



MASSACHUSETTS
CLEAN ENERGY
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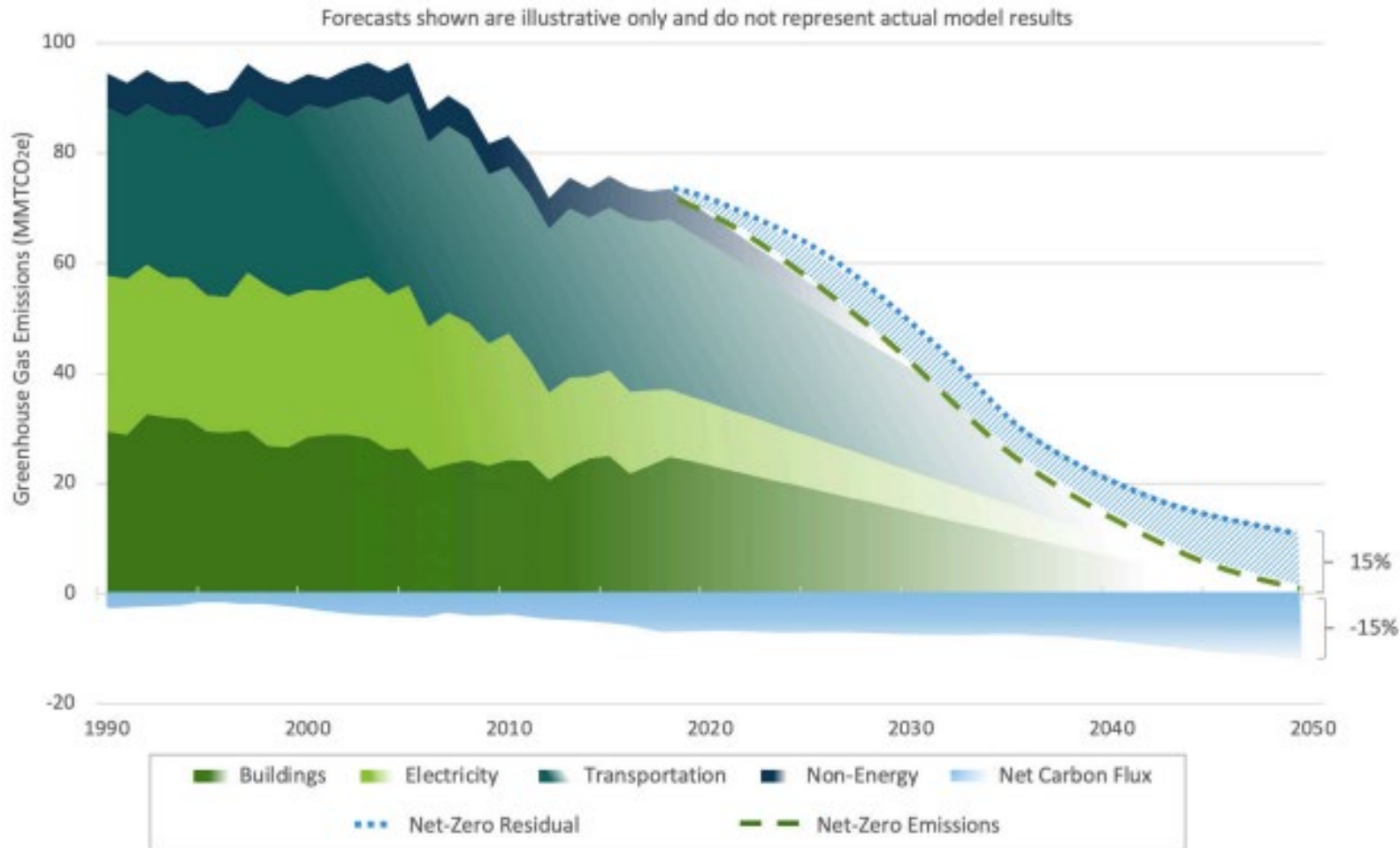
Massachusetts Climate Careers: Powering the Future
High-Performance Buildings

Buildings and Climate Change

Buildings are the second-largest source of greenhouse gas emissions in Massachusetts.



