



MASSACHUSETTS
CLEAN ENERGY
CENTER®

Massachusetts Climate Careers: Powering the Future

Climate Hero Spotlight: Engineers



Opening Activity

Design Thinking: How Would an Engineer Solve It?

Design a bookstand for student desks using only:

- 10 index cards
- 2 objects currently on your person (per person)

Use your worksheets to follow the design thinking process!



Today's Agenda

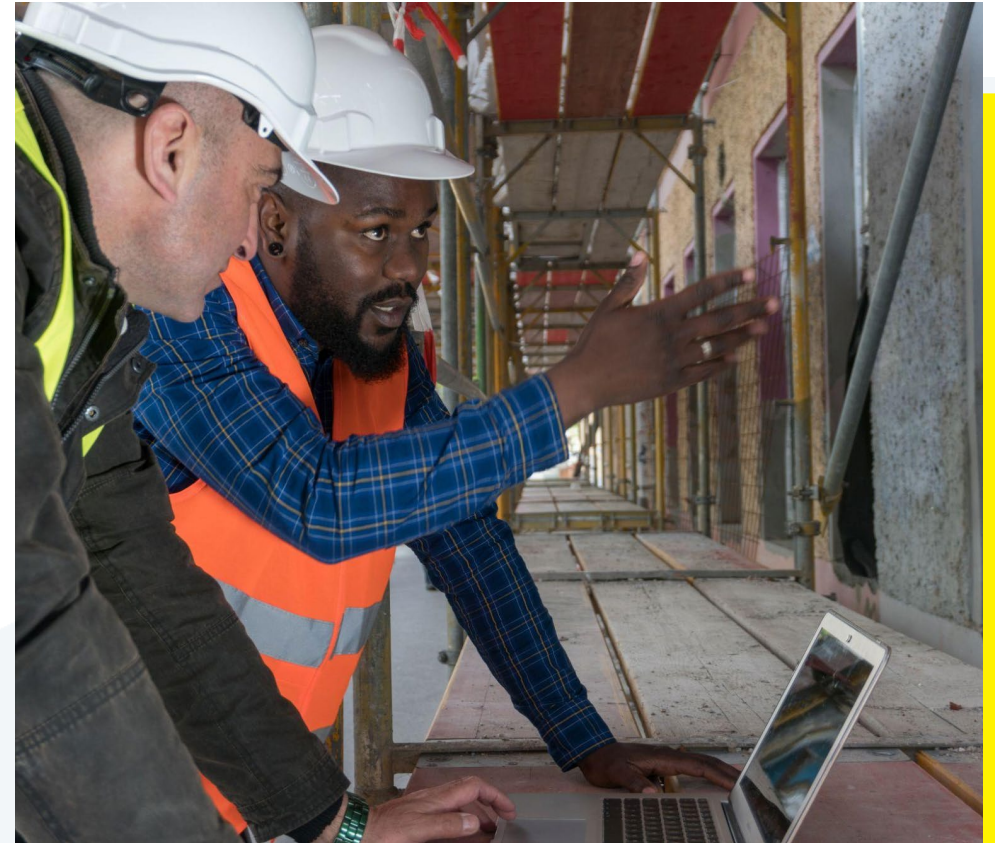
- **The Big Question and My Climate Goals**
- **Climate Watch and Discussion**
- **Engineering Climate Solutions**
- **Engineering Design Challenge**
- **Takeaways and Closing**





The Big Question

How do engineers play a critical role in designing climate solutions?





My Climate Goals

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

1. Describe how engineers contribute to climate-critical projects.
2. Identify the skills and training needed for engineering careers.
3. Describe the aspects of an engineering career that align with your skills and interests.

Climate Watch: Video





Climate Watch Discussion

1. What happens at the Wind Technology Testing Center?
2. What are some things that Carly enjoyed growing up that made her think engineering might be interesting to pursue?



What Do Engineers Do?

