> ..the Supreme Court of the United States has clarified the proper analysis for determining whether civil sanctions constitute punishment. Hudson v. United States, 118 S. Ct. 488 (1997), dictates that a determination "[w]hether a particular punishment is criminal or civil is, at least initially, a matter of statutory construction." *Id.* at 493. Accordingly, we must first ask whether the Legislature, "in establishing the penalizing mechanism, indicated either expressly or impliedly a preference for one label or the other." *Id.,* quoting United States v. Ward, 448 U.S. 242, 248 (1980). [footnotes omitted][19]

[16] Chapter 21P, Section 2, subsection (o) states: “The department and the attorney general are hereby authorized to enforce the provisions of this article and to assess penalties for late payment of the cost recovery demands or the initial assessment. The late penalty shall accrue daily, assessed at the rate of 10 per cent per annum on the amount remaining due.”
[17] Cummings v. State of Missouri, 71 U.S. 277 (1866) (regarding state prohibition against practicing as an attorney or clergy); Ex Parte Garland, 71 U.S. 333 (1866) (regarding prohibition against practice before Federal courts; “exclusion from any of the professions or any of the ordinary avocations of life for past conduct can be regarded in no other light than as punishment for such conduct”).
[18] Powers v. Commonwealth, 426 Mass. 534 (1998).
[19] *Id.*, 538-539.

In that 1998 case, the driver license of appellant Powers had been suspended indefinitely by the Registrar of Motor Vehicles, based on a police report stating that his consumption of alcoholic beverages had been a "major contributing factor" to a motor vehicle accident. When subsequently prosecuted criminally for that accident, Powers argued that would be unconstitutional double jeopardy because his prior license suspension was a punishment that had already been imposed for the same alleged conduct. However, the Court stated that the "main purpose" of revocation of a driver's license is public safety (by depriving an unsafe or irresponsible driver of his or her right to drive) rather than punishment and that such revocation "has been consistently characterized as nonpunitive and therefore civil".[20]

The same 1998 Powers opinion also referred to and by implication seemed to approve the rest of the analytical framework laid out in the 1997 Hudson opinion. In that framework, the first step is to "ask whether the legislature, 'in establishing the penalizing mechanism, indicated either expressly or impliedly a preference for one label or the other.' [quoting Ward, 448 U. S., at 248]."[21] Evidence relevant to that determination includes the actual label given to the provision,[22] the procedural mechanisms in place for enforcing the statute, and whether the statute is located within a state's criminal or civil code.[23]

The Bill provides no evidence that it is intended to be punitive. First, the title of new Chapter 21, "CLIMATE CHANGE ADAPTATION COST RECOVERY ACT", indicates that its purpose is climate change adaptation cost recovery, which is a different motivation from punishment, and the substance of the Bill is consistent with that title. Second, the Bill's text would be placed in Part I of the Massachusetts General Laws, "Administration of the Government", whereas criminal provisions are contained instead in Part IV, "Crimes, Punishments And Proceedings In Criminal Cases." Third, the procedural mechanisms for enforcing the Bill[24] are not criminal, but rather are analogous to procedures for civilly enforcing the duty to pay state taxes, for example.

The second step in the Hudson analysis is to consider whether the statutory scheme is "so punitive either in purpose or effect" as to "transfor[m] what was clearly intended as a civil remedy into a criminal penalty". At this step, "only the clearest proof" will suffice to override legislative intent and transform what has been denominated a civil remedy into a criminal penalty.[25] Hudson also stated that seven factors that had been articulated by the U.S. Supreme Court in a 1963 opinion[26] would continue to serve as "useful guideposts".[27] They are:

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[20] *Id.*, 538. It seemed at least relevant to the Court's determination that a path remained open for Powers to seek a hearing for restoration of his license. *Id.*, 539-540.
[21] Hudson v. United States, 522 U.S. 93, 99 (1997).
[22] *See id*. at 103.
[23] United States v. Ward, 448 U.S. 242, 248 (1980).
[24] Chapter 21P, Section 2, subsection (o) of the Bill states: "The department and the attorney general are hereby authorized to enforce the provisions of this article and to assess penalties for late payment of the cost recovery demands or the initial assessment. The late penalty shall accrue daily, assessed at the rate of 10 per cent per annum on the amount remaining due."
[25] Hudson, 522 U.S. at 99.
[26] Kennedy v. Mendoza-Martinez, 372 U.S. 144, 168-169 (1963).
[27] *Id.,* n. 9.

1. whether the sanction involves an affirmative disability or restraint;
2. whether it has historically been regarded as a punishment;
3. whether it comes into play only on a finding of scienter;
4. whether its operation will promote the traditional aims of punishment - retribution and deterrence;
5. whether the behavior to which it applies is already a crime;
6. whether an alternative purpose to which it may rationally be connected is assignable to it; and
7. whether it appears excessive in relation to the alternative purpose assigned.[28]

Applying the above seven-factor test provides little support for finding that the Bill would be punitive in effect.

1. The Bill would create a potential obligation to pay money into the Fund, not an affirmative disability or restraint (such as prohibition from practicing a profession).
2. Such an obligation has not historically been regarded as a punishment.
3. The obligation is not contingent on any finding of scienter.[29]
4. First, as to deterrence: Because the potential obligation under the Bill to pay into the Fund is based solely on extraction of fossil fuels between 1995 and 2024, that obligation is not intended to and would not deter future extraction.
   Second, as to retribution: Retribution is commonly understood to mean imposing punishment on offenders in a degree proportional to their crimes, providing a sense of justice and fairness for victims and society.[30] The Bill aims for proportionality, but only by tying the dollar amount of payment due to the amount of the harm caused, not to culpability per se. This kind of proportionality is consistent with a desire to fairly allocate the costs to be recovered across the relevant set of responsible parties. That rationale sounds in equity, rather than in a retributive theory of punishment.
5. The behavior triggering a potential duty to pay (*i.e.*, extraction of fossil fuels) is and has not been a crime.
6. As noted above, the non-punishment purpose is stated in the very title, "CLIMATE CHANGE ADAPTATION COST RECOVERY ACT". The substance of the Bill is consistent with that title: the Bill (A) specifies that the payments from responsible parties would be used only for projects "designed to avoid, moderate, repair or adapt to negative impacts of climate change or to assist communities, households and businesses in preparing for future climate change-driven disruptions" and (B) specifies processes for deciding how such funds will be spent. Therefore one can not reasonably determine that the purpose of the Bill is instead punishment.

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[28] Kennedy,168-69.
[29] Although the Bill takes into account industry knowledge in choosing 1995 as the beginning of the time window within which extraction of fossil fuels triggers a potential obligation to pay into the Fund, for reasons discussed in Section III below, it does not require an individual finding of scienter.
[30] See, e.g., Baier, Kurt (1977). The Strengths and Limits of the Theory of Retributive Punishment. *Philosophic Exchange*, vol. 8, No. 1, 37-53.

7. The payments to be collected are not excessive in relation to that cost recovery purpose, because the amounts will be determined based on a quantitative state determination of costs arising from climate change.

Therefore it seems very unlikely that a challenger could carry its burden of proof to show that, even though the Bill on its face imposes only civil obligations, it nevertheless is so punitive in its effect as to violate the Massachusetts Constitution prohibitions against retroactively imposing punishment.[31]

II. Whether the Bill would cause a prohibited "taking"

For the reasons outlined below, it is very unlikely that any challenger would be able to show that the Bill would impose a "taking" prohibited under the Massachusetts Constitution.

A. Constitutional provisions

Article 10 of the Massachusetts Constitution "Declaration of Rights" states[32]:

> Each individual of the society has a right to be protected by it in the enjoyment of his life, liberty and property, according to standing laws. He is obliged, consequently, to contribute his share to the expense of this protection; to give his personal service, or an equivalent, when necessary: but no part of the property of any individual can, with justice, be taken from him, or applied to public uses, without his own consent, or that of the representative body of the people. In fine, the people of this commonwealth are not controllable by any other laws than those to which their constitutional representative body have given their consent. And whenever the public exigencies require that the property of any individual should be appropriated to public uses, he shall receive a reasonable compensation therefor.

B. Applying relevant case law

The Massachusetts Supreme Judicial Court has evaluated takings claims using the same analysis as Federal courts.[33] Slightly different versions of that analysis have evolved based on whether the alleged taking is through (A) impact on a specific piece of real property, (B) impact on a specific fund of money, (C) setting rates for a regulated utility, or (D) or other regulatory

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[31] For the same reasons, there is little evidence to support an argument that the Bill would be either an ex post facto law or a bill of attainder or otherwise violate the U.S. Constitution on the basis that it imposes a punishment retroactively.