Buildings Can Be Climate Solutions



Massachusetts aims to reduce greenhouse gas emissions from buildings by **50% by 2030** and achieve **net-zero** emissions by 2050.

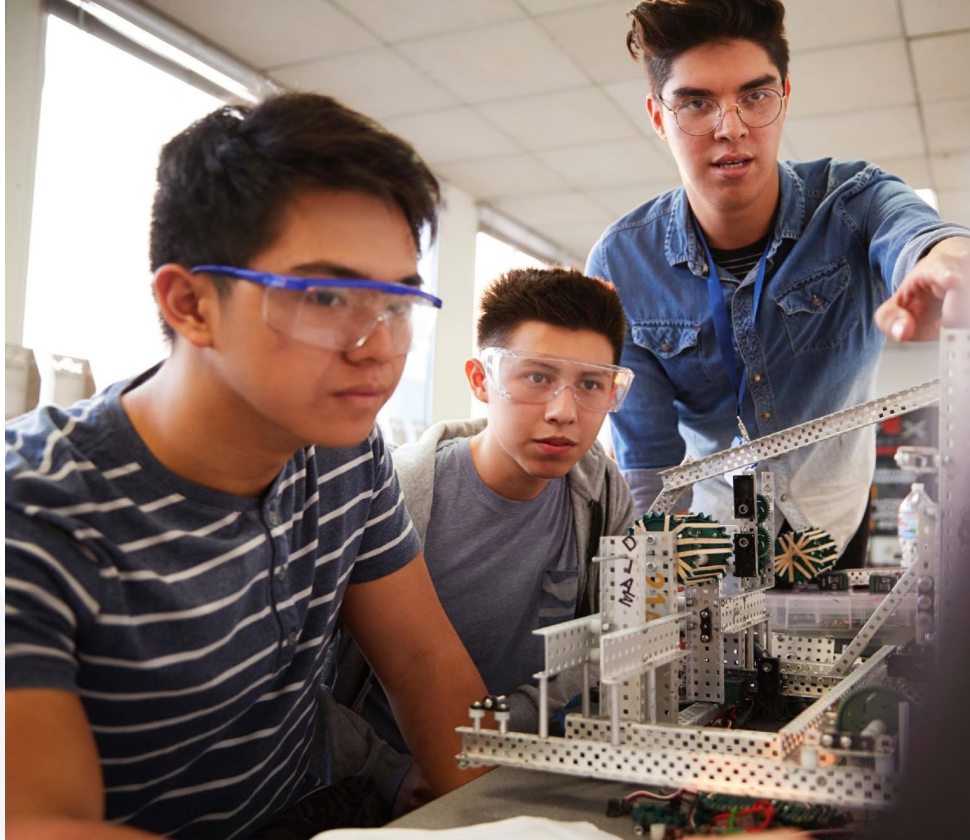


Opening Activity

Discuss this question with a partner:

Does it require more energy to cool a building in summer or heat a building in winter?





Today's Agenda

- **The Big Question and My Climate Goals**
- **Climate Watch and Discussion**
- **High-Performance Buildings**
- **Today's Group Activity**
- **Takeaways and Closing**





The Big Question

How can we use different materials, designs, and processes to ensure that new buildings are part of our climate solutions?





My Climate Goals

When you complete this lesson, you'll be able to

1. Explain the importance of energy-efficient building design, construction, and materials and their role in fighting climate change
2. Identify examples of climate-critical professionals designing and implementing solutions for new buildings to contribute to our net-zero goals
3. Describe some characteristics of LEED-certified and Passive House buildings and how they differ from most current buildings.



Climate Watch: Video



Courtesy of XXX





Climate Watch Discussion

1. What are some examples of Passive House design elements shown in the video?
2. How would you describe the goal of Passive House design for energy efficiency?
3. What did you learn from this video? What does this video make you want to learn more about?



High-Performance Buildings

Energy-efficient buildings use less energy, save money, and help fight climate change.



Clark University
Worcester, Massachusetts
Courtesy of Solar Design Associates



More than a Building



High-performance buildings use less energy and can even generate energy!

