**ANDY:** Tell us, what is an office of sustainability and what do you do as the director?

**ROSI:** So the office of sustainability, obviously we work on sustainability challenges for Dartmouth. So working on making our operations more efficient, but really what we are is sort of the chief collaboration office. In many ways our job is to bring people together in new ways to solve existing problems, to make the college more efficient and more sustainable to reduce our impacts overall.

**ANDY:** You must get asked this 100 times a week, but can you define sustainability?

**ROSI:** I define sustainability as doing things better and more efficiently to reduce our impacts. The Brundtland definition, which I'm sure you've referred to somewhere in your class is to use resources today so that we have resources in the future, roughly paraphrased.

But I think about sustainability as an opportunity to do things better and more efficiently with what we have, but also to look for old or new ways to do things that we'd like to do to use less resources and to use resources that are more intelligent.

**ANDY:** We have taken a look at the Dartmouth Powerplant and we've talked about district heating. Does having a district heating plant on a campus, does that make your job easier, or harder, or how does it change the way you do your work?

**ROSI:** I don't think having a district heating plant makes it harder or easier. I think any time you're trying to improve the sustainability of an ecosystem warm or a human system, which is mostly what we're doing, right, ecosystems are very efficient, but our human systems, we're working with what we have. And sometimes a district heating plant is in some ways more complex than if we had every building on its own system because in order to change the system or make it more efficient, we have to make very large investments because we have so much already in the ground. The system is already connected.

And we have many miles of pipe and we have a large central plant. In some ways it

makes it easier because we can make changes in the central plant. The decision making body to make those changes is very small. It's a defined number of people. I don't have to go to every person in every building. I can speak just the central plant. And the systems are very well understood by those people. So in some ways it makes it easier. And in many ways district heating can be more efficient, so that's an advantage in a lot of ways. But I think it is both a pro and a con. And I think of it more as just the reality of our situation. It has some advantages and some challenges. And we have to work with those and try to maximize the advantages as much as possible.

**ANDY:** One are the issues that I find challenging is every time you convert energy from one form to another you get losses. That's what the 2nd Law of Thermodynamics tells you. And so the most simple way to heat this room would be to have a little fire pit right here in the middle of the room. And have a fire and have a little ventilation system. And convert the potential energy in the carbon bonds of the wood, or maybe we'd have a pile of coal in this room. I don't know. And we just directly get the heat out to the room.

And instead at a Dartmouth Powerplant we're converting the potential energy of oil in this case to the kinetic energy of motion of the steam and the water molecules that are moving around, that then are going through pipes and transported

**ROSI:** Experiencing losses.

**ANDY:** Experiencing losses and eventually heating space, or heating water. So how do you reconcile those principles of the 2nd Law with the fact that there's convenience, and as you mentioned earlier, by having a central plant you've got one place where you can do all your pollution control, you make all your decisions, you have a highly skilled team of engineers monitoring the burn, as opposed to having 100 different oil burners all around campus. So how do you weigh those things? And how you communicate that to, say undergraduate students or anybody else?

**ROSI:** Yeah. It's a great point. And I think about human energy as part of the equation. And so to me the human energy of having things centralized is the reduction in

human energy as opposed to having 100 people whose job it is to tend the coal fire in the 100 individual classrooms.

**ANDY:** Another thing that comes up later on in our course is issues related to climate change and a climate action plan. So I was wondering if you could tell us what is a climate action plan and have you worked on one for Dartmouth? And then what do we tell people who are thinking about applying principles from this course and perhaps choosing to design their own climate action plan?

**ROSI:** So a climate action plan is essentially a road map that tells you how you're going to improve over time to reduce your emissions and your other environmental impacts that affect climate. So that's essentially what a climate action plan is. And usually that involves having a target that you're driving towards. So Dartmouth has a set of emissions targets with the end goal of a 30% emissions reduction by 2030 based on a 2005 baseline.

**ANDY:** And just to specify we're talking about emissions of carbon dioxide?

**ROSI:** Carbon dioxide equivalent. So greenhouse gas emissions, so methane and other greenhouse gases are bundled into that.

**ANDY:** But for Dartmouth we're mostly talking about carbon dioxide.

**ROSI:** We're mostly talking about carbon dioxide. Correct. So a typical climate action plan for a university will have a greenhouse gas emissions goal and then probably also some other goals that are related to climate. And also related to broader sustainability initiatives. So they might include, for example, a waste reduction goal because waste is indirectly related to methane emissions in landfills. Or it might include a transportation goal because transportation is related to the emissions that you emit, your greenhouse gas emissions.

So I put together a climate action plan in my prior professional life. I've put together several for other universities. Dartmouth doesn't have what I would call a formal climate action plan yet, but that's our task over, I would say, the next year and a

half, to come up with a formal climate action plan. We have lots of pieces of it, but we haven't put it together in a comprehensive plan.

**ANDY:** And if you were an individual and, let's say for fun, you wanted to put together your own personal climate action plan, what are the starting points? How do you go about something like that?

**ROSI:** So the first thing to do is to look at your life and look at all of the different types of impacts you have. And then to determine what are the types of impacts you have that are the largest climate impacts. So probably for most people that's their home, and home heating and cooling. It might be transportation, depending on what kind of transportation profile you have. And it might be food and your consumption of food and that kind of resource, or your family's consumption of food.

So if I were doing a quick climate action plan I think I would look for the biggest impacts first. So I would look at my home and its efficiency. I would look at transportation and I would look at food. And I would do a little bit of an audit. What do we use? I would maybe take my power bills, whether that's electricity, or propane, or maybe wood. I burn a lot of wood in my house so I have to factor that into my climate action plan.

And then I would do an assessment of where I stand now based on maybe my emissions from a certain period of time. I would extrapolate or develop a proxy for the year. And then I would develop a goal. How much do you think I can reduce? A great place to start with your home is to do an energy efficiency audit. And there are lots of incentives to do that that make it cost effective now. And it depends on what state you live in, whether those incentives apply to you.

But that's something that I did. I did a blower door test and an efficiency test. And then I had a checklist of all the things I could do to improve the efficiency of my home with a direct understanding of how those things would impact what it was like to live in my home. Many of them have made my home a lot more comfortable. We live in a place where there's cold winters and having your house more insulated makes it a lot more comfortable.

So I would start with those big ticket items and then I would move through transportation and maybe do a food audit for a week. What do we buy for a week? Take your grocery bills and get a rough estimate of what your household eats. And then you can go online and use any of a number of tools to develop a sense of what your carbon impacts are based on the electricity you consume, the fuels you consume, the food you consume, how you travel, and how many miles you travel and what type of vehicle.

And you can start to get a proxy for your own emissions and impacts. And then set some goals. And start to develop a plan on how you're going to get there.

**ANDY:** So thank you, Rosi, very much for talking to us. And I don't know. We might come and ask you to have another chat at some time.

**ROSI:** That would be great. I really enjoyed it.