

CU Stacey Baumgarn

Interviewer: (side talk re: snowfall in Ft. Collins and tree damage...)

SB: Well, hey tell me about your project and what you all are working on?

I: So, Montana State, right now we're working on hopefully getting a proposal going for our faculty and next student group so they can propose it to the school board to hopefully revamp our climate action plan. It's been quite old, or our current one is quite old as it was written and instated in 2009 and since then we haven't really done any GHG admissions or any type or carbon foot printing. So, we're trying to get back on the horse here and kind of figure out current things that other universities are doing that's helping them.

Also trying to help convince our President's staff, just because we're in a little bit more of a conservative state where there's more views and opinions going on. So that can be tricky at times. So, we're just trying to get something pure gold as we would put to hopefully help convince everyone.

SB: So, your last greenhouse gas inventory is from somewhere around 2009?

I: Yeah, I think we also chartered out to do that. So, I was talking to Carol. It was interesting I found you guys do all yours in house which is super cool. So, learning about that. And you're the Campus Energy Coordinator, correct? That's your role?

SB: Right, right.

SB: So, it's kind of funny right, so Carol's my boss and she's an engineer and I was the philosophy and sociology major. So which way is that the right brain or the left brain? Which is the math brain, is that the right brain? Or is that the left brain, I forget which is which.

Anyway, Carol is the engineer/math brain, and I am the people, person engagement brain.

I: That's awesome, I like it!

SB: So, Carol will sometimes jokingly say she does stuff and I do people! You know, but my job was really created around to do engagement, to do education outreach and engagement to our faculty and staff and students around the things that they could do on a day-to-day basis on campus. Maybe at home right but on campus or how they come and go to campus or all those things that would help us reduce our energy consumption, our electricity consumption, energy consumption, water consumption and resource savings.

And obviously those are the things that can also help the university save money, right. If we use less electricity, if we use less water, if we use less paper, we save money. Before I say one other thing I wanted to ask if you had to guess... well do you know, over the past 10 years do you know has your university, has it grown a lot and changed a lot? And the context of that is do you think that your... if you could do a greenhouse gas inventory today, do you think it would look... how do you think it might look differently than it did 10 years ago?

**6:07**

I: I definitely will say so probably in 2009 we were around 8000 students and we're closer to the 20,000-student range mark right now. So, we kind of expanded there. And also, on our initial GHG report, we've been talking to our sustainability coordinator here who we were lucky enough she was a part of that one and she's kind of helping us figure out information she needs now. And in that, I guess calculation she explained that they didn't do the best job of calculating scope 3 GHG emissions regarding like travel for the universities, car. So, I think that would be something that would definitely impact new report.

SB: Yeah, and those are hard, I mean those can be hard. I guess too so then in some sense maybe

some of the categories, would be the same. Maybe some of the numbers could be bigger. Or maybe hopefully unchanged, but in some sense to do a new calculation for you would also be setting a new baseline from which you could then measure future progress. You kind of need a new baseline.

I: Exactly. Kind of like conducting these interviews, looking at different universities but also, we've been... I am not sure if CSU is a part of this. I think Carol might've mentioned it.

SB: Second Nature?

I: Yeah, Second Nature and STARS report, right, is that what you guys use?

SB: So, Second Nature... we are not members of Second Nature. And Second Nature now is kind of holder of something that's called the Carbon Commitment. They have a couple different names; I forget off the top of my head now because we're not members. In 2008 our university signed what was called the American College and President's University Climate Commitment.

I: Yeah.

SB: And many institutions were APUCC members or signatories. And when you signed, when a university became a signatory, part of that was you kind of agreed to do things in general, two broad things. One that you would do a greenhouse gas inventory. And then two you would develop a climate action plan that would map out a pathway to reduce those emissions, right? So that's what got us started. You guys may have done the same thing?

I: Yeah, I think so. I think we were signatories on the... I don't know if it would be considered a bill, the bill you mentioned. That's kind of what got us started and then we made a

commitment to make GHG inventory like every year and then update the plan every 2 years, but I think with the growing and some stuff took priority.

SB: No. That's right and that's how the APUCC kind of outlined is that you would do inventories

I think it was every other year technically. And then periodic updates to your climate action plan. We just, and this is Carol but we kind of decided it was almost easier to do a greenhouse gas inventory every year, which sounds funny because you're doing more work than you have to. Because you're having to do all this outreach to all kinds of other people around campus to get data and information, people forget.

But if you come back to them every year and it's at this kind of predictable time and then you say hey Nicole, remember last year when I sent you that email and asked for the numbers related to something, something, something and you go yeah, I guess I kind of do. People get accustomed to it, so it turned out kind of easier to do it... or really not that much more work to do it every year. And it kind of kept us, it just kept us on a real steady cycle.

And then we have done mostly a good job at creating an update to our climate action plan every two years. There's been 1 or 2 times where I think maybe it slipped into a 3<sup>rd</sup> year because of who knows what was going on, but we just pushed off the update. So, our inventories... haven't changed a whole lot. I mean we still use the same methodology. Maybe Carol shared this, did she share our results or is it of any interest to you?

Actually, I should send you this thing, we just redid this little thing. I don't know, let's say it's probably still fairly crappy in terms of how it really looks for sharing something publicly, but it looks a whole lot better than what we had. And it's kind of basically a little summary statement of progress towards our carbon neutral goal. Of our inventory.

I: Awesome.

**11:58**

SB: It puts it in a little bit more context. We realized every year we'd finish the calculation and we'd put this thing up on the website. And it talked about scope 1, scope 2, scope 3 emissions and nobody knows what you're talking about. So, we kind of recreated it in a way... well Carol and I go out on campus and give presentations about our sustainability efforts, our greenhouse gas inventory all these things, all the time. And in giving those public presentations we don't talk about scope 1, scope 2, scope 3 because nobody knows, and nobody cares. So, we say this is the impact to our campus from commuting. This is the impact from air travel. We use words that we use every day and then people know what you're talking about.

So anyway, I'll try to remember to send you that. It's still kind of a draft.

I: No worries.

SB: It's a way we're looking at providing updates to our campus that might be more user friendly for people who don't do greenhouse gas inventories on a regular basis.

I: For sure, definitely hearing that. I'm an environmental science major and this opportunity was presented to me to my adviser, and I had no idea what a climate action plan even was. And when I first started reading about, I kept seeing GHG, scope 1 and scope 2 and kind of like you said I was like what is this!?! But then when you got down and read it it made more sense.