Features might include:

- Landscape design
- Passive solar design
- Insulation and building envelope
- Heating, ventilation, and air conditioning (HVAC) systems
- Smart building technology
- Water efficiency
- Renewable energy sources



Certifications

- **LEED certification** (Leadership in Energy and Environmental Design) focuses on sustainability and promotes eco-friendly practices.
- **Passive House** design focuses on energy efficiency.





Careers in Energy-Efficient Construction

- Architects and designers
- Engineers
- Building contractors
- Equipment operators
- Carpenters, electricians, plumbers
- Roofers
- Insulators
- HVAC contractors
- Building automation contractors
- Building inspectors
- And more!





Today's Group Activity

Design Green Buildings for Different Climates



Cold Climate



Desert Climate



Tropical Climate



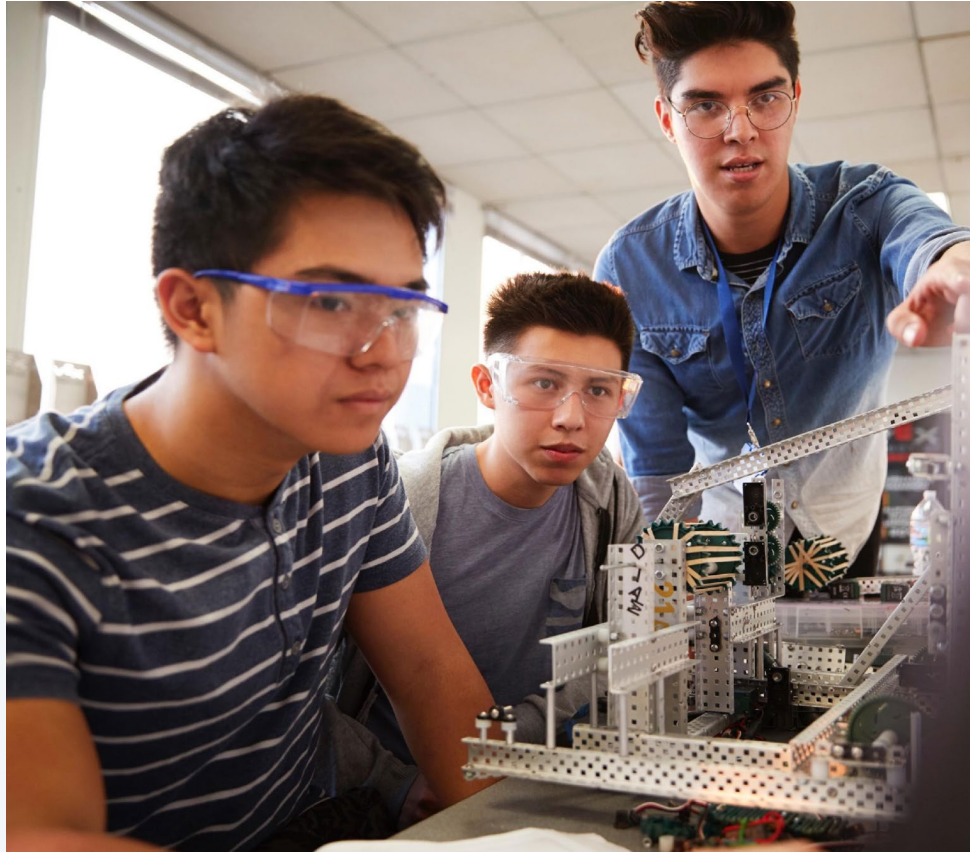
Coastal Climate



Group Presentations

- How is your climate challenging for energy-efficient buildings?
- What energy-efficient features does your design include?
- How do these features make your building a high-performance building?





Key Points

- High-performance buildings are designed to use less energy, improve comfort, and reduce environmental impact.
- Key features include energy efficiency, renewable energy integration, and smart technologies.
- Equitable design ensures benefits for all communities, including disadvantaged ones.





Closing Activity

If you had more time, what additional energy-saving element would you add to your green building design?

What role do you see yourself playing in creating energy-efficient buildings?





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*High-performance buildings aren't the buildings of the future; they're the buildings of **today**. They're an essential solution in mitigating the impacts of climate change.*