[32] The Fifth Amendment of the U.S. Constitution sets similar limits on "taking" of private property, be either state or Federal government action, stating, "No person shall be … deprived of life, liberty, or property, without due process of law; nor shall private property be taken for public use, without just compensation."

[33] *E.g.*, Commonwealth vs. Blair, 60 Mass. App. Ct. 741, 748 (2004) ("the Supreme Judicial Court, to date, has evaluated takings claims under the Federal analysis").

actions. Because the Bill clearly does not involve any of the first of these, the relevant analysis would be as a potential “regulatory taking”.

The Supreme Judicial Court in a 2014 decision addressed several types of “takings” challenges in an appeal brought by a gas and electric utility. The utility had objected to actions by the relevant regulatory body that had not only (A) imposed a financial assessment on electric utility companies in order to fund investigation into their “preparation for and responses to storm and other emergency events", in amounts proportional to the intrastate operating revenues of each from sales of electric service, but also (B) prohibited them from passing the cost of this assessment on to consumers.[34] The Court considered the concepts of “per se taking”, “regulatory taking,” and the takings analysis developed specifically for utility rate cases, and found no unconstitutional taking under any of these theories.[35]

First, as to a “per se taking”, the Court listed many precedents establishing the general rule that ”an obligation to pay money is not a per se taking where the obligation does not affect or operate on a specific, identified property interest”.[36] The Court found that because the state’s action here imposed an obligation to pay money only “from a company's general funds”, it was not a “per se taking”.[37]

Second, the Court considered the separate claim that by specifically levying assessments on the appellants totaling slightly over $190,000, and by denying just compensation, a “regulatory taking” had occurred. The Court proceeded to apply the “regulatory taking” criteria that had

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[34] Fitchburg, 467 Mass. at 770-771

[35] The Court also applied the takings analysis that it had developed specifically for utility rate cases, and there also found no unconstitutional taking but because that analysis clearly is not relevant to the Bill, it will not be discussed further here.

[36] Fitchburg, 467 Mass. at 770-771. (“The United States Supreme Court has distinguished on at least two occasions monetary obligations from physical appropriations of property rising to the level of per se takings. *See* Eastern Enters. v. Apfel, 524 U.S. 498, 529-530 (1998) (opinion of O'Connor, J.) (employer's obligation under statute to pay annual premium to commissioner of Social Security for certain retired miners not per se taking because not "permanent physical occupation of [petitioner's] property"); Sperry Corp., 493 U.S. at 62 n. 8 ("It is artificial to view deductions of a percentage of a monetary award as physical appropriations of property"). On the whole, Federal courts have established that an obligation to pay money is not a per se taking where the obligation does not affect or operate on a specific, identified property interest. *See* Koontz v. St. Johns River Water Mgt. Dist., 133 S. Ct. 2586, 2601 (2013) ("property taxes, user fees, and similar laws and regulations that may impose financial burdens on property owners" do not constitute takings); McCarthy v. Cleveland, 626 F.3d 280, 285-286 (6th Cir. 2010), and cases cited (concurring with seven other United States Circuit Courts of Appeal that "Takings Clause is not an appropriate vehicle to challenge the power of [a legislature] to impose a mere monetary obligation without regard to an identifiable property interest," and concluding that enforcement of traffic offense ordinance against vehicle lessees was not per se taking because it did "not seize or otherwise impair an identifiable fund of money" [citation and quotation marks omitted]); Branch v. United States, 69 F.3d 1571, 1576 (Fed.Cir.1995), cert. denied, 519 U.S. 810 (1996) ("[T]he principles of takings law that apply to real property do not apply in the same manner to statutes imposing monetary liability.... [T]axes or special municipal assessments indisputably 'take' money from individuals or businesses, [but] assessments of that kind are not ... per se takings").” [footnotes omitted]

[37] Fitchburg, 467 Mass. at 778.

been developed largely to deal with cases involving real property and summarized them as follows:

> Our regulatory taking analysis consists of "ad hoc, factual inquiries," … employing "several interrelated" and well-established factors…. To determine whether there has been a compensable regulatory taking, we look to: "(1) the economic impact of the regulation on the claimant; (2) the extent to which the regulation has interfered with distinct investment-backed expectations; and (3) the character of the governmental action".... As the department correctly observes, we consider each of these factors in relation to the property as a whole.[38][citations omitted].

a. Economic impact

The Court evaluated those three aspects as follows. First, as to economic impact, the Court noted that to constitute a compensable regulatory taking, the economic impact on the property owner must be “severe”, not a "[M]ere diminution in value of property” [citations omitted]. The Court found that the economic impact would be “minimal in relation to the petitioners' total budgets [because] Overall, the assessment represents 0.0037% of each company's 2011 operating revenues.”[39]

b. Investment-backed expectations

Second, as to investment-backed expectations, the Court stated that the “reasonable and legitimate investment-backed expectations” of public utilities and their investors is only to “obtain a reasonable rate of return, such that the enterprise of providing a public utility is at least to some extent profitable”. The Court found that the petitioners had not demonstrated that even after availing themselves of a subsequent rate-setting process, the assessment in question would prevent them from earning a reasonable rate of return.[40]

c. Character of the government action

Third, as to the “character of the governmental action,” the Court seemed to say the question was whether it “serves a legitimate public purpose”.[41] The Court found evidence in the legislative history that “suggests that the legislative purpose was twofold: to enable the department to investigate public utilities' storm preparedness and responsiveness, and to impose penalties on those companies for inadequate storm response planning and implementation.” The Court concluded that this legislative purpose served a legitimate public purpose, and further that “requiring the electric companies to absorb the costs associated with achieving these purposes, where the costs are associated with potentially inefficient or

[38] *Id.* at 783-784.
[39] *Id. at* 784.
[40] *Id.* at 785.
[41] *Id.*

inadequate performance by the companies themselves" was not inconsistent with that legitimate public purpose.

C. Conclusion

First, the Bill clearly would not create a "per se taking", because it would impose an obligation to pay money only "from a company's general funds", without confiscating all of those funds.

Second, challengers are very unlikely to be able to prove that the Bill would cause a regulatory taking, under the three-part test articulated by the Supreme Judicial Court, because:

- the Bill would apply only to the largest fossil fuel extraction companies, whose profits are much larger than the amounts that they may be assessed under the Bill;
- the "reasonable and legitimate investment-backed expectations" of these largest fossil fuel extraction companies and their investors is not to perfectly maximize their rate of return; and
- the Bill aims for what is clearly a legitimate public purpose, which is to pay for projects to adapt to climate change, which otherwise taxpayers would have to pay for or would not be done at all.

In sum, it seems very unlikely that any challengers would be able to show that the Bill would impose a "taking" under the Massachusetts Constitution.[42]

III. Whether the Bill would violate substantive due process rights

For the reasons outlined below, it is very unlikely that any challenger would be able to show that the retroactive aspect of the Bill would violate substantive due process rights protected by the Massachusetts Constitution.

A. Constitutional provisions

It has been said that a handful of different provisions in the Massachusetts Constitution are collectively comparable to the due process clause of the Federal Constitution.[43] Article 10 in particular (quoted in full in Section II above) has been a primary source of due process jurisprudence in Massachusetts, both procedural due process and substantive due process; the latter addresses "governmental actions that either 'shock the conscience' or interfere with rights considered to be fundamental to the concept of ordered liberty."[44]

B. Three-pronged "reasonableness" test

[42] For the same reasons, the Bill would not impose a "taking" prohibited by the U.S. Constitution.

[43] Pinnick v. Cleary, 360 Mass 1 (1971), n. 8 ("Part II, c. 1, Section 1, art. 4, of the Massachusetts Constitution, and arts. 1, 10 and 12 of its Declaration of Rights, are the provisions in our Constitution comparable to the due process clause of the Federal Constitution.").

[44] Lawrence Friedman and Lynnea Thody, *The Massachusetts State Constitution*, Oxford University Press, 2011, p. 50-51.

In a 1978 opinion[45], the Supreme Judicial Court articulated a three-pronged test for evaluating substantive due process under the Massachusetts Constitution. The court noted that although retroactive statutes are not per se unconstitutional, they can be found to be unconstitutional if, on a balancing of considerations, they are deemed to be unreasonable.[46] The court stated that this reasonableness test "is essentially a review of whether it is equitable to apply the retroactive statute against the plaintiffs."[47] The court went on to articulate a three-part approach to evaluating reasonableness of retroactive statutes:

> Reasonableness, in our view, can best be examined from three principal viewpoints: the nature of the public interest which motivated the Legislature to enact the retroactive statute; the nature of the rights (in this instance the plaintiffs' asserted rights) affected retroactively; and the extent or scope of the statutory effect or impact.[48]

The Supreme Judicial Court has continued to apply this three-pronged test to evaluate retroactive statutes under the Massachusetts Constitution.[49]

C. Application to the Bill

As discussed below, the Bill seems very well positioned to pass the above "reasonableness" test in light of (1) the strong public interest in funding climate change adaptation projects; (2) the Bill's financially manageable impacts on responsible parties; (3) the lack of a reasonable expectation by responsible parties that they would never be held at least somewhat accountable; (4) the Bill's built-in mechanisms to guard against overreach and overbreadth; and (5) the Bill's allocation of costs across various entities in an equitable way.

