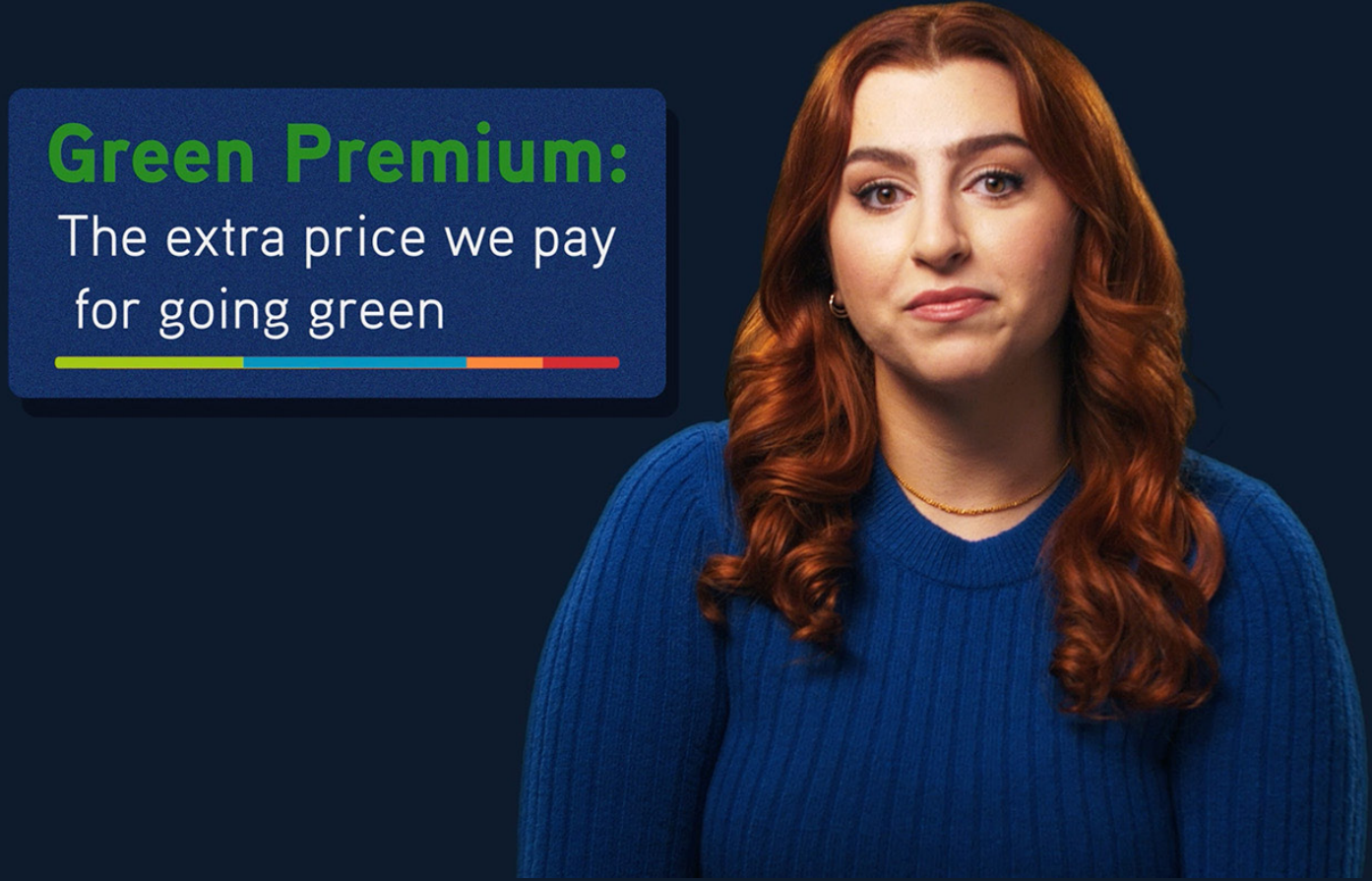


Green Premium:

The extra price we pay
for going green



Green Premiums - The Extra Cost to Decarbonize

This video provides an overview of the green premium, a tool you will use throughout the course to understand one of the major obstacles facing many net-zero technologies: the cost of implementation.

Additionally, you can use it in your own life to see where innovation and action can make the biggest difference in getting to net zero.



0:10

Textbox: The Extra Cost to Decarbonize; Nejadrasool appears on screen; clips of coal power plant and solar panels; images of high carbon emitting conventions next to their low carbon alternatives

Hi, I'm Niki Nejadrasool, and in this video, I'll explain green premiums—the extra price to get to zero.

For the last century, our lives have been powered by cheap fossil fuels—our gas-powered vehicles, our coal powered electricity—all of it depends on cheap energy.

Moving to a carbon net zero world will not be easy and it will not be cheap. But how much more will it cost? Most people have come to expect low carbon alternatives to cost a little bit more, and right now, electric cars do cost a little more than gas-powered ones, plant-based meats cost a little more than real meat, and while solar panels eventually pay for themselves, they cost money to install.