SB: And now we were supposed to have an updated climate action plan in 2020. And we had started this, I don't know for us relatively elaborate outreach effort to try to get a lot of student voices and get a lot of faculty input. And try to involve more people in the process. One so that more people would feel ownership in the plan. But then of course the pandemic kicked off about the same time our outreach was being kicked off. Let's just say we're about

at the same place today as we were a year ago in making that update.

Now Carol's been crunching all the numbers in the background and I've been starting to write a bunch of the narrative. And what we've decided is when we get ready to go back out to do a road show and talk to our campus community and students, that we really need to have a draft document in front of them. And it's okay if it changes wildly, but we were kind of just... I think we made a mistake in that we were trying to say... you know you don't know anything about what a climate action plan, what do you think should be in it. And with all due respect, a lot of people – students in particular – again no judgment but they're like we think there should be more recycling, we think there should be more composting on campus. Okay. It's really important for us to hear that that's what people are excited about and that's what they're interested in and that's what they want to do.

But in our greenhouse gas inventory, emissions relative to what we send to the landfill is 1% of our total.

I: Oh, that's crazy!

**15:33**

SB: Right?! So even if we were perfect at recycling and did 100% no containment diversion of compostables, and so nothing went to the landfill, if we could make all of our emissions relative to our waste go to zero, we would still have 99% of our problem. So, we're trying to figure out how we can... I don't want to tell you not to care about composting or not to care about recycling. But right now, 50% of our emissions come from electricity because most of our electricity is generated by coal, burning coal. And another 25% of our emissions comes from natural gas which is because we heat our buildings.

So, 75% of our emissions right now are because of buildings and the energy that we use to

operate those buildings, in and to operate those buildings. So that's why... So, we really want people to be aware of that so if you're going to get excited and engaged in a behavioral change or in an effort to help us reduce emissions, keep composting, keep recycling but also turn off lights in empty rooms and do all these other things that help us reduce the sources that matter more.

I: For sure, that's definitely something that's important. I think you bring up a good point, recycling and composting is probably something, at least for me, very tangible where I am doing it oh yeah, I am doing such a great job. In reality you're only doing 1%. That's super interesting to hear. I think Carol mentioned that you guys are working on the coal scope with, aren't you guys building a field of panels or solar?

SB: So, there's a couple of projects related to that. I'll talk about that, but let's not forget to talk about (AASHE-SARS?) but anyway. So, because our 2 largest sources of our greenhouse gas emissions are purchased electricity and natural gas. In 2017, actually it would've been in 2016, a bunch of students got really motivated and started pushing via a petition to kind of lobby for the use of 100% renewable electricity. And in January of 2017 the students delivered 4000 signatures to the President of the University that said we want the university to commit to 100% renewable electricity by 2030.

I: That's awesome.

SB: 100% renewable electricity had been in the climate action plan since 2010, right? But did the President look at that, did the President care? I'm being flip, don't quote me on this part, right. But we work in facilities, we've been saying it all along. We should use more renewables, but we weren't making much progress. When 4000 students show up on the steps by signature of the administration building the president looked out the back door of the building and called over to Carol, hey Carol can I sign this thing? What's going to happen? And Carol is like we

don't know how to do it, but we think you can sign it!

I: That's awesome!

SB: So, he signed it. And we said while we didn't exactly know how we believed that we could achieve it by 2030. And so, when the president signed that commitment, it became a very public thing. That the university this big entity in town said they were going to use 100% renewable electricity by 2030 and how were they going to do that. The City of Ft. Collins who is our utility provider. We have a municipal utility here. They were like how are you guys going to do that? They were nervous.

But long story short, we signed and made this pledge in January of 2017 and we were kind of an outlier in our place. By December of 2018, so almost two full calendar years but by December of 2018, the City of Ft. Collins had adopted the same goal, the City of Loveland, the town of Estes Park, the City of Longmont, the local utility that provides the electricity to those 4 member communities, Excel Energy and other cities around the state. Some cities had done it before us. And people didn't do it because of us necessarily. It just was what was happening and evolving in the space of utilities and consumer demand for more renewables in the mix of electricity.

So today, or by that point in 2018, but today, we are all in alignment. We don't have to argue with the utility. We share the same goal, and we're really lucky for that. But it's also really powerful.

I: For sure.

**22:01**



SB: There's that context, so we know that of all the electricity that we buy from Ft. Collins utilities that they have same goal by 2030 to give us 100% renewable electricity. So, in some sense you could say that if we did nothing related to electricity between now and 2030, in 2030 we would reduce our emissions by 50% because we would have 100% renewable electricity.

I: That's awesome that the city is stepping up like that. Definitely Bozeman is far behind on that. But as a Colorado native that's awesome to hear that (?) stepping up.

SB: Excel Energy has very similar goals, so that would be Denver and Cherry Creek and all those places. I mean by 2030 most of Colorado will be pretty close to achieving 100% renewable electricity. So that said on campus we still have some obligation and some motivation to make additional investments and changes in reductions as we can too.

So last year it finished but Carol maybe mentioned, she just completed a large geo exchange project. That was our first significant project, I mean it was a \$20M project where our Moby, what we call the Moby Complex, it's Moby Gym where the basketball team plays, volleyball plays and this set of offices and a whole other set of auxiliary gymnasiums and swimming pools and all that stuff. This huge giant complex of buildings, we were heating that building and those pools, etc. with steam. Well how do you make steam, you burn natural gas. You make hot water, and you make steam, blah, blah, blah.

Well, we took that whole building and installed a giant geo exchange field and we drove 500 wells in the intramural fields adjacent to that building and today we heat and cool that building with ground source heat pumps and we no longer deliver steam to that building. So now we no longer burn any natural gas to heat and cool that building.

I: That's awesome.

SB: We use a little bit more electricity right which in the short term is a penalty but by 2030 that building will kind of be net zero, right?! So, we're trying to do that. That was our first large geo exchange project. We have another pending, but it was put on hold because of the pandemic, and we didn't build a new building that we were planning to build. So, if and when that building comes back the plan is that building will have heating and cooling from geothermal or geo exchange heat pumps, ground source heat pumps.

And then again Carol and I are always keeping our eye on what's going on in the utility industry and what's going on with prices. And so last year in the midst of the pandemic we got an RFP out on the street and we got a partner under contract and we're going to add 21 additional solar arrays on campus, construction starts next month.