1. Nature of the public interest

The Bill is clearly focused on the public interest in adequately funding climate change adaptation projects. Many adverse effects from climate change are already happening in Massachusetts and even worse future effects are already "baked in" (*i.e.,* are certain to happen in the near future, even if humans succeed in reducing emissions of so-called greenhouse gases). While climate change adaptation projects will not be able to fully "avoid, moderate, repair or adapt to" these negative effects, they can substantially reduce those negative effects, if appropriately designed and adequately funded. The Bill therefore seeks to advance a legitimate and weighty public interest.

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[45] American Manufacturers Mutual Insurance Co. vs. Commissioner of Insurance, 372 N.E.2d 520, 374 Mass. 181 (1978).
[46] *Id.,* 374 Mass. at 189-190.
[47] *Id.* at 191.
[48] *Id.* The opinion noted that "This three-pronged approach is suggested in the article by Hochman, The Supreme Court and the Constitutionality of Retroactive Legislation, 73 Harv. L. Rev. 692, 697 (1960) …[which] has been cited with approval" [citations omitted].
[49] *See, e.g.,* Koe v. Comm. of Probation, 478 Mass. 12 (2017); Nationwide Mutual Insurance Co. vs. Commissioner of Insurance, 491 N.E.2d 1061, 397 Mass. 416 (1986).

The Bill is designed to do so in an effective way. In particular, public notice and comment will be invited on the drafting of regulations to implement the Bill and drafting the climate cost study. The Bill takes extra care to specify a broad range of stakeholders that must be consulted in developing a "statewide climate change adaptation master plan" to guide dispersal of funds; and the Bill requires periodic independent evaluations of the effectiveness of the overall climate change adaptation cost recovery program. These mandated procedures would provide checks and balances that should help the Bill be effective in achieving its goals.

2. Nature of the rights affected

The Bill would adversely affect the interests of responsible parties in maximizing their profits and the interests of their shareholders in maximizing returns on their investments. Even if such economic interests are not normally labelled "rights", they are due some weight in the balancing test used to determine reasonableness.[50]

3. Extent /scope of the statutory effect / impact

Even though the size of the compensatory payments would not be determined until some time after enactment of the Bill, there is no reason to expect that they will lead to bankruptcy or consolidation of any responsible parties. If compensatory payments therefore only reduce the profits of responsible parties without bankrupting them, the economic burden of those payments will be shifted mainly onto those who own stock in those companies. Those shareholders then will see a somewhat reduced rate of return on their investment, in the form of lower dividends paid out and/or lower stock price. Because responsible parties are necessarily very large firms, they generally have a very large number of shareholders of various kinds, including individuals, pension funds, and others. Therefore the economic burden of those payments would be spread over a very large number of individuals.

4. Balancing considerations

A major factor in many decisions applying the three-part "reasonableness" test has been balancing expectations of the adversely affected party against the relevant public interest. Several such decisions have found retroactive legislation to be unreasonable when the public interest in making it retroactive was weak, compared to the adverse impact on a party who had reasonably relied on the prior state of the law. In contrast, retroactive measures have been upheld when the court finds them rationally tied to a substantial public interest and finds no strong legitimate expectation of unchanging law.

a. Selected prior cases

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[50] *See, e.g.*, Keniston v. Bd. of Assessors, 407 N.E.2d 1275 (Mass. 1980) (stating that retroactive tax legislation can constitute a denial of due process when it is sufficiently "harsh and oppressive").

For example, one case involved civil liability for a worker injured while employed as a laborer for a contractor hired by the property owner to frame a single-family home. The State Building Code in effect at the time of the accident did not make the homeowner strictly liable for assuring compliance with the Building Code. However, after the Supreme Judicial Court so held, and apparently in response to that ruling, the legislature amended the Code to make such a homeowner liable, retroactive to two weeks before that homeowner applied for their building permit. After that legislative amendment, the Supreme Judicial Court held that to hold the homeowner to new obligations in these circumstances "would offend fundamental unfairness", in part because the homeowner was entitled to rely on the Building Code that was in effect at the time the homeowner applied for their building permit. It also seemed important to the court that "no significant public interest is served by creating liability" retroactively in this way.[51]

A similar rationale led to rejecting legislation that retroactively changed what kinds of religious beliefs an employer was required to respect in excusing employees from their work assignments. The employer had discharged two employees who refused to work on Christmas Day. Such a discharge had been allowed under the law then in effect (i.e., as applied to those two employees and their basis for refusing to work). However, the legislature then expanded the types of religious objections that must be accommodated and made that change retroactive, thereby exposing the employer to substantial civil liability to the discharged employees. The Supreme Judicial Court held that, although "there is an important public interest at stake in prohibiting discrimination against persons for their sincerely held religious beliefs", "there is no indication that any significant number of persons will benefit from or need the retroactivity provision", and therefore the retroactivity - compared to the adverse impact on the employer and its reasonable expectations - was unreasonable under the balancing test.[52]

Yet another decision by the Supreme Judicial Court that struck down a retroactive civil measure as unconstitutional turned on weakness of the public interest element compared to a strong reliance interest. The plaintiff was someone who had pled guilty to a charge of rape at age 22. Many years later, the Sex Offender Registry Board was created and classified him as a level one sex offender, someone whose risk of reoffense is low. He was not allowed to present evidence that he presented no risk to reoffend and thus should not be required to register. The Court found that the plaintiff had a substantial interest in not being classified as a level one sex offender with no opportunity to rebut that classification, because that would require annual notification to local and Federal law enforcement that he presented a risk of committing a sex offense and he would be "left to suffer the consequences of such an unsavory designation" for the rest of his life. On the public interest side of the balance, the court noted that "the public interest in protecting vulnerable members of the community from sexual predators is a compelling one". However, the court found that such public interest was not served by foreclosing any opportunity for an individualized assessment of a person whose

[51] St. Germaine v. Pendergast, 626 N.E.2d 857, 416 Mass. 698 (1993).
[52] Kathleen Pielech vs. Massasoit Greyhound, Inc., 804 N.E. 2d 894, 441 Mass 188, 197 (2004).

twenty-four-year history since their single sexual offence provides evidence of risk of recidivism.[53]

In contrast to the above results, the Supreme Judicial Court upheld an action by the state Commissioner of Insurance that retroactively increased commission rates owed by plaintiff Nationwide Insurance to independent insurance agents to 16.2%, up from the 10.69% set in contracts that Nationwide had privately negotiated with those agents. As to the public interest at stake, the court found that "the State has a valid interest in assuring the quality of services rendered to the consuming public by insurance agents; this interest is furthered by requiring that agents be compensated at a fair and adequate rate."[54] As to the nature of the rights affected, the court found that Nationwide was effectively on notice that its contract terms might thus be overridden by future legislation because the automobile insurance industry is intensely regulated.[55]

Although the opinion in Nationwide relied in part on the longstanding heavy state regulation of the automobile insurance industry to reject the plaintiff's reliance argument, it seems clear from the pattern of other decisions that legitimate retroactive legislation is not limited to intensely regulated industries. Rather, the general principle for weighing a reliance argument seems to be that stated in an earlier decision by the Supreme Judicial Court: "Essentially, the question is . . . how great is the change viewed in the light of the reasonable expectations of the parties".[56]

The pattern of the above cases strongly suggests that the Bill would pass the "reasonableness" test as it has been applied by the Supreme Judicial Court. First, unlike in the first three cases discussed above, the public interest at stake is very strong and the Bill seems reasonably designed to advance that interest. Second, there is no evidence that the compensatory payments would eliminate the profitability of responsible parties. Third, at least since the beginning of the covered period in 1995 (and arguably earlier), responsible parties were on notice of the possibility that their fossil fuel extraction activities would lead to substantial costs being imposed on them in some form or other, as discussed further below.

b. Industry knowledge

In 1995, the Intergovernmental Panel on Climate Change (IPCC) concluded for the first time that human activity was likely causing global warming. Specifically, the IPCC Second Assessment Report (SAR) stated "The balance of evidence suggests a discernible human influence on global

[53] Doe, Sex Offender Registry Bd. No. 8725 v. Sex Offender Registry Bd., 450 Mass. 780, 882 N.E.2d 298 (2008).
[54] Nationwide Mutual Insurance Co. vs. Commissioner of Insurance, 491 N.E.2d 1061, 397 Mass. 416, 423-424 (1986).
[55] *Id.*, at 424.
[56] American Mfrs. Mut. Ins. Co. v. Commissioner of Ins., 374 Mass. 181, 190 (1978), quoting Fornaris v. Ridge Tool Co., 423 F.2d 563, 567 (1st Cir. 1970).

climate."[57] This was the first time that the IPCC (created in 1988) explicitly linked human greenhouse gas emissions to observed warming. This language helped drive greater media coverage and public awareness about climate change as a human-caused issue. 1995 therefore was the year the scientific consensus on human-driven climate change became formally recognized at the global level.