This extra amount we pay now to reduce our carbon emissions is what we call the green premium. Green, because it's about making a choice that is better for the environment. Premium, because it's an additional price or premium that one pays.

And over time, as more people buy and use low carbon options, we expect the difference in price, the green premium, will go down. But let's take a little time to unpack what that means with three different examples.

1:24

Textbox: Plant-based Meat; image of plant-based patties; graphic of a cow farting and burping; bar chart showing the steady increase in the plant-based meat market

Hungry for a specific example of a green premium? Let's look at our first case study: plant-based meat.

When we think about carbon emissions, we tend to think about those emitted from planes, cars, and trucks. Did you know that cows emit gas as well? Funny, yes.

But if we want to get to net zero, cow emissions are also serious business. In fact, the methane gas they produce accounts for more than 4% of all global emissions. Ew!

One way we can reduce methane emissions is by replacing meat from livestock with plant-based meat alternatives because then we won't need as many cows.

Many people are doing just that. In fact, the popularity of plant-based burgers has skyrocketed in recent years. Even so, plant-based meat is still about 50% more expensive than conventional beef.

2:21

Side by side images of a pound of beef and a pound of plant-based meat; textbox showing the math for calculating the green premium for plant-based burgers

In other words, if on the day we recorded this video, ground beef costs on average \$5 per pound, then plant-based meat costs on average about \$7.50 per pound.

So how much would it cost for your school cafeteria to serve every student a quarter pound, plant-based burger instead of a quarter pound beef burger? Let's figure out the green premium for that substitution.

Take the difference between the cost of one pound of meat and one pound of plant-based burger, or \$2.50, and then divide that by four. The answer is about 62 cents for every quarter pound burger, and that's the green premium—62 cents. And that's just for one burger. A school might make hundreds or even thousands of burgers every day.

Now let's shift gears for our second example.

3:14

Textbox: Electric Cars; image of an electric car charging; textbox: "EV owners also save on maintenance costs...about \$330 each year." - Money; image of an auto repair shop; clip of a mechanic performing an oil change

Calculating green premiums isn't always simple. Consider electric cars. What's the green premium for switching from a gas-powered car to an electric one?

Well, studies show that electric cars cost on average \$10,000 more than their gas-powered counterparts. So, you're probably thinking the green premium for electric cars is \$10,000, but slow down.

It turns out that the green premium for making the switch from a conventional to an electric car is not just the difference in sales price. We also need to account for the different costs of owning and operating the cars.

Now generally speaking, electric cars are much easier to maintain than cars with combustion engines. Gas-powered cars require regular oil changes and have lots of moving parts that sometimes need to be fixed. There's also the cost of filling up your car at the gas station.

Of course, owning an electric car comes with its own costs. For example, some owners might have to install a fast-charging station at home.

Still, over the long term the cost savings from driving an electric vehicle probably outweigh the additional costs of purchase.

So, while the green premium for purchase is higher, it could still make financial sense to switch to an electric car. And this calculation might be different for different people.

Costs can change, based on where you live, your specific model of car, or government programs to make buying these cars cheaper.

Now for some good news: sometimes going green can actually save you money. That is to say, a green premium can also be negative. For example, 90% of US households have some type of air conditioner.

Typically, that air conditioner is the biggest consumer of electricity, more than the lights, refrigerator, and computer combined. So, air conditioning costs money to run, on average between 10 to 90 cents an hour, depending on the unit.

That doesn't sound like much, but for most families, it comes to anywhere between \$900 and \$1,200 a year, depending on where they live and how much they run their AC unit. And here's where the potential green premium savings comes in.

Replacing your AC unit with a new efficient electric heat pump and cooling system might actually save you money. Why?

Well, heat pumps cool the house by transferring heat out of it. As a result, electric heat pumps and cooling systems are more efficient than traditional air conditioning systems.

This means they require less electricity to run than conventional AC units. In fact, they can reduce some homes electricity use by as much as 50%.

In Houston, for example, the resulting savings amounts to 17% per year or \$170, while in New Jersey, it's 25% or \$250 per year. Now that's cool!

4:20

Clips of crunching numbers on a calculator, a couple budgeting; textbox: Negative green premium: the savings realized when switching to a green alternative costs less; doughnut chart displaying the categories of household electricity use

5:19

Clip of a thermostat being turned up, overlaid with graphics of up arrows; animated diagram showing how an electric heat pump and cooling system functions; image of a girl lounging in an inflatable pool

6:17

Clip of an HVAC technician repairing a unit; image of a rusted and worn air conditioner; graphic icons representing: Time, Money, Policy, Culture

You may think a technology with a negative green premium would be in every home around the world by now, yet only a small percentage of homes have heat pumps installed. Why aren't they more widely adopted? Good question.

It's expensive to replace a whole air conditioning unit and people usually wait for their system to break down before changing it, an opportunity that presents itself only every 15 to 20 years.

So, a lot of people end up running their inefficient older systems for a long time even though they have to pay more to do so. How uncool is that?

Understanding the green premium can play an important part in efforts to make change. And most importantly, calculating the green premium for any particular technology can help consumers and governments decide how to direct our time, attention, and money into the innovations that will cut emissions most efficiently.



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