I: That's awesome.

SB: That will double the number of arrays and not quite double the amount of electricity that we get from solar on campus. But that's all happening right now too. So even though, and we did that because... this gets a little complicated, if you install solar through a power purchase agreement, a PPA which is the contractual approach that we took, we don't put any money on the table. A 3<sup>rd</sup> party brings the money, builds the solar. We just agree to buy the electricity. And in this case negotiated that we would retain the RECs, those environmental attributes of the project as well.

So, we will buy the electricity from those arrays and we will retain the RECs which is really important because then we can deduct it from our greenhouse gas inventory. If we didn't own the RECs, then whoever owned those RECs would be able to take it off their greenhouse gas inventory. So that's really powerful. And why does the university want to do that? Well, we

signed a PPA that says this is how much we're going to buy this electricity for the next 25 years. So, it's a fixed price. If you've paid your electricity bill in your apartment or if you asked your parents about paying an electricity bill at home, almost every year the cost of electricity goes up.

I: And it fluctuates.

SB: We just agreed to a fixed rate, flat for the next 25 years. So, we're going to pay this much. The cost of electricity is going to do this and all that money. So, it will save the university millions of dollars over the 25-year period of that contract. Well why wouldn't you do that? So, we're going to generate more solar, green electrons, we're going to own the environmental attribute, so we're reduce our greenhouse gas inventory numbers, and we're going to save money. Who doesn't want that? That's a good deal!

I: I think Carol mentioned, those have a special name. So, you said that's called PPA. I'll have to bring that up.

SB: Power Purchase Agreement.

I: I'll have to definitely bring that up, that seems something convincing people especially university higher up, they like to hear saving money. I know that's one of their favorite things to hear. No that's awesome. I think Carol mentioned that will all this stuff going on you guys will have a fun announcement maybe around Earth Day about your guy's net zero plan. So, I've been keeping an ear out for it.

SB: And in January we had the first student funded solar array come online. I don't know if Carol mentioned at CSU, we don't have an office of sustainability. So, there's no one person or no one office where these things happen. And we do not have a student fee related to

sustainability. Though you could argue students do pay an alternative transportation fee which is kind of funny language. It's a fee but then you get a free bus. Whatever, it's not free you just paid for it but anyway skipping over that! So, students do pay a fee that's related to transportation and now that fee is used a little more broadly and it not only covers your transit pass, but it has helped to fund some bike lanes and skateboard racks outside of buildings and different things like that that enable alternative transportation behaviors. So, students do pay that fee but not a general generic sustainability fee.

So, when our student government, this was about 2 years ago, 2 and a half years ago, it took forever for all this to happen. But anyway, I don't know what happened in student government, but they realized that they had a bunch of money that they didn't know they had. Which when does that happen!? But it's like open up your checkbook and realize you got an extra \$100,000 oh okay. So, while the students were trying to talk about well should we just have a big concert? What should we do to blow this money. I came along and I said hey what about solar. And long story short, myself and a whole group of students worked together to get a bill passed within the student government to utilize that money to fund a solar array.

And the cool part is because that's on the student center, the student center is 100% funded through student fees. So now we put that solar up there. Every month it's going to generate electricity, helps reduce our greenhouse gas emissions, helps reduce our inventory. And all the money that it saves, it saves the students money. I say you, but you the students were paying the bill for that electricity. So that was a really unique and cool fun project to have evolve too over time.

I: It seems like you guys have such a strong student presence within sustainability and climate action planning on your campus. Is there something that you feel like has contributed to that? Or is it just really awesome group of people?

SB: There's a couple of things. One thing, I don't know if you've run across it. It's called the student sustainability center. It's the student branch if you will of a unit on campus, we just call it SOGES, all of our acronyms, but it's the School of Global Environmental Sustainability. And so SOGES opened their doors, became a school 2008 or 2009. And it was mostly academics and faculty and academics around teaching sustainability and encouraging interdisciplinary research for sustainability. And I think when the faculty who created SOGES, I think from the very beginning they said there needs to be a student component. And so just built into how they designed their whole thing there was a student sustainability center from day 1. And they funded and hired a student director and so there was a Director of the Student Sustainability Center, a student Director and they ran the student sustainability club. And that became a place for students to be engaged in sustainability... both classes and just through... learning about what's going on on campus.

And those student directors did an amazing job. I mean some of those early directors, I mean today too, they just do a really, really amazing job. And having events and creating a newsletter that connected not just what was going on on campus but what was going on in the community and in the surrounding areas. And it was just really, it's really, really impressive what they have done. And so, a lot of credit I think goes to SOGES for what they created academically on our campus and they created the minor, the first global environmental sustainability minor on our campus and now you can get a global environment sustainability minor or an energy minor or a water minor or a peace and reconciliation minor. So, a really cool social justice program. Anyway, they've done a lot so in my mind that was the first real important student led and student organization that came around.

And then it was maybe a couple of years later but then the student government, they created a position that they call the Director of Environmental Affairs. They didn't want to call it

sustainability. It's that politics thing where you go oh, we don't want to say the word green, we don't want to say the word sustainability. We don't know what to say! Whatever doesn't matter. But they called it the Director of Environmental Affairs so that's a position within our student government that also then does a bunch of coordinating and they have a little budget somehow. And again, they do events and education.

Like right now the director of Environmental Affairs, Sofia Shepp, she's really on about composting, great. So, we do not currently do much composting in the student center. Some back of the house in the coffee shops catering area, there's a little bit that they do. But anyway, they wanted to support public composting and so together ASCSU, the student government, Student Sustainability Center from SOGES and we have a Zero Waste Team a student organization that's focused on zero waste. Those three are in partnership working with the student center and working with facilities management. And are starting to collect compostables from users of the student center right now in public areas.

**37:00**

I: Oh, that's awesome. That's cool to see a student body come together. That's something definitely large to coordinate and take a part of. That's so interesting. I don't think at our campus... we have a sustainability office, but it's mostly composed of faculty. And I definitely think there are a few, they do accept a few interns. But that's definitely an interesting thing that you guys have almost like your own student sustainability office. That's something I definitely made note of.

