**How much of our electricity can we get from solar?**

It'd be great if we could get all we need...

...but in truth, the answer is a bit uncertain.

I see a bright future illuminated by pollution-free energy!

I see a rolling blackout.

I see a squirrel.

Some days we can easily predict how much solar power we can generate...

...but on partially cloudy days, we can't.

Lots!

...but in truth, the answer is a bit uncertain.

What if we could generate enough solar to meet our energy needs?

We're the renewables.

And that creates a big problem.

Whenever clouds block the sun... solar electricity supply plummets.

But since we don't know what will happen...

We might not be able to meet demand!

Which means that as we plan for a brighter, cleaner future...

...we're going to have to prepare for uncertainty.

We're the renewables.

You can count on us, kid...

...except when you can't!

...but mathematical models can help us make decisions anyway!

CASTLE Lab at Princeton, led by Professor Warren Powell, BSE '77, employs mathematical modeling to make better decisions under uncertainty. The lab currently is developing models to help integrate solar and wind energy onto the grid, structure decisions about when to turn on generators and how to deploy and manage energy storage options.

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