Relevant prior indicators of industry awareness include:

- In 1988, leading NASA climate scientist James Hansen testified before Congress that scientific data had confirmed that industrial activities were causing climate change.
- In 1965, remarks by the president of the American Petroleum Institute ("API") to API's members advised them that a report from the President Johnson's Science Advisory Committee predicted "that carbon dioxide is being added to the earth's atmosphere by the burning of coal, oil, and natural gas," which would lead to "marked changes in climate";that "there is still time to save the world's peoples from the catastrophic consequences of pollution, but time is running out'; and that the report "unquestionably will fan emotions, raise fears, and bring demands for action".[58]
- Many more primary sources detailing pre-1990 Big Oil awareness of the harmful nature of their products on climate are collected in testimony presented to the Vermont legislature in 2024.[59]

Therefore one can make a strong case that at least by 1995, fossil fuel companies were on notice of a substantial risk that their continued extraction activities would attract future legal responsibility in some form or other (i.e., whether through tort liability, legislation, or otherwise), and in effect assumed that risk. In other words, they would no longer have a reasonable expectation of being able to maximize their profits without some sort of financial accountability. In fact, given their actual or constructive knowledge at least by 1995, one could argue it would be inequitable to let them escape accountability and let essentially all the costs of climate change adaptation expenses fall on others.

c. Avoiding overreach and overbreadth

Also relevant to the balancing test is that the Bill includes multiple avenues for avoiding overreach or overbreadth with regard to responsible parties. As noted above, responsible parties and others will be able to comment on draft regulations and the development of the statewide climate change adaptation master plan. Responsible parties also will have the right to challenge their identification as such and the calculation of the compensatory payment due from them.

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[57] UN Intergovernmental Panel on Climate Change, Second Assessment (1995), available at https://archive.ipcc.ch/pdf/climate-changes-1995/ipcc-2nd-assessment/2nd-assessment-en.pdf.
[58] Frank Ikard, Meeting the Challenges of 1966, Proceedings of the American Petroleum Institute, 12-15 (1965).
[59] Anthony Iarrapino, Esq., Testimony to the Vermont House Committee on Environment and Energy and the House Committee on Judiciary in Connection with Their Review of S.259 (April 11, 2024).

d. Equitable cost allocation

A strong argument can be made that the Bill would allocate costs in an equitable manner.

First, despite the evidence of industry knowledge summarized above and ample ability to pay, the Bill would allocate only 80 per cent of climate change adaptation costs to the class of responsible parties. That would in effect leave the other 20 per cent to be unrecovered or to be borne by Massachusetts taxpayers, in recognition that although consumers generally were less aware than responsible parties, they received benefits from fossil fuel products that they purchased. The legislature has substantial discretion to decide what allocation across those categories is equitable.

Second, the Bill would exclude from the definition of responsible party any firm that extracted fossil fuels in the period 1995 through 2024 in an amount to which less than one billion metric tons of covered greenhouse gas emissions are attributable. That will tend to exclude smaller firms that might have less ability to pay and for which the inference of knowledge as of 1995 may be weaker. The legislature has substantial discretion to create such cut-off levels for the sake of administrative practicality and other considerations.

Third, the Bill would make compensatory payments proportional to the amount of fossil fuels each responsible party extracted during the covered period (after excluding the amount to which one billion metric tons of covered greenhouse gas emissions are attributable). Therefore the share of the financial burden imposed on each responsible party would be closely aligned with the share of the harm caused by each.

D. Federal decisions addressing retroactivity

Massachusetts courts often cite Federal court decisions when considering whether a statute that has retroactive effect therefore causes a "taking" or violates substantive due process rights, because Massachusetts and Federal courts have long used essentially the same tests.[60] Also, the tests for "takings" and substantive due process are very similar, essentially boiling down to reasonableness. Some Federal decisions that seem particularly relevant to evaluating the retroactivity of the Bill are discussed below.

1. Federal "Superfund" law

As noted above, the Bill is to a large extent modelled after the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA", or "Superfund"), passed by Congress in 1980. CERCLA has consistently survived a broad range of Constitutional challenges, including challenges to its retroactive aspect. CERCLA imposes strict liability on certain parties for the costs of remediating contaminated sites, including for those parties' actions years and even

[60] *See, e.g.,* Nationwide Mutual Insurance Co., 397 Mass. at 423; American Manufacturers Mutual Insurance Co., 374 Mass. at 191 n. 7.

decades before CERCLA was enacted. Those liability-creating acts include, for example, "arranging for disposal" of wastes that contain hazardous substances at a site where remediation is later deemed necessary to protect public health or the environment.

Federal courts have consistently sustained the constitutionality of the retrospective application of CERCLA to pre-enactment conduct[61]. For example, a 6th Circuit opinion affirmed a decision of the District Court that had applied the same three-part test that the Supreme Judicial Court has endorsed, described above,[62] and found no "taking"[63]. The 6th Circuit conceded that "CERCLA reaches conduct that occurred prior to its passage because it authorizes government and private parties to clean up abandoned waste sites and then seek recovery of the costs from responsible parties" but distinguished the Eastern Enterprises case,[64] in which the Supreme Court struck down retroactive application of the Coal Industry Retiree Health Benefit Act of 1992. The 6th Circuit stated:

> We agree with the district court that CERCLA, as retroactively applied to APU, does not violate the Takings Clause. Although the economic impact on APU of retroactive CERCLA application is potentially significant, it is also directly proportional to APU's prior acts of pollution. Retroactive CERCLA liability similarly does not interfere with APU's reasonable investment backed expectations, as that concept is discussed in Eastern Enterprises, because APU's liability directly relates to the acts of its predecessors, who expressly assumed liability for any claims concerning the land and who reasonably could have anticipated liability for environmental harms… it is reasonable here to impose retroactive liability for possibly unforeseen costs of responding to environmental harms resulting from a party's disposal of waste. Finally, there is nothing unusual about the character of the governmental action in this case; Congress intended to spread the costs of present risks and liabilities, which were created in the past, to those who benefitted from their creation.[65]

Massachusetts has long had statutory provisions closely analogous to CERCLA, known as the Massachusetts Oil and Hazardous Material Release Prevention and Response Act, codified at M.G.L 21e. Like CERCLA, Chapter 21e has retroactive effect in that parties can be held liable for costs of remediating contaminated sites, based on their actions before it was enacted. The Supreme Judicial Court and other Massachusetts appellate courts have adjudicated many cases arising from Chapter 21e[66] but my review has not found an appellate decision addressing a challenge

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[61] See, e.g., United States v. Monsanto Co., 858 F.2d 160 (4th Cir. 1988); United States v. Northeastern Pharm. & Chem. Co., Inc., 810 F.2d 726 (8th Cir. 1986); Franklin County Convention Facilities Auth. v. American Premier, 240 F.3d 534 (6th Cir. 2001).
[62] See Fitchburg, 467 Mass. at 783-784.
[63] Franklin County Convention Facilities Auth. v. American Premier, 61 F. Supp. 2d 740, 743-44 (S.D. Ohio 1999).
[64] Eastern Enterprises v. Apfel, 524 U.S. 498 (1988).
[65] Franklin County Convention Facilities Auth. v. American Premier, *supra* n. 65, at 553.
[66] E.g., Acme Laundry Co. v. Secretary of Environmental Affairs, 410 Mass. 760 (1991); Guaranty-First Trust Company vs. Textron, Inc., 416 Mass. 332 (1993); Griffith v. New England Telephone & Telegraph Co., 420 Mass. 365 (1995); Martignetti v. Haigh-Farr, Inc., 425 Mass. 294 (1997); Commonwealth v.

specifically to the retroactive aspect of Chapter 21e. One could speculate that perhaps, in light of the precedents that have blessed the retroactivity of CERCLA, no party has deemed it worthwhile to challenge the retroactivity of Chapter 21e - or at least to the point of taking an appeal that has resulted in a reported opinion.

