



Thank you for this opportunity to submit public comment to the Senate Commission to Study the Successful Implementation of the Act on Climate. My name is B.L. Jordan, and I am the Adaptive Reuse Policy and Programs Manager at Providence Preservation Society (PPS). I appreciate the Commission's leadership in advancing this study and hope to highlight additional avenues that could strengthen Rhode Island's response to greenhouse gas emissions and the climate crisis. PPS is a non-profit based in Providence, Rhode Island. These comments are volunteered from our organization which focuses, among other advocacy efforts, on promoting: (1) adaptive reuse; (2) sustainable planning and design; (3) circular economy projects and policies; and (4) advocates for preservation, restoration, and reuse trades skills that support workforce development.¹

Greenhouse gas emissions, and their effects, are a substantial threat to our state's health, economy, and culture. We are already grappling with severe climate-related events and are expected to experience accelerated weather change and vulnerabilities into 2100.² The 2021 Act on Climate was an acknowledgement by the state legislature that these greenhouse gas emissions must be reduced to help mitigate harm to the state and its citizens. There are targeted emission reduction standards including 45% below 1990 levels by 2030; 80% below 1990 levels by 2040; and an expectation for net zero emissions by 2050.³ The Rhode Island Executive Climate Change Coordinating Council's (EC4) strategies are shaped by these mandates. However, the 2025 Climate Strategy made clear that "the current policy scenario [will] reach 62% below 1990 levels by 2040 and 70% below 1990 levels by 2050," missing the legal mandates.⁴

I. Embodied Carbon has not been Addressed in Rhode Island's Climate Goals and Represents a Significant and Immediate Carbon Emission Reduction Opportunity.

Buildings account for nearly 40% of global greenhouse gas emissions.⁵ In Rhode Island, the Department of Environmental Management's 2022 Greenhouse Gas Inventory states that the building sector roughly accounts for 30% of all emissions produced in Rhode Island, representing the second largest emissions sector.⁶ Since the creation of the EC4, much of the State's climate change strategy has been focused on the reduction of operational carbon. Operational carbon is associated with a building's

¹ *Mission*, The Providence Preservation Society, <https://ppsri.org/about/> (last visited March 19, 2026).

² *The Effects of Climate Change*, Nat'l Aeronautics and Space Admin. [NASA], <https://science.nasa.gov/climate-change/effects/> (last visited March 19, 2026).

³ R.I. Gen. Laws § 42-6.2-9.

⁴ R.I. Exec. Climate Change Coordinating Council, *Rhode Island 2025 Climate Action Strategy 4* (2025).

⁵ United Nations Env't Programme, 2022 Global Status Report for Buildings and Construction iv (2022), <https://www.unep.org/resources/publication/2022-global-status-report-buildings-and-construction>

⁶ *Rhode Island Green House Gas Inventory*, R.I. Dep't Env't Mgmt, [rhode-island-greenhouse-gas-inventory](https://www.dem.state RI.gov/rhode-island-greenhouse-gas-inventory) (last visited March 19, 2026).



energy use, such as lighting, heating and cooling, appliance use, and mechanical systems. Operational carbon emissions are critically important and impactful to track and reduce, but do not represent the entirety of our carbon emission footprint.⁷

There are significant carbon emissions throughout a building's life cycle, from construction through demolition, known as embodied carbon. These emissions are released in the manufacturing, transportation, installation, maintenance, and disposal of building materials.⁸ Unlike operational carbon, **once embodied carbon is expended, you cannot reverse or reduce this type of carbon, which is known as “sunk cost” carbon.** Ready-mix concrete, structural steel, steel rebar, and asphalt are among the highest carbon-intensive materials that generate extensive greenhouse gas emissions.⁹