SB: That club, through that student organization, they just do so much. And they can... here's the deal, Nicole as a student you can get away with so much more than I can as a staff member. Faculty want to help you and employees want to help you and they want to see you succeed. You can say things and do things and take actions that we can't do sometimes because of

politics and bureaucracy but at least in the way that you can probably move faster. You can be nimbler. We might share the same goals, but I have to go through a certain process and a certain hierarchy and a certain... and that's okay. That's okay because I am also an employee, and I can play the long game. You know, you're a student and just here for a couple of years, you got to move fast. Right? If you want to see something happen you got to move fast, but you can. And I think people want to see you succeed too. So, I don't know I think it's cool that this effort right now, at least it feels to me that you and other students are kind of leading this effort. And I think you might have more success getting it restarted with all due respect than maybe your sustainability coordinator would have had.

I: That's really interesting. I think I CC'ed them on email, I am not sure if you saw, but we've been really lucky to have two mentors for this program. Dr. Haggerty and Dr. Paul Letropeli. And they've been really great about letting me and I think 9 other students' kind of work together and trying to help bring together this report for this council and I think that this is probably their end goal too is like student voices. It's our money, or not our money but we pay tuition. So that's something definitely interesting. And it's been interesting to hear from a bunch of universities students' involvement because it varies.

At the beginning of this we did a literature review, or I was a part of a team that did a literature review regarding campus climate action plans, you know, what do they consist of, you know what's missing through these reports. And that was main thing as we were looking is how are these climate action plans talked about or even... I guess engaged with. Is it more of a top down, more of a president and down to the community? Or does it more start with students in the community and then is presented to the I guess top dogs.

But it's definitely cool to hear it sounds like CSU has taken more of the community student approach to the top which is so cool!

SB: I feel lucky that it's been I feel like a mix of both. There's certainly been grassroots effort from both our students but even so... when Carol and a colleague Toni Miamoto, I think she was on one of your lists earlier too, they kind of knew what they wanted to have happen, and its kind of just did what they could get away with. They did a little energy challenge in a building to prove that if you ask people in a building to conserve energy and help show them the ways they can do it, that that building can reduce electricity consumption. So, they did this little pilot and they showed that I think they saved 6% of the electricity consumption of that building and that was the basis, that was the pilot example Carol used in order to ask for the funding that created the position that I have.

I: Oh, okay that's awesome.

SB: So, they said if we can do this in one building and save 6%, if we try more broadly there's probably real savings, right? Now we're just probably just a little bit bigger than you guys. We're 25,000 maybe closer to 30,000 students. But just to put it in perspective our electricity bill last year was \$13M.

I: Whoa, that's a big number!

SB: All utilities together is \$20M and it is, it's a big giant number. Now granted the university on the whole, the whole budget is a little bit more than a billion dollars. So maybe \$20M feels like money you find in the couch cushions I don't know. To you and to me, \$20M or \$13M for electricity it's still real money it's a lot of money. And it is to administrators too. I don't mean to say it's not. But if we can do some things just through simple engagement and empowering people to know how they can help us reduce electricity consumption in our buildings, if we can save 5% well what is that, \$13M... never do math in public 10% is



\$1.3M and 5% is still \$500,000 I mean I don't get paid \$500,000. I wouldn't mind if I did. I am trying to do these things that will save that money and make essentially my job pay for itself.

I: This might be an odd question, last time when we were speaking to Carol she mentioned something almost like a green revolving fund where you guys save money. Does that work with your utilities as well if you save money on utilities does that go back into your fund, or is that more the university's money?

SB: Yes and no. It's a little bit messier than that. Yeah so we do again this is something that started a number of years ago. And it started with I think for the first 5 years, Carol and a group of people in facilities were given \$500,000 to do energy efficiency improvements. And that happened for 5 years and with each project that they invested in, that they chose to do then the utility savings from that was returned back into that fund. So that's a revolving fund. We don't call it a revolving fund but it's exactly a revolving fund. You're investing those dollars each year. And then the next year you get to... we were given that money every year for 5 years. So each of those 5 years in a row we got a new \$500,000. Let's say the first year we got \$500,000 and we did some efficiency projects and then some of those projects paid back through savings, so maybe we had let's just say we had \$50,000 of utility savings, so then the next year in year 2 we had \$550,000 to do projects with, right? Because we got the \$500,000 plus the \$50,000 in savings from year 1.

Well let's say in year 2 we saved another \$50,000 so then in year 3 we had \$600,000 to use. Our \$500,000 plus the \$50,000 plus the \$50,000 so by year 5, year 6, we had \$1M.

I: That's awesome.

SB: And then they cut us off. Then we were no longer getting the base money. We're operating from the money from the savings of the projects that we implemented in the prior years. So now there's not... new money that the administration has to put towards it. We're just recycling money from savings. And when you do those projects you do have to say like this project is going to save this much electricity for this many years. And then maybe you don't get it in perpetuity, if you buy a new air handling unit for your roof, you can only presume that that's going to live for 20 years and then that thing is going to die and you have to buy another one.

So there's some messy parts of the calculation of all of that, but it's... but revolving funds are really powerful tools for investing in the campus. And then... And it doesn't have to last forever. I mean the funding from the administration side doesn't have to last every year because you're going to do projects that are going to save money. And our ROI, our return on investment on an annual basis is right around 20% a year.

I: That's awesome.

SB: So it keeps it going. So a big part of our climate action plan update that we haven't revealed or spoken very publicly about yet, so don't beat me to the press. But we'll be asking for an increase in that revolving fund, maybe Carol did mention that. So right now we're investing \$1M a year but we're going to.. not this coming year but in the year after we're going to see if we can get that to \$2M for a couple years and then even go one step more and see if we can get \$3M a year. So that will be some new money that will be required to put in. But because we have so many opportunities on our campus to do energy efficiency and reduce the amount of electricity and natural gas that we consume... and again once you're not buying that KW hour of electricity or you're not buying that therm of natural gas, that's savings too forever.

I: Of course and this is kind of a follow up question to that, because I think I ran out of time before I asked Carol. So with the expansion of this revolving fund, do you guys feel like this... this new number will be more adequate for what you guys want to do? Right now our fund is I think... I might butcher this but it's around \$500,000 maybe a little bit less. And I think sometimes we find a hard time to do projects within that realm. So do you feel like that increase definitely helps you...