2. Mandated health benefits for coal miners

The Supreme Court found that the Black Lung Benefits Act - which required operators of coal mines to pay money into a fund to pay benefits to miners suffering from black lung disease - did not violate substantive due process, even though it imposed such liability retroactively with regard to miners exposed to coal dust before the statute was enacted.[67] The Court stated that "the imposition of liability for the effects of disabilities bred in the past is justified as a rational measure to spread the costs of the employees' disabilities to those who have profited from the fruits of their labor -- the operators and the coal consumers" - even if the mine operators "may not have known of the danger of their employees' contracting pneumoconiosis".[68]

A divided Supreme Court reached a different result on very different facts, when a company objected to the application to it of the Coal Industry Retiree Health Benefit Act of 1992.[69] Four of the nine Justices found that the Act caused an improper "taking" as to the plaintiff; one Justice concluded that "takings" analysis was inapplicable but the Act violated the plaintiff's substantive due process rights; and four Justices rejected plaintiff's arguments that it was unconstitutional at all. The five Justices who found the Act unconstitutional as applied relied on their determination s that (A) the plaintiff had transferred its coal business in 1965 to another company and (B) not until some date later did it become reasonably foreseeable to coal companies that retiree health benefits might become mandated. This decision illustrates that the degree of foreseeability is an important factor in evaluating the reasonableness of retroactive impact and that evaluating foreseeability is a fact-intensive exercise.

3. Energy Policy Act of 1992

The Energy Policy Act of 1992 required all domestic electric utility companies that previously had purchased enriched uranium from the Government for the generation of electrical energy to pay a fee to help pay for the clean-up costs of the Government facilities where the uranium enrichment activities were carried out. Challengers asserted that thus imposing a substantial burden based on past acts constituted an unconstitutional taking of property and a violation of substantive due process, but these claims were rejected.[70] The court noted that "retroactivity is largely objectionable…to the extent it cannot be anticipated" but nevertheless concluded (using language that seems relevant to the Bill) that "those who create a burden for society or who

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Boston Edison Co., 444 Mass. 324 (2005); Scott v. NG US 1, Inc., 450 Mass. 760 (2008); Bank v. Thermo Elemental Inc., 451 Mass. 638 (2008).

[67] Usery v. Turner Elkhorn Mining Co., 428 U.S. 1 (1976)

[68] *Id.* at 17-18.

[69] Eastern Enterprises, n. 64..

[70] Maine Yankee Atomic Power Co. v. United States, 44 Fed. Cl. 372, 381-82 (1999), aff'd, 271 F.3d 1357 (Fed. Cir. 2001)

benefit from a burden's creation must be seen as implicitly accepting responsibility and possessing constructive knowledge that they may one day be called to account."[71]

E. Conclusion

Taken together, the above cases suggest that it often is reasonable for a legislature to impose a new legal obligation retroactively on parties based on their past actions that caused environmental or health harms. Interestingly, these cases have not relied heavily on foreseeability - *i.e.*, on findings that the parties should have anticipated that some future change in law would hold them to account for their actions, although that sometimes has been mentioned as an additional rationale. Instead, as noted above, several of these opinions seem to say that even in the absence of such foreseeability, it can be reasonable for the legislature to shift costs retroactively onto those who caused environmental or health harms.

These precedents strongly suggest that the Bill's retroactivity would pass constitutional muster. Not only does the Bill shift the public's costs of responding to climate change partially onto parties largely responsible for causing climate change, it also limits its retroactive effect to a time period where foreseeability applies - *i.e.*, when those parties knew or should have known that their activities were causing climate change and its public harms. The Bill also adds an element of reasonableness in that it would not make responsible parties jointly and severally liable, as Chapter 21e and CERCLA does, but rather would calculate their obligations to pay based on their relative amounts of fossil fuels extracted in the relevant time period.

IV. Plaintiff's burden of proof

The Supreme Judicial Court has consistently stated that plaintiffs carry a heavy burden in seeking to overcome the presumption that a statute is constitutional. For example, in the same opinion that adopted the three-pronged test for "reasonableness," the Court stated that:

> "Every rational presumption is indulged in favor of the validity of an act of the General Court. Enforcement of such legislative enactment will not be refused unless its conflict with some provision of the Constitution is established beyond reasonable doubt." This is particularly the case with economic and remedial social enactments. In this sphere the burden is on the plaintiffs to make factual showings that the statute is irrational in its operation, and it has been our frequently stated rule that such a statute will not be set aside as a denial of due process "if any state of facts reasonably may be conceived to justify it." [citations omitted][72]

[71] In finding that the Act did not violate substantive due process, the court also gave credit to the fact that the Act (A) imposed only a portion of the financial responsibility for cleanup on this class of parties and (B) within that class of parties, made the amount of financial responsibility proportional to the amount of uranium each had purchased in the relevant time period. Id. The Bill incorporates both of those principles.
[72] American Manufacturers Mutual Insurance Co. vs. Commissioner of Insurance, 374 Mass. 181, 190 (1978).

In light of the facts summarized above available to justify the Bill under the three-part "reasonableness" test, it seems very unlikely that a challenger will be able to carry their heavy burden of proof that the Bill if enacted is unconstitutional on its face. That is in part because such a challenge would not seem fully ripe until after the Bill was implemented to a certain degree. In particular, it seems premature to apply the balancing test before the dollar amounts of compensatory payments are actually determined, because only then could one mount an argument that the size of those payments tips the balance into unreasonableness as applied to a particular responsible party.

Several prior cases that illustrate this barrier for plaintiffs. The Supreme Judicial Court declined to find a regulatory "taking" when a statute prohibited the continued operation of atomic energy plants, in part because of the possibility of compensation through a subsequent rate setting process.[73] The Court stated that this "affects the 'takings' analysis in this case in a manner similar to the possibility that an appropriate board might grant a special permit affects the takings analysis in a case where a zoning by-law is challenged. [citation omitted] In both instances the determination whether a taking is present depends, in part, on a factual inquiry regarding possible agency action." The Court held that therefore there were not yet sufficient facts to establish a regulatory taking.[74]

Sixteen years later, the Supreme Judicial Court cited the above opinion and reached a similar conclusion in the Fitchburg utility regulation case referenced above. There, the Supreme Judicial Court found that the petitioners had not demonstrated that a rate-setting process available to them - to possibly mitigate the financial impact of the assessment they had challenged - would prevent them from earning a reasonable rate of return.The Court therefore declined to find either a regulatory "taking" or a violation of substantive due process rights.[75]

Similarly, when defendants in a wetlands protection case claimed that Watershed Protection Act restrictions on their ability to modify beachfront property caused a categorical taking, the court held their challenge was not ripe because they had not yet tried to utilize the variance provision in the Act.[76]

The actual economic burden that the Bill will place on any particular responsible party can not be known until after the implementing state agency (A) prepares the climate cost study, (B) calculates the dollar amount to be demanded from that party, and (C) hears any administrative appeal from that party. The Bill guarantees to responsible parties and others the right to comment on a draft of the climate cost study. The Bill also guarantees that persons subsequently receiving financial assessments will have the right to challenge the accuracy of the assessed amount, both at the agency level and through subsequent judicial review. Not until these processes are complete could a court properly determine whether the Bill as implemented

[73] Yankee Atomic Electric Co. v. Secretary of the Commonwealth, 403 Mass. 203 (1988).
[74] *Id.*, 210-211.
[75] Fitchburg, 467 Mass. at 785.
[76] Commonwealth vs. Blair, 60 Mass. App. Ct. 741, 748 (2004).

causes either a regulatory “taking” or a violation of substantive due process rights as to that party.

Written Testimony of Anthony N.L. Iarrapino, Esq.[1]

Submitted in Support of H1014/S588 to the MA Legislature's Joint Committee on Environment

Summary Points

- These bills establish strict liability based on the substantial amount of greenhouse gas pollution attributable to fossil fuels extracted by corporations that have a jurisdictional nexus to the Commonwealth of Massachusetts and the costly damages the Commonwealth and its people have suffered and will suffer as a result of that pollution.

- Retroactive "polluters pay" strict liability, as incorporated into the Climate Superfund bills, is a well-established legal principle reflected in existing state and federal laws, including in state hazardous waste cleanup cost-recovery laws.

- Strict liability laws do not require proof of wrongdoing, negligence, or culpable mental state; they just require proof that the liable party engaged in the polluting activities to which strict liability attaches—in this case extracting and refining fossil fuels that resulted in at least 1 billion metric tons of CO2 equivalent emissions from 1995 to 2025.

    - There is no disputing that the large corporations who could potentially be held accountable under these bills engaged in such activities—it is proven in publicly reported data from the companies themselves. That reliable data is publicly available to Massachusetts officials and has been carefully analyzed using peer reviewed methods such as those reflected in the widely-cited Carbon Majors report published by Ric Heede and others. That report demonstrates how you take the detailed, dataset of fossil fuels extracted and refined and translate that into the total greenhouse gas emissions fueling the climate crisis on a corporation by corporation basis.