Rhode Island has not yet comprehensively addressed embodied carbon in relation to the state's building stock lifecycle. According to the Natural Resources Defense Council (NRDC), “over the next 25 years, more than half of the emissions from new buildings will come from the materials that make up a building, rather than its operations.”¹⁰ Without explicit attention to embodied carbon, Rhode Island risks missing significant and immediate emissions-reduction opportunities, particularly with regard to building materials. The State of Massachusetts' Embodied Carbon Intergovernmental Coordinating Council (ECICC) recently released its first Embodied Carbon Reduction Plan.¹¹ The coordinating council undertook the study of embodied carbon throughout Massachusetts' agencies, which led to the publication of an embodied carbon plan that encourages the measurement and reduction of embodied carbon in state-managed construction.¹² The plan refers to embodied carbon as “the sleeping giant when it comes to sources of climate pollution,” and makes nine recommendations,¹³ broadly calling for investigation into building and construction practices across Massachusetts' agencies, collect environmental product declarations (EPDs), recommending “cradle-to-grave” whole building life cycle assessments¹⁴ for new building construction or major building

⁷ Aileen Carroll, *Embodied Carbon vs Operational Carbon*, One Click LCA (2025), <https://oneclicklca.com/en-us/resources/articles/embodied-carbon-vs-operational-carbon>.

⁸ U.K. Green Building Council, *Operational & Embodied Carbon: Explainer Guide* (2023), <https://ukgbc.org/wp-content/uploads/2023/02/operational-and-embodied-carbon-1.pdf>

⁹ Env't Prot. Agency, *Low Embodied Carbon Materials* (2024), https://www.epa.gov/system/files/documents/2024-11/resources_lecm.pdf

¹⁰ Mikhail Haramati, *The Key to Lowering a Building's Carbon Footprint? Embodied Carbon*, NRDC (2025), <https://www.nrdc.org/bio/mikhail-haramati/key-lowering-buildings-carbon-footprint-embodied-carbon#what-is>

¹¹ See *Generally*, Commonwealth of Massachusetts, *Embodied Carbon Reduction Plan* (2026).

¹² Commonwealth of Massachusetts, *Embodied Carbon Reduction Plan 3-5* (2026), <https://www.mass.gov/embodied-carbon-intergovernmental-coordinating-council-ecicc>

¹³ *Id.* at 6-8.

¹⁴ Asha Ramachandra, *10 Facts About Building Life Cycle Assessment*, OneClick LCA (Feb. 7, 2025) <https://oneclicklca.com/en-us/resources/articles/10-essential-facts-about-building-life-cycle-assessment>

renovations over 20,000 square feet, and protocols to explore adaptively reusing structures and building materials.¹⁵

Similar to Massachusetts, the state of Rhode Island should commission a study to understand embodied carbon impacts and make recommendations for public agencies that own buildings and complete major renovations and capital projects. The Rhode Island Department of Transportation (RIDOT) commissioned a carbon study in 2023 to support net zero emissions by 2050, but did not specifically study embodied carbon.¹⁶ Nearly one-third of all concrete used for construction in the United States is procured by state and local governments.¹⁷ The State, through capital building projects, can establish clear embodied carbon goals and identify additional opportunities to decrease embodied carbon, thereby setting the tone for low-embodied carbon projects in the State.

II. Implementation Opportunities to Reduce Embodied Carbon in Concert with the Reduction of Operational Carbon.

- a. *Adaptive reuse and deep energy retrofits should be a priority for the state's climate action strategy.*

The adaptive reuse¹⁸ and deep energy retrofits¹⁹ of older buildings should become a priority in the state's overall climate strategy because it offers a way to avoid unnecessary embodied and operational carbon expenditures. Reusing existing buildings with deep energy retrofits has been shown to reduce overall operational carbon **and** lower embodied carbon emissions from new materials.²⁰ The Massachusetts Embodied Carbon Plan states, "the most effective ways to lessen EC impacts are to reduce overall volumes of new work through building and material reuse and scoping capital investments to only the size needed to meet needs, avoiding unnecessary construction."

Addressing existing buildings is critical to achieving net-zero emissions by 2050. There is research to suggest that even if a building is highly energy efficient and uses the best

¹⁵ Commonwealth of Massachusetts, Embodied Carbon Reduction Plan 6-8 (2026).

¹⁶ Rhode Island Dep't of Transp., Carbon Reduction Strategy, 2 (2023), https://www.dot.ri.gov/projects/CarbonReduction/docs/Carbon_Reduction_Strategy.pdf.