**49:59**

SB: Yeah I mean it definitely helps, but it will still be not enough. And what I mean by that is so we had been wanting to do a lighting retrofit in the library. Right now our library is a pretty big building. I can't remember the square footage now but it's a pretty big building. And it's an important building to use efficient lighting in because it's open a lot of hours. I mean not exactly 24/7 but it's one of the most highly used facilities on our campus right. That means the lights are on most hours of most days.

Well we knew we wanted to do it, so we took some money one year to just do the design work. To just pay for the design work to find out what can we do and how much is a lighting retrofit going to cost us. Well just to do that one building was going to be \$800,000. Well essentially that would take all of our money for one year and we don't like to do that. We like to do a variety of projects and try to spread the money around right. So what that meant was we said this year we'll just fund one floor. So we'll just do the first floor of the library and now next year hopefully we'll do the 2<sup>nd</sup> floor. And then in the 3<sup>rd</sup> year maybe we'll do the 3<sup>rd</sup> floor. So if you talk to your facilities people, I don't know the number for our university off the top of my head either but facilities people are always talking about deferred maintenance at the institution.

I: Yeah

SB: We have buildings that are over 100 years old. And we have buildings that are brand spanking new. But in the midst of all that we have lots of roves that need replacing. We have lots of carpet that needs replacing, we have lots of windows that need better sealing. There's just a million things that if you had the money you'd fix them. You'd want to fix them. And some of those things a lot of those things can result in energy savings.

Again I don't know what's happening on Montana but here in Colorado we as a state, we don't do a really great job of funding higher education. And so where the state of Colorado used to give universities more money, for all things, including deferred maintenance meaning catching up on the upkeep of your building. Today we don't get as much and so that's why tuition has gotten more expensive, right because the state gives us less money. Well we still need the same amount of money to keep doing the same things, so we raise tuition and that offsets some expenses but then we choose not to replace a roof or change the carpet or do those things.

So you get this huge backlog of things that you need to fix. And it gets tricky in these revolving funds, when are you doing something for energy efficiency and when are you doing it as a preventative maintenance project. And sometimes it's both. But point is, there's a lot, institutions probably need a lot money just to do some deferred maintenance and to make things that you already have work better. And then can we take it a step further and do things for energy efficiency.

I: That's definitely a good point. I haven't really talked to many facilities people on our end but that would definitely be a good perspective to gain, because I am sure sure you know MSU, like CSU we have a lot of older buildings that we're trying to renovate. And we were able to, I think it was 2011 we were able to install geothermal wells kind of like you guys did.

SB: Cool.

I: So we're trying to slowly hook up our buildings one by one, but it's expensive, it's hard.

SB: That's right. I mean it would be a really good question before you end up with your final reports. Like in some sense to find out from facilities what is their number of... what's the number for deferred maintenance. I think on our campus I think it's hundreds of millions of dollars. And so I just think that's an important thing because while students and faculty are thinking about one things and administrators are thinking about another thing, your facilities people are over there thinking about a whole other set of things too. And to know that these, especially deferred maintenance, it's such a... it's a pain point for them, because they feel bad about it. Like you know nobody wants a roof that leaks and yet sometimes you have them because you just can't... you don't have the money to replace the roof. So you keep putting a band-aid on it and you're doing the best you can, but you feel bad every time you put a band-aid on it instead of really fixing it.

And I think you know when we make investments that are maybe related to energy efficiency they actually can help that too. One of the things that we use in our green revolving fund is we allocate, I don't know if it's been between \$30,000 and \$50,000 a year to our folks that maintain the steam system. We have a district steam system that pumps steam underground all over campus. And you can imagine all those pipes, they get old, the insulation falls off or there's leaks. At the big system wide level you don't know, you're not aware. And so we put \$30,000 or \$50,000 every year into just helping that group of people do maintenance work on the steam system because we know that for that \$50,000 investment it returns 3 fold back to us in utility savings. It's just so important but in their budget alone they didn't have the money to do it. It's very counter intuitive but anyway there's some internal partnerships like

that that work together. So anyway I'd ask them about their deferred maintenance. It's just good to know, well how much do they spend on utilities?

I: For sure, thinking about that, going back to I am not sure how our school handles the dynamic between like maintenance and upkeep of energy like for the geothermal well, I am not sure if that utility upkeep comes out of the sustainability and CAP fund or if it comes out of another fund. So that's definitely something to look at because if we're saving money for these utility upkeep you know probably don't have a lot of room to do a lot.

SB: I know you're trying to do a climate action plan ultimately but it's kind of in that theme of investigative journalism it's like follow the money!

I: Exactly. And I am sure universities play a large role in how unit affects the other and I am sure that has a huge impact on what we're wanting to do here. I think when building a climate action plan one thing that we're trying to do is think about everyone involved and hoping that we can please everyone. Of course we're not going to please every single person! But we want to try our best.

SB: In that context, the one thing that I wanted to go back to which gives... it should give some importance to helping you have a reason, some more reasons for doing a new greenhouse gas inventory and kind of setting a new baseline for your institution. Because we have done our inventory every year, we do the total inventory but then we also put together these charts and graphs you know. But we'll show like okay this is the trend of our total emissions. And then we show the trend of those emissions on a per student basis which accounts for growth. And then we show those emissions per square foot.

And then if you take and you also add in how much money you spent on these things. I'll try to

send you these slides. You can look at them, maybe it's interesting and maybe not. But the point is at our institution if we look across the 5, the last 5 even 10 year period, our campus footprint by buildings, our square footage grew by 20%. We added 20% of the square footage to our campus over this past decade. Most within the last 5 years. And our student population has grown, not as much as yours but by maybe 5 to 8, maybe 10,000. But relative, your percentage is bigger but we grew a lot too.

Our emissions have gone down in that period and the total amount of money that we spend on utilities has stayed flat. So we have more buildings, we have more students and the price of utilities has gone up, and yet we spend about the same amount... for those utilities today that we spent 5 years ago. That is a powerful message for the people who are working on the budgets.

**1:01:18**

I: Yeah

SB: Because we're not saying you can't grow. I mean I might think it'd be nice if we did say that a little bit sometimes some places, but we're not saying that. But in spite of growth, when we build more efficient high performance buildings, when we engage more people in the conversation. When we measure and track the things that matter and make a difference, that helps us to prioritize those other investments be it for um how we all enjoy our campus or how best to prioritize them in order to reduce utilize expenses and reduce greenhouse gas emissions. I mean it just helps to line it all up. And right now without those pieces of information, your administration or your folks in the budgeting department or folks in the sustainability office or folks in facilities may or may not know the places that certain investments could create some real wonderful co-benefits.

