# Mariana Liebman-Peláez

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I am passionate about performance-based building design at the intersection of comfort, resilience, and sustainability. I bring my background in mechanical engineering and building technology to explore project-specific opportunities for high-comfort, low-impact systems.

## EDUCATION

**Massachusetts Institute of Technology**  Cambridge, MA
*MS in Building Technology (GPA 5/5)*  September 2020

Relevant coursework:
- Daylighting
- Urban energy flows
- Computational design and optimization
- Systems for low-carbon buildings

**Tufts University School of Engineering**  Medford, MA
*BS in Mechanical Engineering, magna cum laude (GPA 3.52/4)*  February 2014

## PROFESSIONAL EXPERIENCE

**Transsolar KlimaEngineering**  New York, NY
*Senior Associate*  2021 - Present
- Consulting and thermal simulation for context-specific design opportunities for high-comfort, low-impact systems

**The Green Engineer**  Concord, MA
*Building Performance Analyst*  2021
- Whole building energy simulations for LEED certification, code compliance, and Massachusetts utility programs
- Developed internal tool for streamlining baseline energy model assumptions

**Massachusetts Institute of Technology**  Cambridge, MA
*Research Assistant*  2018 - 2020
- Validated an energy model of an indoor hydroponics shipping container farm (EnergyPlus)
- Simulated the energy exchanges between plants and the interior of a shipping container farm
- Presented research findings to industry partners, highlighting potential for energy savings
- Developed a simplified multi-objective optimization framework suitable to interactive urban planning (Python)

**Evolution Engineering, Design and Energy Systems Ltd**  Quito, Ecuador
Researched vertical gardens as cooling systems for a building technology consulting company in Quito, Ecuador  2018
*Intern*
- Contributed to *Beyond green façades: active air-cooling vertical gardens,* http://dx.doi.org/10.1108/SASBE-05-2018-0026
- Designed, built, and tested an "active vertical garden" prototype as a low-energy evaporative cooling system

**Booz Allen Hamilton**  McLean, VA
Supported Affordable Care Act program for third-party insurance web-brokers interfacing with HealthCare.gov  2015 - 2017
*Sr. Consultant, Health IT Policy*
- Managed web-broker help desk on behalf of client, addressing complex policy and technical inquiries
- Wrote and developed client-facing policy and technical documents
- Managed and mentored junior consultants
- Received an award for outstanding work on a fast-turnaround assignment

*Consultant, Center for Robotics Systems and Simulation*
- Integration and troubleshooting of human-detection software for a search and rescue drone

**Avalanche Energy**  Somerville, MA
Prototyped a sun-tracing solar concentrator for residential water heating at a 3-person startup  2014
*Software and Controls Engineer*
- Developed and tested Arduino-based sun tracking controls for solar concentrator
- Installed controls hardware and conducted performance experiments for system beta-testing

## PUBLICATIONS

**Energy and Buildings**  2021
Mariana Liebman-Pelaez, Johnathan Kongoletos, Leslie K. Norford, and Christoph Reinhart. "Validation of a building energy model of a hydroponic container farm and its application in urban design." *Energy and Buildings*, Volume 250, November 2021, 111192
https://doi.org/10.1016/j.enbuild.2021.111192

## AWARDS

**Massachusetts Institute of Technology**  Cambridge, MA
*Presidential Fellow*  2018

## TEACHING EXPERIENCE

**Northeastern University, School of Architecture**  Boston, MA
*Adjunct Faculty*  Fall 2021
- Taught Fall 2021 semester of "ARCH 5210: Environmental Systems", providing master's students with an introduction to fundamental principles of climate responsive and sustainable building design

## LEADERSHIP

**STRIVE Trips**  Cusco, Peru
- Led an international service-learning summer program for high school and college athletes in Peru  2017 - 2018
- Developed and led service-learning curriculum for high school and college students
- Developed and managed partnerships with local organizations and municipalities

**Tufts Hybrid Race Car Team, Tufts University**  Medford, MA
- Led drive train team for the university "Formula Hybrid" undergraduate race car design competition  2011 - 2014
- Analyzed Well-to-Wheel energy and $CO_2$ emissions of the car
- Analyzed, designed, and installed the cooling system of the car

## LANGUAGES

- English
- Spanish (bilingual)
- French

## SOFTWARE

- C++, C#
- Python
- MATLAB
- VBA
- Rhinoceros 3D
- Solidworks
- AutoCAD
- ArcGIS
- EnergyPlus
- OpenStudio
- TRNSYS
- eQuest
- Grasshopper
- Ladybug
- Climate Studio
- DIVA