¹⁷ Rebecca Esau & Audrey Rempher, *Low-Carbon Concrete in the Northeastern United States*, (2022), [Low-carbon-concrete-in-the-northeastern-united-states](https://www.lowcarbonconcrete.org/low-carbon-concrete-in-the-northeastern-united-states)

¹⁸ Adaptive reuse refers to the practice of reusing or repurposing an existing building for a new use, often different from its original function, to help extend the building's life.

¹⁹ Deep energy retrofits are changes to a building that seek to decrease operational energy usage with upgrades to the building envelope, roof, insulation, and mechanical or building systems. See *Deep Energy Retrofits*, Dep't of Energy, <https://www.energy.gov/femp/deep-energy-retrofits> (last visited March 19, 2026).

²⁰ RMI, REALIZE Deep Energy Retrofit Case Study: Fairweather Apartments Salem, MA (2024), https://advancedbuildingconstruction.org/wp-content/uploads/2024/03/Fairweather-Salem_DER-Case-Study.pdf



available technology to reach net zero, **it may take decades for a new building to make up for the carbon emissions already released in the course of demolishing the building and then creating the replacement.**²¹ It is imperative that the state balance the construction of newer low carbon or net zero buildings with deep energy retrofits to older buildings which have already expended carbon and are now carbon assets.

In Providence alone, more than 85% of the building stock is more than 50 years old.²² We simply cannot build our way to net zero in line with the 2021 Act on Climate emission mandates – we are going to have to retrofit existing buildings for increased energy efficiency. There has been legislation introduced to understand and benchmark operational carbon energy usage in certain buildings around the state, but this legislation is still pending. This data is important for large building owners trying to understand the deep energy retrofits needed to help cut their operational carbon. Providence implemented a similar scheme, called BERO or the Building Energy Reporting Ordinance.²³ The first report after this ordinance went into effect, released in 2024, makes clear that the data will guide the city to work with building owners to identify strategies and opportunities to improve building sustainability.²⁴ These building benchmarks provide valuable data on operational carbon, but this data does not account for the carbon costs of demolition and new construction, and does not quantify savings in both operational and embodied carbon that can come from retrofits. A more robust plan to address and support building retrofits in Rhode Island is needed.

b. Manual deconstruction should be considered at the end of a building's usefulness and when it cannot be adaptively reused.

Deconstruction is the intentional dismantling of a building by hand in order to salvage and reuse materials and keep them out of the landfill.²⁵ Deconstruction is critical to shrink the carbon emissions of buildings because it decreases the use of new carbon-intensive materials and prevents the high emissions associated with the manufacturing and transportation of new building materials.²⁶ A 2018 Environmental Protection Agency Study on waste showed that building demolition represents more than 90% of all Construction and Demolition Debris (C&D), while construction

²¹ Preservation Green Lab, The Greenest Building: Quantifying the Environmental Value of Building Reuse 21 (2011), https://cdn.savingplaces.org/2023/05/24/11/14/36/697/The_Greenest_Building_Full.pdf

²² The Atlas of ReUrbanism, Fact Sheet: Providence, Rhode Island (2026), https://cdn.savingplaces.org/2023/07/17/14/43/30/570/Providence_Factsheet.pdf

²³ ORD-2023-35, City of Providence, https://providenceri.ig2.com/Citizens/Detail_LegiFile.aspx?Frame=&MeetingID=14046&MediaPosition=&ID=41345&CssClass=

²⁴ Dep't of Sustainability, Setting the Baseline for Carbon Neutrality: City of Providence 2024 Building Energy Report 2 (2024).

²⁵ Katy Pickens, *Deconstruction & Salvage: When Historic Buildings Come Down, Can the Materials Find New Life?* PPS Providence Post (2025).

²⁶ Audrey Rempher et. al., *Embodied Carbon 101: Building Materials How to eliminate the emissions hidden in concrete, steel, insulation, and other building materials* (2023), <https://rmi.org/embodied-carbon-101/>.



represents less than 10%.²⁷ Rhode Island's central landfill, consisting of 1,200 acres located in Johnston, Rhode Island, is expected to reach maximum capacity in 2046.²⁸ Deconstruction leads to reductions in embodied carbon emissions and responsible diversion from an already taxed waste stream.