I: For sure. You do have a point like having you know almost proof behind... not that there isn't

but physical proof that we can give them would definitely help. I am hoping maybe that they'll be able to complete a GHG or scopes maybe this summer. And there's been a lot of talking with our research going on that we could maybe keep it in house which would save on money there. So I am hoping maybe by the time we kind of start proposing or they start building the climate action plan we'll have more numbers to compare and hopefully have more of a basis of things we need to improve on there.

SB: Do you know what tool they're going to use for that greenhouse gas inventory.

I: They mentioned it, it was created by New Hampshire University.

SB: SIMAP

I: SIMAP, yes that's it.

SB: Cool. So we use SIMAP as well. I mean Carol has her own homegrown tool that she uses. But we take all of the data that's in Carol's tool and we put it into SIMAP and compare the numbers just to kind of see how they turn out. Because of some of the emissions factors the number isn't exactly the same. But point is I think SIMAP is a really fine tool and you know there's nuances to using every tool. But I think it will work really well for you and it will help you start to track some of that stuff.

I: Yeah I am super excited to kind of see how this all plays out. And I think... our sustainability coordinator was talking about possibly sending out forms or surveys about how people are getting to campus. And obviously it's hard to do scope 3 right now within Covid because I am sure what travel kind of used to be it isn't now. But hopefully it will kind of give us a basis of where we need to start and where we need to go to



SB: Yeah there's a few pieces. They're big projects and we used to struggle with that commuter survey as well. And then luckily about 5-6 years ago we were able to hire an alternative transportation manager, so a person who is dedicated, committed to reducing single occupancy vehicle trips to campus. And so Aaron, he and his group now have created a very, very robust commuter survey that goes out annually to... a sample of employees and a sample of students and we get a great data set. And now we have that for 5 years running, so we're also starting to see some great trends from that. Which getting a good survey, it's hard but it's really important.

**1:06:07**

I: I am sure Ft. Collins, I have a bunch of friends who go there, and they always tell me how they always bike to campus. It's always sun and I am here in -11 I don't want to bike anywhere.

SB: We're spoiled, that's true! As you know when you were home, it's relatively temperate even through the winter and Ft. Collins is really flat too, right, I mean for the most part. The main part of town and around campus it's pretty flat. So that makes it really bike friendly and again the community and the university have both been committed to shared goals around getting more people on bikes and walking than in cars and that plays out in how particularly students but faculty and staff come and go to campus as well.

I: That's awesome. I wish, hopefully maybe one day they'll come up with some kind of biking shield or something we can wear in a blizzard. I've seen people up here biking with their ski goggles on. Or people cross country ski to school. I am like that seems so crazy.

SB: You got to be committed. But I just don't want you to get run over! That's the main thing.

I: Uh, they'll have to build special paths or something.

SB: I don't want to keep you too much but I did want to ask you real quick, is MSU a member of AASHE?

I: AASHE? I don't think...

SB: So you haven't done a STARS report yet?

I: Un-no. I don't think we're officially a part of STARS. Or I think we might be proposing to become a part of that community. I am not sure if we're quite involved in with them yet. But I think it's one of our hopes.

SB: That's also a great... So AASHE, the Association for the Advancement of Sustainability in Higher Education AASHE. So they hope to advance sustainability in higher ed. And I think anybody, I think even if you guys aren't a member, I think you can still create an account with AASHE because you have a .edu email address.

I: Okay.

SB: On the AASHE platform if you will, from their website there's thing called the hub. And again you have to have an account but it should be free for anybody. And once you log in then you can search for resources. So if you want to just search who has a climate action plan, well there all going... they should all be there. So they're a great resource for lots and lots of things. And there's also a little list serv chat thing, where if you have question you can post it out and it goes to thousands of people around the county. Students and faculty all the time are posting like hey we want to do this thing has anybody done it before? What advice do you have for us? So anyway there's that.

But then this little bit about STARS. So CSU some of us, some people here are really competitive about STARS. Personally I don't think of it that way. STARS is a rating system not a ranking system. So while we do have a platinum rating and while it might be true that today we have the highest score of any institution in the US, I think there's a Canadian school that has a higher score than us, it's not about your score. The score doesn't matter.

I: Yeah.

**1:10:33**

SB: I guess it's nice if you want to brag. I care about that but I don't care about that. What I do care about is that you can use that assessment and it's a lot of work, don't get me wrong. There's over 1000 questions, 1000 data points that you need to fill out and complete the STARS assessment. I mean it makes doing a greenhouse gas inventory seem simple. So it's a lot of work. But what I think a lot of universities do use it for or could use it for is going through that assessment is you could treat it like a gap assessment, right? You could treat it and a person could use it as a benchmarking tool. Of just like okay how are we doing in this category.

And you could do the whole thing, or you could do a section of it. And just to participate in order to get a score. But again the score is only valuable to you, because then you might say... Because we even did this, even though the first time we did it we tried real hard and we worked at it real hard and we earned a gold rating. But still then the very next thing people said okay great, we got a gold, we got a score that gave us a gold rating, what do we do to get the platinum. And then we built a plan around... we built a path to platinum plan. Well it doesn't matter you could just do a path to improve, you know whatever. I mean you might be better than you think.

But either way I just want to encourage you, maybe that's a useful tool because it is a real comprehensive assessment about all the aspects of sustainability not just operations and not just greenhouse gas emissions but about the equity piece of things and all those social justice considerations are really important. And that we don't want our environmental sustainability efforts to overshadow the importance of the other elements of sustainability too.

And all that gets covered in STARS. I am also a fan of that platform, only in so far as because I think it can be a real powerful tool for an institution to kind of look in the mirror.

I: Almost like a little self check in which I think our institution definitely needs. We just need a place to start kind of.

SB: Totally. I am almost positive that even if you... I think there's a way to register as a STARS participant and I don't think your score even has to be public. I mean if you want it to be great, but if you don't want it to while you're kind of practicing or figuring it out, that's okay too. But it's just a great tool because it's asking all those questions. And then it does give you... a bit of a framework around how to build the rest of it. Even right now at the university so while we've got our greenhouse gas inventory and we've got our climate action plan and those are really important. The other big driver for us is we have now in the last couple years created a sustainability strategic plan. And that sustainability strategic plan the format of it if you look at it, it follows the format of STARS. Because we're using those categories as a framework to say how are the ways that we could improve.