    - Federal courts have upheld statutes imposing retroactive strict liability without an evidentiary trial of facts where there is no doubt that the responsible parties engaged in the activities that caused the pollution problem for which the law holds them strictly liable. E.g., *Commonwealth Edison Co. v. U.S.*, 271 F.3d 1327, 1341-42 (Fed. Cir. 2001)

- The focus of these bills is not about exacting retribution on large fossil fuel companies because of intentional wrongdoing. Rather, it is about acknowledging

[1] For two decades, Attorney Iarrapino has practiced environmental law in the state and federal courts of Massachusetts and Vermont. This testimony is not filed on behalf of any client and reflects the personal views of the author.

that large fossil fuel companies have imposed an economic burden on the Commonwealth while reaping economic benefits for themselves.

• In the context of retroactive cost-recovery statutes, The U.S. Supreme Court has stated that "legislative Acts adjusting the burdens and benefits of economic life come to the Court with a presumption of constitutionality." *Usery v. Turner Elkhorn Mining Co.*, 428 U.S. 1 (1976).

• The Climate Superfund bills are not greenhouse gas emissions reduction measures. They do not require any emitter of greenhouse gas pollution to change their behavior, nor do they require any fossil fuel producer to reduce the amount of fossil fuel they extract, refine, or sell. They therefore in no way conflict with the federal Clean Air Act or any other federal law addressing the climate crisis or fossil fuel production.

Evidence Showing that the major fossil fuel corporations knew the climate disruption risks their activities entailed before and during the Covered Period.[2]

Legal precedents involving the retroactive cost recovery laws often turn on a key question to determine the fairness of such retroactivity provisions in statutes like the Climate Superfund: should responsible parties reasonably have known about the problem their activities might cause in the future at the time they engaged in the activities in the past? Courts have made clear that this is an “objective test” that looks at all available information about the problem in question rather than a subjective test that requires a polluter-by-polluter showing of specific knowledge.

In the case of the retroactive cost-recovery for the problem the Climate Superfund bills are aimed at, there is overwhelming evidence of historical industry knowledge of the connection between fossil fuel combustion and climate damage of the sort the Commonwealth has experienced and will continue to experience as a result of “covered greenhouse gas emissions.” That evidence stretches back well past 1995, the beginning of the “covered period” for strict liability under the Climate Superfund bills.

Recent reporting in The Guardian newspaper traces fossil fuel industry-funded scientific knowledge of climate danger back as far as 1954. Primary source excerpts from that industry-funded research may also be found here.

[2] During my oral testimony to the Committee on September 2, 2025, I indicated that I would provide further evidence indicating widespread industry knowledge of the connection between the fossil fuel

industry's products and activities and the costly climate changes Massachusetts is experiencing. The following examples are some, but not nearly all, of the primary sources or links thereto evidencing that knowledge.

Take Royal Dutch Shell Corporation as one example cited in investigative reporting by L. Michael Buchsbaum. He reports that

> In 1977, Shell co-funded and helped organize a week-long academic workshop on the carbon cycle staged by the Scientific Committee of Problems of the Environment, or SCOPE, an international research collaboration initiative. Bert Bolin, the Swedish meteorologist who would later become the first chairman of the IPCC, took part in the session.
>
> The workshop's 491-page report was just one of dozens of Shell-backed academic initiatives and reports published throughout the '70s that spelled out the risks posed by burning fossil fuels in increasingly vivid terms, peppered with warnings of "drastic economic consequences" and "severe stresses on human societies".

And Committee members can read Buchsbaum's other reporting with further links to primary source, industry-funded science here: https://energytransition.org/2023/10/shell games-unearthed-docs-reveal-companys-deep-awareness-of-fossil-fuels-existential risks/

Much of that knowledge is reflected in a chilling video produced by Shell and released in 1991 called Climate of Concern. It is still available on YouTube. https://www.youtube.com/watch?v=0VOWi8oVXmo This video belies the widespread availability of scientific research linking burning of fossil fuels to climate disruption and cost-driving impacts like flooding and crop failure, something documented further by Vatan Hüzeir, a PhD candidate at Erasmus University Rotterdam and publisher of *Dirty pearls: exposing Shell's hidden legacy of climate change accountability, 1970-1990. Included among that research is a* 1970 industry journal article where Shell appears to accept responsibility for harms caused by its products.

Further, even older evidence proves that Shell was not alone in its awareness of the problem; rather the knowledge was disseminated on an industry-wide basis by the American Petroleum Institute.

Viewers of the popular film *Oppenheimer* may recognize the name of physicist Edward Teller. Aside from his work on the hydrogen bomb, Teller also studied climate change resulting from burning fossil fuels. In 1959, he gave a cautionary address to the American Petroleum Institute. In his address, he gave a stark warning of the dangers of

global warming to the petroleum industry and human civilization, describing the need to transition to energy sources other than fossil fuels:

> [A] temperature rise corresponding to a 10 per cent increase in carbon dioxide will be sufficient to melt the icecap and submerge New York. All the coastal cities would be covered, and since a considerable percentage of the human race lives in coastal regions, I think that this chemical contamination is more serious than most people tend to believe.[3]

I also call the Committees attention to the research of Oxford Senior research fellow Benjamin Franta, who uncovered a document containing the 1965 annual remarks of American Petroleum Institute's ("API") President, Frank Ikard. His remarks to Big Oil executives include acknowledgement of a Johnson Administration Report of the Environmental Pollution Panel of the President's Science Advisory Committee which warned that fossil fuel combustion could cause significant climactic changes by the end of the 20th century. In his remarks, he noted that **"[o]ne of the most important predictions of the report [was] that carbon dioxide is being added to the earth's atmosphere by the burning of coal, oil, and natural gas**," which would lead to "marked changes in climate beyond local or even national efforts." [4] He then warned industry leaders that

> This report unquestionably will fan emotions, raise fears, and bring demands for action. **The substance of the report is that there is still time to save the world's peoples from the catastrophic consequence of pollution, but time is running out**.

These and many more primary sources detailing pre-1990 Big Oil awareness of the harmful nature of their products on the climate may also be found by following the links below:

> Benjamin Franta, Early oil industry knowledge of CO2 and global warming, 8 Nature Climate Change 1024 (Nov. 19, 2018), https://www.nature.com/articles/s41558-018-0349-9
>
> Smoke and Fumes: The Legal and Evidentiary Basis for Holding Big Oil Accountable for the Climate Crisis, Center for International Environmental Law 12 (Nov. 2017), https://www.ciel.org/wpcontent/uploads/2017/11/Smoke-Fumes FINAL.pdf.
>
> Environmental Research, A Status Report, American Petroleum Institute (Jan. 1972), http://files.eric.ed.gov/fulltext/ED066339.pdf
>
> Memo from J.F. Black to F.G. Turpin re The Greenhouse Effect, Exxon Research and Engineering Company 2 (June 6, 1978),

[3] Edward Teller, Energy patterns of the future, 38 Energy and Man: A Symposium 53, 58 (1960). [4] Frank Ikard, Meeting the challenges of 1966, Proceedings of the American Petroleum Institute 12-15 (1965)

http://www.climatefiles.com/exxonmobil/1978-exxon-memo-ongreenhouse-effect for-exxon-corporation-management-committee/ .

Memo from R.W. Cohen to W. Glass re possible "catastrophic" effect of CO2, Exxon Corporation 1 (Aug. 18, 1981), http://www.climatefiles.com/exxonmobil/1981-exxon-memo-on-possibleemission consequences-of-fossil-fuel-consumption

Memo from M.B. Glaser to Exxon Management re CO2 "Greenhouse" Effect, Exxon Research and Engineering Company 11 (Nov. 12, 1982), https://www.climatefiles.com/exxonmobil/1982-memoto-exxon-management about-co2-greenhouse-effect/

Between 1983-84, Exxon's researchers published their results in at least three peer-reviewed papers in the Journal of the Atmospheric Sciences and American Geophysical Union. See e.g. Atmospheric Greenhouse Effect: Is Burning of Fossil Fuels Affecting World Climate?, Mobil Oil Corp., Status Report Environmental & Toxicology Issue No. 83-2 (June 1, 1983), https://perma.cc/6A6Y-GQSF

Geoffrey Supran and Naomi Oreskes, *Assessing ExxonMobil's climate change communications* (1977–2014), 12(8) Environmental Research Letters 084019 (Aug. 23, 2017), http://iopscience.iop.org/article/10.1088/1748-9326/aa815f.