The State of Rhode Island, similar to Massachusetts, should consider piloting deconstruction projects to measure, among other benchmarks, waste diversion, cost savings, and material reuse at the State level. Standards that are already used, like CHPS,²⁹ provides some guidance on the recycling and reuse of building materials, but CHPS does not require a project proponent to reuse building materials in a new construction project. Recycling materials does not necessarily help to lower embodied carbon or benefit building owners. Incorporating materials from a demolished building into new construction actively helps to lower the new buildings' embodied carbon, may bring the cost of construction down, and is likely healthier for people and the environment.³⁰

c. Workforce development is critical to address adaptive reuse, deep energy retrofits, and deconstruction needs.

The focus for many green jobs in Rhode Island has been in the offshore wind industry. The Rhode Island 2025 Climate Action Strategy estimates there will be approximately 4,000 new jobs related to offshore wind.³¹ Some net job growth is anticipated in the building sector, including 420 jobs related to work on water heating, lighting, and appliances in commercial buildings.³² But it is important to remember that roughly 38 million, or 40% of the total buildings in the country, are more than 50 years old.³³ In Providence alone, approximately 85% of the capital's building stock is more than 50 years old.³⁴ The climate strategy should also recognize potential job growth that is tied to sustainable building practices and embodied carbon in the fields of adaptive reuse, deep energy retrofits, and deconstruction.

The Rhode Island 2025 Climate Action Strategy articulates the need for pre-weatherization and weatherization incentives without acknowledging the workforce

²⁷ Env't Prot. Agency [EPA], Advancing Sustainable Materials Management: 2018 Fact Sheet 19 (2018), https://www.epa.gov/sites/default/files/2021-01/documents/2018_ff_fact_sheet_dec_2020_fnl_508.pdf

²⁸ *Central Landfill (for trash)*, Rhode Island Recourse Recovery Corp., <https://rirrc.org/about/operations/central-landfill-for-trash>

²⁹ Northeast CHPS Criteria for New Construction and Renovations Versions 4.0 292 (2022), <https://neep.org/sites/default/files/media-files/NE%20CHPS%20v4.0%20Clean%20Final%20Draft%20May%202022.pdf>

³⁰ *Let's Talk About: Deconstruction*, Place Economics, <https://www.placeeconomics.com/lets-talk-about-deconstruction/>

³¹ R.I. Executive Climate Change Coordinating Council, Rhode Island 2025 Climate Action Strategy 28 (2025).

³² *Id.*

³³ See Place Economics, *The Campaign for Historic Trades: Status of Historic Trades in America 6* (2022).

³⁴ National Trust for Historic Preservation Green Lab, Fact Sheet: Providence 2 (2017).



needed to address these complex issues. Pre-weatherization is the process of removing outdated building mechanics like knob and tube wiring, which then allows for sustainable upgrades to the building.³⁵ New trades professionals with knowledge of historic building practices and materials, coupled with skills related to deep energy retrofits and building performance, are needed to complete these types of jobs.

In addition, workforce development in the field of deconstruction should be considered as a necessary tactic to meet our climate goals. Deconstruction is a careful process which allows for the conservation and reuse of materials. The process is usually labor-intensive and requires knowledge of historic building construction and systems. Mechanical demolition may be quicker but often results in a loss of materials that end up as “waste.”³⁶ Deconstruction has the potential for cities and states to leverage assets to create a circular building economy.

Thank you for your consideration of these comments. We would be pleased to address any questions or concerns about them. Thank you for your continued leadership in studying the 2021 Act on Climate.

Respectfully Submitted,

/s/ B.L. Jordan
Adaptive Reuse Policy and Programs Manager
Providence Preservation Society

/s/ Marisa Brown
Executive Director
Providence Preservation Society

24 Meeting Street, Providence, RI 02903

³⁵ Advisory Council on Historic Preservation, Policy Statement on Promotion and Value of Traditional Trades Training 2 (2020), <https://www.achp.gov/digital-library-section-106-landing/achp-policy-statement-promotion-and-value-traditional-trades>

³⁶ *About Deconstruction*, Build Reuse, <https://www.buildreuse.org/about-deconstruction> (last visited March 19, 2026).