I: That's awesome. I don't know if our school has a sustainability... well I know we have an office but I am not sure if we have any sort of a plan but that's something to check in on too because I am sure that probably correlates with a bunch of things that we're doing here and

can definitely, I am sure they could help us with what we're doing.

**1:15:18**

SB: Yeah I mean it's... you know any time you can have another layer of bureaucracy but at the same time it's good is there's someone that's setting some goals and someone that's holding some expectations. But then you still need a tool or several tools to measure and monitor your progress towards those goals.

I: Yeah for sure. Sorry even though I am recording stuff I find it helps me remember if I write it down.

SB: That's good.

I: The only other thing that I was looking at that I found super interesting, this is probably more of a personal question. Doesn't have anything to do with climate action plan. But you were part of something called Green Labs Program and that looked so interesting and I want to ask about that and what that incorporated? I read a little bit about it in regards to that it's almost sustainable lab practices. Is that correct?

SB: I'll try to be brief. Again I was a philosophy major, what do I know?! But I do know now about buildings that on our campus any way, the most energy intensive buildings, the buildings that use the most electricity the most natural gas, the most steam the most water are laboratory buildings, by a HUGE amount. Right, if you look at a building that's just a bunch of classrooms, or if you look at an office building maybe uses this much energy and then you look at a classroom building and maybe it uses this much energy. And then you look at a lab building and it's like you can't see it any more. It's like way over here.

So I thought well geez I've never worked in a laboratory. I don't know anything about laboratories, why and what's going on? So I just started looking out there, looking around, what's going on, who knows what, what are the resources. And you quickly find your way to universities that have a Green Labs Program. So just like maybe you've seen other universities that have a Green Office Program.

I: Yeah.

SB: Okay I could have a green office program but what am I going to tell people to do? Get better at recycling, duplex printing, turn off the damn lights when you go home at night. It's important, don't get me wrong, but compared to a laboratory, again if I can have an impact in a space I could save this much energy in an office or I could try to save THIS much energy in a lab. That's what I want to spend my time on right? So I happen to... there's a great Green Labs Program down at CU-Boulder.

I am supposed to say bad things about Boulder, but there's a woman at CU-Boulder named Cathy Ramirez and Cathy is like the most amazing, most generous wonderful person on the planet. And will share anything, and she will help you. And she will talk to anybody and she's just a huge green labs champion.

So anyway I reached out to Cathy. She got me started a little bit. Then I got talking to, then I got connected with a group called I2SL which is all about sustainability in labs, blah, blah, blah. And I just talked about it. I just talked about it as much as I could with a bunch of different people. Again I didn't know what I was doing and I didn't know what I was trying to accomplish. But the first thing I learned about or the first thing I could do something about were these ultra low temperature freezers, -80 freezers. Most people haven't heard about them until we talked about the Covid vaccine that one variety needs -80 freezers.

I: Yeah.

**1:19:50**

SB: Well one freezer uses as much electricity as an average household does in a year.

I: That's crazy.

SB: And we have 700 or 800 of these freezers on campus, because of the types of research we have going on on campus. Then I learned that there are new models of freezers that are wildly more energy efficient. And maybe they use 1/3rd of the amount of electricity that an older model freezer uses. So I used the resource of this revolving fund. And I said hey if I create an incentive program can we help to pay for a percentage of the freezer cost to incentivize researchers to choose a more energy efficient unit. Because it was true that the energy efficient ones they cost more than a regular one. So we did a whole bunch of work to calculate out and figure it out what the savings to us would be and what the cost would be. And we landed on a number for our campus. That we could put \$2000 towards the purchase of a new freezer if the researcher bought the freezer wanted them to buy.

I: I see, that's so cool. I didn't think of labs or freezers or anything that would have such a large impact but that's just so interesting to learn about. I wonder how that's reflected on our campus. I am not sure if we're doing similar research but that's something to look into for sure.

SB: And it was totally unique and crazy. Again I work in facilities, let's be truthful here, facilities doesn't always have the best reputation on campus, right, because we're the ones who don't fix the leaky roof or don't replace the bad carpet. But here I was saying hey I am in facilities and if you want to do this thing I'll give you \$2000. Well we've never given anybody a gift

and all of a sudden we were offering a gift. So I've been at that project for 5 years now. And I think I am really close, I am not sure but I think I will have just incentivized my 100<sup>th</sup> freezer.

I: That's awesome. So you've replaced out of you said 600-700, with 100 so you must be saving a lot of money there and also emissions wise.

SB: Yeah now some of them are just new freezers where research expands or whatever and people are just adding a freezer to fleet. But at least we're adding a smaller energy user than a big one. And then in the case when we're replacing them it fits really great. So that was my main... that one incentive program was kind of like the whole Green Labs Program until about a year ago. Of course then we got slowed down by the pandemic and everybody leaving campus and blah, blah, blah. But today we have a little Green Labs website and we have a couple of programs. And one of course is the ULT incentive. And now we're trying to start a campaign around shutting the sash on the fume hood. Right? Because oddly a lot of researchers don't close the sash all the way on the fume hood and it's just sucking a bunch of air out of the space. And we just had to pay money and burn natural gas to heat that space. And now we're just sending it right out the...

So anyway we're working on a shut the sash campaign and we're doing a pilot for labs to earn a Green Labs certification. And that's really great from an engagement standpoint because it's getting all the folks in the lab involved in the conversation about sustainability in the lab. So it's really cycling along but it was never a part of my job description. It's not in my official job description today. And yet I guess I am the leader. And so I am not sure if I have it in my signature or not. I have two different signatures that I use sometimes. And if I am sending an email related to Green Labs then I use the Green Labs signature. And I gave myself the title of the Green Labs champion!



I: Awesome.

SB: Just made it up, it's not the... So kind of fake it until you make it.

I: Sometimes you got to do that, if no one was stepping up, you took charge. So power is yours!

**1:25:05**

SB: That's right. I think it's really cool and there's lots of resources out there that are free and people are willing to share information and like Cathy at CU-Boulder. She makes all these posters that are informational posters. And she's like just take my poster, take off the CU logo, put on the CSU logo and use it.

I: That's so kind. We haven't talked to anyone at CU-Boulder just because they're such a larger school than us. We were like I don't know if we can compare. And they have a very large endowment so we were like I don't know.