Furthermore, as noted by the Union of Concerned Scientists, "[i]n 1988, the issue moved beyond the scientific community and onto the national stage. James Hansen, a leading NASA climate scientist, testified before Congress that scientific data had confirmed that industrial activities were causing climate change. It was also in 1988 that the United Nations formed the Intergovernmental Panel on Climate Change and the U.S. Congress introduced the National Energy Policy Act in an effort to reduce emissions of heat-trapping gases." Based on these events, the Union of Concerned Scientists rightly observe that "[i]t is difficult to imagine that executives, lobbyists, and scientists at major fossil companies were by this time unaware of the robust scientific evidence of the risks associated with the continued burning of their products." Based on the documents referenced above, there is no imagination required.

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#240-25

Dear Legislators,

DARTMOUTH

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Hanover, New Hampshire03755

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Joint Committee on Natural Resources
Massachusetts State Legislature

September 2, 2025

Re: Scientific basis for H.1014/S.588

I am a professor and climate scientist at Dartmouth, where I direct the Climate Modeling & Impacts Group[i]. My group and I work to understand the impacts of human-caused global warming on our water, food, recreation, infrastructure, and economic and physical security. Much of our scientific research centers on using publicly provided observations and openly available models to quantify the impacts and costs of global warming to date and to estimate how those may evolve into the future. Our goal is to improve our understanding of the consequences of warming for people and the things they value and to inform the difficult decisions those consequences will compel. My group's climate attribution work has been published in leading peer-reviewed scientific journals, like *Science*, *Nature,* and the *Proceedings of the National Academy of Sciences.*[ii] I serve in a number of leadership and service roles in the climate science community, including with the National Climate Assessment, the National Academies, and the University Corporation for Atmospheric Research. I hold an undergraduate degree and a Masters of Public Administration from Columbia University, a Master of Science from the London School of Economics, and a PhD in climate science from Stanford University.

Briefly, I want to make clear to you all that the task of both identifying the extent and costs of economic losses Massachusetts has experienced as a result of hazards from global warning and the attribution of responsibility for those losses back to particular greenhouse gas emissions inventories is possible based on sound, peer-reviewed science. My letter here makes the following four key points supporting that statement and I would be happy to field any questions the lawmakers have about each of these in formal testimony, should they want that:

- **Firstly, using peer-reviewed, consensus scientific methods, scientists can *quantify* the economic losses a region like Massachusetts has endured from the impacts of global warming to date.[iii]**

- **Secondly, using peer-reviewed, consensus scientific methods, scientists can *attribute* Massachusetts's climate losses back to particular emissions or emitters over a given time period, as considered by the legislation.**[iv]

- **Thirdly, using peer-reviewed, consensus scientific methods, scientists can estimate the net present value of future damages associated with *both* historical and future emissions.**[v]

- **Lastly, it is my opinion that we are systematically underestimating the economic costs of climate change to date, and that is because all of these climate damage cost accounting methods are inherently conservative or limited by data.**

For example, over the 1991-2022 period, we attribute that Massachusetts's economy has lost over $45 billion from changes in extreme heat traceable back to greenhouse gas emissions originating from the highest emitting five fossil fuel companies[1]. I want to emphasize: this is the loss from only one hazard (extreme heat) estimated over a 30 year period historically. This does not include extreme rain and flood damages, or those arising from droughts, wildfires, tropical cyclones, or sea level rise. The damages from extreme heat will continue to manifest for generations into the future, costing future Massachusetts residents their well-being and riches.

Losses from climate change abound. But who pays and how much? While these questions are ultimately being resolved in courts and in legislative bodies such as yours, science can help provide answers to these questions. In particular, science can help by quantifying climate damages and attributing them to particular parties.

In general, there are three sets of costs to consider in assessing total damage due to climate change,[vi] and there are different methods to estimate each of these.

- The first is the cost of the damage promulgated by historical emissions. So these are the costs that have already manifested in Massachusetts's economy owing to the hazards from the human-caused global warming to date.

- The second set of costs to consider are the costs that will arise from future hazards, which have their origins in historical emissions. The effects of carbon dioxide (CO_2) are cumulative, and CO_2 has a very long residence time in our atmosphere, such that some fraction of the first ton released at the dawn of the industrial revolution is still up there, warming our climate and generating impacts.[vii] This means that the emissions already released from fossil fuel combustion, and to which we can already attribute historical climate damages in a place like Massachusetts, will continue to cause damage to the state into the future.

[1] This estimate is based on the peer-reviewed work, Callahan & Mankin, *Carbon majors and the scientific case for climate liability,* Nature (2025).

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- The last cost to consider is the cost from future emissions. Decarbonizing our economy will take time and will itself be energy intensive; to the extent that it is reliant on fossil fuels, future emissions will generate future impacts, and those impacts, costs.

Thanks to the careful work of researchers like Rick Heede at the Carbon Majors database, we have the time varying Scope 1 and Scope 3 emissions data from major fossil fuel firms that position the apportioning of any one of the aforementioned costs back to these emitters.

There are a number of scientifically defensible and rational approaches to calculating the costs attributable to each of these terms and apportioning them to actors. I would generally classify the damage attribution work into two approaches. I emphasize that *both of these approaches have a rational basis*, which implies that the State would have options in how best to approach any accounting:

- The first approach relies on using some estimate of the marginal damage to Massachusetts from a ton of emissions, like the social cost of carbon or SCC. The SCC is a dollar estimate of the discounted welfare costs associated with emitting one additional ton of carbon dioxide into the atmosphere. Right now, using various methodologies, the EPA places the SCC at $190 per ton[viii]. With that legally binding estimate in hand, one could apportion economic damages attributable to particular emitters or emissions based on a chosen covered period[ix].

- A second approach is one my research team, among others[x] has been working on, which we call an 'end-to-end' attribution. Our approach isolates and quantifies *particular* climate damages attributable to *particular* emitters and, owing to its modularity and flexibility, can be applied to myriad contexts (from single events to cumulative harms), emitters (from individual firms to nations), and climate change-driven hazards (from average temperatures,[xi] to heat waves, to storms, droughts, floods, and others), given data availability. Our framework uses consensus, peer-reviewed methods and resolves nonlinearities in the relationships between greenhouse gas emissions, atmospheric concentrations, temperature changes, physical hazards, and damage. Our rigorous treatment of causation is designed to meet scientific and legal standards.

Climate attribution science is a well-established consensus science, informing synthesis reports like the Intergovernmental Panel on Climate Change[xii] and the National Climate Assessment[xiii], and has been used to establish causal links between global warming various climate hazards, like floods[xiv], droughts[xv], heat waves[xvi], snow loss[xvii], tropical cyclones[xviii], and other hazards.
Similarly, there is considerable peer-reviewed, consensus work that documents and attributes the monetary losses from climate impacts—so called "climate damage assessments"[xix]. Damage assessments are often grounded in empirical or semi-empirical models called "damage functions" that connect climate-related extremes, like heat waves or floods, to policy-legible socioeconomic outcomes, like lives or income lost. With these damage estimates, decision-makers can then better

understand the costs of climate inaction and weigh them against the net benefits of adaptation and mitigation.

These attribution methods rely on comparing outcomes in two groups, just like in a medical drug

trial. In a drug trial, participants are randomly assigned into treatment and control groups. The individuals in the treatment group receive the drug, while those in the control group do not, and the medical outcomes among the two groups are compared. The power of randomizing who is in the treatment versus control groups allows us to show that even though individuals respond differently to the treatment, we can still make an attribution of the efficacy of the treatment.

We can extend this toy example to climate attribution in general. Our attribution methods rely on comparing outcomes in a world with versus without climate change. The distinction here is that we use models, rather than a randomized control trial, to construct the control group, or the counterfactual world without climate change. The power of this framework means we can remove a set of emissions associated with an emitter and evaluate how climate hazards and their associated damages would have looked differently. The difference between the work with versus without this emitter is the attribution of the causal role the considered emissions had on a state like Massachusetts.

I am happy to delve into the mechanics of the approach if the State has questions. I also include our two peer-reviewed scientific manuscripts with my letter, documenting our approach. Briefly, we use an integrated modeling framework built on consensus, peer-reviewed methods that allows us to build a transparent and reproducible chain of causality from emissions to damage, sampling the range of outcomes that are possible at each step. We do this by simulating from emissions to damage, leaving out a particular emitter, or set of emissions, creating a control group. We can then compare the two worlds, one as it is, and one without a particular set of emissions and compare the economic outcomes. That is our damage attribution.