Apply math and science to solve problems, overcome challenges, and produce solutions

Engineering Roles in Clean Energy

Engineers design, build, and maintain climate solutions



Solar engineer
Designs solar power systems

Wind turbine engineer
Optimizes turbines for wind energy



Building systems engineer
Creates energy-efficient building systems

Engineering Roles in Clean Energy

Engineers design, build, and maintain climate solutions



Electrical engineer
Design safe and efficient
energy flow

Materials engineer
Research and improve use of new
materials



Civil engineer
Plan and design infrastructure

Engineering Roles in Clean Energy

Engineers design, build, and maintain climate solutions



Mechanical engineer
Design systems for clean energy technology

Structural engineer
Ensures stability and safety of clean energy structures

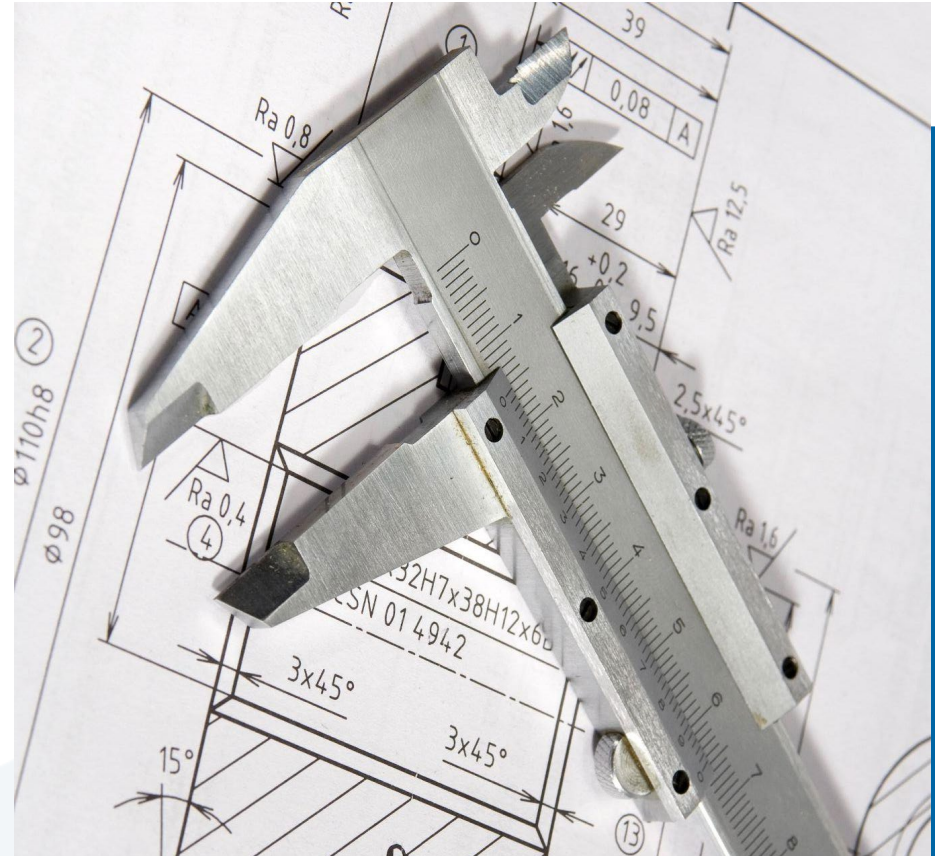


Environmental engineer
Evaluates and mitigates environmental impact of clean energy systems

Key Skills for Engineers

These core skills help engineers thrive in different industries:

- Problem-solving
- Mathematics
- Project management
- Software literacy
- Communication





Engineering Skills and Interests

You might enjoy engineering if you

- are curious, creative, and persistent about problem-solving
- are skilled at simplifying and communicating complex topics
- enjoy math and sciences, such as physics, chemistry, biology, geology, or computer science
- plan to pursue **at least** a bachelor's or undergraduate degree.



Similar-but-Different

Roles similar to engineering include

- engineering technicians
- scientists.



Today's Group Activity

Engineering Feasibility Study in Sunnyville

Sunnyville, MA, is a small town that wants to ensure its community solar system operates efficiently and is eager to explore potential upgrades or improvements. The town has hired you—a team of engineers—to conduct a feasibility study and make recommendations!





Presentations

*Engineering Feasibility Study
in Sunnyville*

Which recommendation best aligns with the town's goals?

- Optimize energy efficiency
- Improve reliability
- Reduce maintenance costs



Key Points

- Engineers drive innovation in clean energy.
- There are a variety of engineering roles involved in finding climate solutions.
- Engineers require a wide range of skills and a problem-solving mindset.
- Engineers have a huge impact on sustainable development.



Closing Activity

Before You Go

1. What can we learn from how engineers approach problem-solving?
2. What is one question you still have about how engineers support climate solutions?
3. What interests you about becoming an engineer?



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*Engineers play a critical professional role in
Massachusetts's Climate Solution Goals.*