SB: What about DU? Have you talked to DU?

I: We haven't talked to DU much either but that is something I think would be interesting to see. We didn't really interview any private institutions so I thought that'd be cool to see these private institutions because they have a fairly large endowment. I am sure they're doing some pretty cool things.

SB: Well you know I mean yes, I think that's true. But maybe from a size standpoint they might be sort of similar. A lot of people talk about the endowment, maybe it matters. I guess there's a few people that have managed to figure out a way to use some percentage of their endowment funds to fund their green revolving fund. But otherwise, no one can touch their

endowment anyway. So you might have a giant endowment but you can't do anything with it that helps sustainability in the short term. So sometimes... well I'll say this, we did an evaluation a couple years ago of all the schools that had a STARS report. And we were comparing does the size of your school or the size of your endowment affect your STARS score. And then we looked at urban rural.

I: That would be interesting.

SB: And what we found is that there really was no... there were some credit areas in STARS where you did better if you were in a city versus if you were a rural college. Maybe you didn't have public transportation. But then there were other areas where the rural school did better than the urban school. And there was a few categories where maybe a school with a larger endowment did a little better. But then there were other categories that this didn't matter.

The point is across the whole board, like there's nothing about any one type of institution that puts you at a competitive disadvantage for how your school institution might score in STARS. And I just kind of suggest that it's a proxy for this idea that sometime endowment size may or may not matter.

I: That's super interesting. Is that report public by any chance or is it more for internal research?

SB: We just did it internally. Maybe I'll ask Carol if I can share it. Now it's a little bit old, but I could ask her if I could send it over to you. There might be a PowerPoint presentation summary of it

I: That would be awesome, if not no worries. I just thought that would be something really cool

to share with my mentors as we're all learning about this stuff. One thing we focused on in our literature review and when we went out looking other institutions we focused a lot on endowment and university size. And it's interesting hearing that and I am sure that would be something they would love to see. If it's possible, if not no worries, I completely understand!

SB: I'll double-check or I'll just send it to you. I think it was... graduate student intern that did the report for our Sustainability Committee on campus. Like I said it was a curiosity because it was relatively early on in STARS and I think people were... lots of institutions were curious did you have an advantage or disadvantage if you were an urban school or a land grant school. Right, because we're a land grant school, you're a land grant too, right?

I: I think so.

SB: We're a land grant school. We own a feedlot for cripe's sake. We got 3500 cows in a feedlot. Not a great thing for our greenhouse gas footprint but that's part of who we are. And CU-Boulder doesn't have feedlot. They don't have so many cows to count. We had to count all our cows. But because we're a land grant institution and things like the Extension Service is under the land grant institution, look at all the education and outreach we do across the state as land grant institutions. Master gardener programs, teaching people about using less than appropriate fertilizers on their crops. I mean all these things that are related to sustainability education that happen through extension because we're a land grant institution.

If you look at our STARS report we knock it out of the park in engagement and outreach. And part of that is because of Extension. So CU-Boulder doesn't have extension so that works in our favor. All of our cows, not so much. But it's...

I: Give and take. That reminds me we have classes here that are called NRSM which I think is

Natural Resource something Management, and it's kind of similar. Like land management, how do you graze a field, what's proper fertilizer. That's something I was required to take NRSM 101 but it was something that you know I never thought I would be here taking but now I educate my parents. They're like I am going to buy... what is that, Miracle Grow or something, one of them has cancerous properties and I am like dad you can't use that. But you never know, I never thought I would need that information.

SB: Totally true, totally true! Anyway, I'll try to put together an email in the next... soon, in the next couple days. I'll attach a bunch of crap and you look at it and if you have questions, well now you know how to get a hold of me.

I: That will be awesome. I am on the interview portion of the next couple weeks, we have a data analytics team, I don't know if that's what you would refer to them as, but I am sure they would eat that up. They would love it. So yeah thank you so much for everything. I really appreciate it. I have learned so much and I can't wait to share with everyone. I really appreciate you taking the time out of your day. I'm sure it's been so busy with everything going on.

SB: It's really great what you guys are doing. Don't underestimate your power as students. And maybe even think about how you can get other students involved in supporting what you're doing even if they're not directly involved in the project, right, because... is it a class project necessarily or is it more than that?

I: It's presented as a class, it's like an internship / class hybrid. A mixture, they call it a group study.

SB: I guess my point is if your group can expand beyond the group itself, almost like petition

format. If you had 2000 students that said we need to do a greenhouse gas inventory because we don't even know what our impact is right now. We care about this thing but we don't how to prioritize our actions. And therefore we need, we need this information to know... how to behave and how to act and how to influence change. It's serious business that's affecting all of us. And I don't know, like I am just trying to think of ways how you can bring more students along so that it... maybe goes a little bit beyond your group.

I: For sure, me and my group members have been trying to figure that out as well. One way hopefully that we're kind of talking about is when we're presenting this matter it actually is going to be on a Zoom or Webex some kind of broadcasting network. So we were talking about making it more of a public thing so we can share it with our student body, what we've learned. Because like I said I had no idea about a lot of these things and it's like a field that I want to go into. So it's so cool. And I think my generation has definitely expressed that they care a lot about the environment or least growing up in Colorado that was something that was really big. Wanting to protect the 303 and snow and protect your winters.

SB: That's right, yeah.

I: So I think you know hopefully if we were to spread more word around I think a lot more people would care it's just accessing that information and understanding it that's difficult.

SB: Yeah and that's maybe... when I send you this little summary of our greenhouse gas inventory, I'd really appreciate your feedback. Because this is the first time we've tried to do it this way. So I'll share it and then you can tell me does that, if you saw those numbers and that kind of format for your own institution, would that be helpful? Or what questions do you have about it? Especially as a student. I think about it every day. I don't know what assumptions I have in my mind that I am overlooking. So I'd be really grateful to have your

feedback on that little piece too.

I: Of course.

SB: I want the information to be useful and motivating to you.

I: I'm happy to share that with my group and everyone. I already know they will be so excited about all of that and so am I. Again I really appreciate everything, this has been so helpful.

SB: No problem. You know how to get a hold of me so just send me a note if you have a question or need some clarification or any kind of follow up

I: Thank you so much again for everything. And you have a great rest of your day and enjoy that warm weather. Hopefully the snow is gone!

SB: I know, thanks so much, have a good evening!

**1:38:16**