We have applied this framework to assess the income lost due to historical emissions-driven changes in average temperature and heat waves. Importantly, it can be extended to other hazards, like floods, or drought, and to other damages, like mortality or morbidity, depending on the use case. For example, there are U.S. economy trained damage functions[xx], and with that damage function in hand, we were able to estimate the global warming and the economic damage nationally just from the emissions traceable to the U.S. power sector over the 1973-2023 period.[xxi]

What we know from these individual damage assessments is that the costs of climate change to date are far higher than previously understood. We have shown that for average temperatures, for extreme heat, and for climate variations that could be affected by climate change, like El Niño. Because the costs attributable to these individual hazards to date are so large, and they focus on quantities that are easily measured, it is my assessment that any accounting of the damages to date are an undercounting, and are thus inherently conservative. Thank you for the opportunity to share our science with you today.

Sincerely,

Justin S. Mankin

[i] Website: https://jsmankin.github.io/

[ii] E.g., Callahan & Mankin, *Climatic Change* (2022); Callahan & Mankin, *Science* (2023); Gottlieb & Mankin, *Nature* (2024); Callahan & Mankin, *Science Advances* (2022); Callahan & Mankin, *Nature* (2025).

[iii] E.g., Callahan & Mankin, Science Advances (2022); Callahan & Mankin, Climatic Change (2022); Diffenbaugh & Burke, *PNAS* (2019); Burke, Hsiang, Miguel, *Nature* (2015). [iv] E.g., Callahan & Mankin, *Science Advances* (2022); Callahan & Mankin, *Nature* (2025). [v] EPA Report on the Social Cost of Greenhouse Gases: Estimates Incorporating Recent Scientific Advances: https://www.epa.gov/system/files/documents/2023-12/epa_scghg_2023_report_final.pdf

[vi] Burke et al. *NBER Working Paper 3165* (2023).

[vii] Matthews & Caldeira, *Geophysical Research Letters* (2008).

[viii] EPA Report on the Social Cost of Greenhouse Gases: Estimates Incorporating Recent Scientific Advances: https://www.epa.gov/system/files/documents/2023-12/epa_scghg_2023_report_final.pdf

[ix] See, for example Schleussner et al. *ESS Open Archive* (2023).

[x] See Burke et al. *NBER Working Paper 3165* (2023) https://www.nber.org/system/files/working_papers/w31658/w31658.pdf; Quilcaille et al., (2024) https://www.researchsquare.com/article/rs-4796598/v1 .

[xi] Burke et al. *NBER Working Paper 3165* (2023).

[xii] E.g., Bindoff et al., 2013: Detection and Attribution of Climate Change: from Global to Regional. In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_Chapter10_FINAL.pdf [xiii] USGCRP, 2023: Fifth National Climate Assessment. U.S. Global Change Research Program, Washington, DC, USA. https://nca2023.globalchange.gov/chapter/3#key-message-5 [xiv] Pall et al., *Nature* (2011).

[xv] Diffenbaugh, Swain, & Touma, *Proceedings of the National Academy of Sciences* (2015).

[xvi] Callahan & Mankin, *Science Advances* (2022).

[xvii] Gottlieb & Mankin, *Nature* (2024).

[xviii] Patricola & Wehner *Nature* (2018).

[xix] E.g., Carleton, et al.*, Q. J. Econ.* (2022); Hsiang, et al.*, Science (2017);* Auffhammer et al., *Rev. Environ. Econ. Policy* (2013); Carleton & Hsiang, *Science* (2016); Diffenbaugh and Burke *PNAS* (2019).

[xx] See Hsiang et al. *Science* (2017).

[xxi] Mankin et al., Climate damages to the U.S. economy from U.S. power sector emissions (2025), available at: https://zenodo.org/records/16874810

Nikolas Bowie
Louis D. Brandeis Professor of Law

September 15, 2025

Testimony of Prof. Nikolas Bowie
to the Massachusetts Joint Committee on Environment and Natural Resources
in connection with its consideration of H.1014/S.588, "An Act establishing a climate change superfund"

Dear Chair Barber and Members of the Joint Committee:

I am a lawyer (J.D. Harvard Law School, 2014) and historian (Ph.D. Harvard University, 2018) who teaches courses in federal constitutional law, state constitutional law, and state and local government law at Harvard Law School. More information on my professional and publication history is available at the Law School's website.

This testimony focuses on the question whether the retroactive aspect of H.1014/S.588 would violate any limits set by the Massachusetts Constitution. In short, I believe it does not, for the reasons outlined below.[1]

First, the bill would not come close to transgressing the primary constitutional concern of retroactive legislation, which is the imposition of criminal liability or other punishment for prior acts. The bill imposes new

[1] In connection with reaching these conclusions, I have reviewed a legal research memorandum prepared by attorney Paul Shorb, in both draft and final form, titled "Whether H.1014/S.588 Violates Any Limits on Retroactivity Set by the Massachusetts Constitution." I agree with and endorse its conclusions.

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financial consequences for prior acts, but they are not "punitive" as that concept has been defined under applicable Massachusetts and federal precedents.

Second, the financial obligation potentially imposed on a "responsible party" would not, in my opinion, qualify as an unconstitutional taking without compensation. The Supreme Judicial Court has followed the U.S. Supreme Court in its analysis of takings, and neither Court has described a financial obligation as a "per se taking" outside the context of land-use questions. If a Massachusetts court analyzed the bill through the lens of a "regulatory taking," the analysis and result under applicable Massachusetts and federal precedents would be similar to that described below in connection with due process rights.

Third, the bill should survive a challenge that, on its face, its retroactive nature unconstitutionally deprives anyone of life, liberty, or property without due process of law. Under applicable Massachusetts and federal precedents, evaluating the fairness of a retroactive obligation requires balancing fact-intensive considerations that include the nature and scope of the retroactive impact. But I understand that the facts of any financial impact on any particular "responsible party" will not be known until after the designated executive branch agency completes a number of fact-finding steps and related calculations as directed by the bill. Therefore, a judicial challenge would not be ripe until the financial demand on a particular responsible party has been calculated and issued by the designated executive branch agency. The same would be true if the challenge was based on a "regulatory taking" analysis.

Fourth, I do not expect that, when such financial demands are issued, they would be held unconstitutional on either a "regulatory taking" or fairness theory.

- As a general matter, legislation with retroactive impact is routinely enacted, consistent with constitutional requirements. A challenger faces a high hurdle to prove that retroactive impact (so long as it is not punitive) is unconstitutional.

- This bill in particular takes care to incorporate principles of proportionality that a state or federal court would consider important for applying the relevant review criteria.

- Those criteria do not necessarily require that the parties impacted were either already in a heavily regulated industry or otherwise on notice of the potential for such future legislation. Therefore, the fact that bill limits its retroactive reach to a time period when there is ample evidence that large fossil fuel extraction companies were actually on notice simply adds more weight to the balance, in favor of the bill's reasonableness.

I would be glad to respond to questions from the Joint Committee about this testimony.

Sincerely,

Nikolas Bowie
Louis D. Brandeis Professor of Law
Harvard Law School

#240-25

MAKE POLLUTERS PAY. MASSACHUSETTS

Whereas, this legislative session, bill H.1014/S.588, "An Act establishing a climate change superfund," also known as the Climate Superfund Bill, was filed; and

Whereas, if passed, this bill would establish a climate change superfund into which the largest oil and gas companies would pay billions of dollars over 25 years, with each company's share proportional to their contribution to global greenhouse gas emissions between 1995 and 2024, as determined by the Executive Office of Energy and Environmental Affairs; and

Whereas, oil and gas companies bear the responsibility for exacerbating the climate crisis, and have consistently misrepresented the destructive impacts of fossil fuel combustion on the global climate; and

Whereas, climate change caused by global warming poses many serious threats to the **City of Newton** and its residents, including extreme heat, flooding, poor air quality, and other extreme weather, which are already impacting the **Newton** community; and

Whereas, to adequately fund necessary climate adaptation and resilience projects, as well as the significant repairs and recovery from flooding and other extreme weather damage, **Newton** requires funding at a scale beyond the reasonable constraints of the **Newton's** operating budget, and the passage of the proposed Climate Superfund legislation in the State House would provide the means for **Newton** and other municipalities like it to adapt to climate impacts more adequately, equitably and meaningfully; and

Whereas, the proposed legislation would mandate that 40% of the monies raised be allocated to projects benefiting environmental justice communities, encourage utilization of apprenticeship work programs, and encourage adherence to prevailing wage laws; and

Whereas, the Commonwealth of Massachusetts currently does not have a plan to adequately, equitably and meaningfully fund necessary resilience and adaptation projects in affected communities like **Newton**; now, therefore:

Be it Resolved that the **Newton City Council** expresses its support of H.1014/S.588, "An Act establishing a climate change superfund;" to build polluter accountability and fund climate resilience.

Be it Further Resolved that the **Newton** Clerk forward a copy of this resolution to the **Newton** legislative delegation (Rep. Amy Sangiolo, Rep. Greg Schwartz, Sen. Cynthia Creem) as well as the House Speaker, Senate President, and the Office of the Governor.