Tracking & Reporting Greenhouse Gases FULL TRANSCRIPT

Audio Description script

Narrator: An opening sequence of titles says PG and E Supply Chain Responsibility Department presents this. Prime supplier academy, greenhouse gas tracking and reporting. The speaker is Adhamina Rodriguez. She is founder and CEO of AR Consulting. Ms. Rodriguez is a lean woman with tightly curled dark hair and glasses. She wears a headset mic, a black jacket and top, and red pants. She talks in front of an audience sitting at long tables in a carpeted conference room. Behind her is a projector screen that shows PowerPoint slides as she discusses them.

A PowerPoint slide appears on the projector screen and behind the speaker. The heading reads "What are greenhouse gases?" There is footage of the sky with clouds and an orange sunset. Over the sunset, the words GHGs absorb radiation from the sun. There is a view of earth from space. There is a graphic animation of yellow rays of sun entering our atmosphere from the sun and then bouncing back out, as well as red arrows of greenhouse gases emanating from the earth hitting the atmosphere and getting diverted back to earth. This image moves to the left side of the screen, and on the right is another image of an agricultural greenhouse with a dome roof that matches the dome shape of the atmosphere layers in the graphic image.

A PowerPoint slide appears on the projector screen behind the speaker. The heading reads "Why limit emissions of GHG?" The bullet points are highlighted in yellow as the speaker reads them. The next PowerPoint slide appears on the projector screen behind the speaker. The heading reads PG and E Supplier Environmental Performance Expectations. Three key words in the slide are highlighted. Measure, reduce and report. A PowerPoint slide appears with the heading Main Greenhouse Gases. On the slide is a circle that has been divided into sectors. The largest sector is carbon dioxide and the three smaller sectors from largest to smallest are methane, nitrous oxide, and the fluorinated gasses.

The CO2 sector is circled in yellow. Yellow arrows point to the other sectors. Text appears over clouds and says methane is 30 times more potent than CO2. Nitrous oxide is 300 times more potent than CO2. F gases are 20,000 times more potent than CO2. Sections of the slide are circled or highlighted in yellow as she discusses them. Footage of power plants, transmission lines, a parking lot, and a plane landing appear on the screen behind the speaker. The methane sector is circled. There is footage of a dairy farm. Text appears over gas pipelines in the desert. It says natural gas is 90% methane. There is footage of a gas stove, the Golden Gate bridge, a road, and the Bay area cityscape at night. Text appears that says "California has a zero carbon goal by 2045 and natural gas is being phased out." The nitrous oxide sector is circled. There is footage of agricultural fields being harvested and irrigated.

The fluorinated gases sector is circled. There is footage of a boy looking in a refrigerator, a refrigerated section of a market, and two men looking at an AC unit. The man looks

through a refrigerated section of a store. Text appears that says "F gases are 20,000 times more potent than CO2." A PowerPoint slide appears with the heading GHG protocols. A PowerPoint slide appears. Red check marks appear by the bullet points as she reads them out loud. A PowerPoint slide appears with the heading Setting Organizational Boundaries. The bullet points are highlighted in yellow as the speaker reads them. A PowerPoint slide appears with the heading Setting Operational Boundaries. The bullet points are highlighted in yellow as the speaker reads them.

There is footage of an industrial plant, a burner, food being cooked on a burner. The speaker goes to a light switch in the room. Red check marks appear by scope one and scope two on the slide, and words are added in red that say "Mandatory for calculations." Scope three is checked and words appear in red that say "Voluntary for reporting". A slide that says the formula behind it all has the formula activity date times emissions factor equals CO2 emissions.

Sections of a slide showing the example of the formula in use are highlighted as she speaks about each section. The next PowerPoint slide appears on the projector screen behind the speaker. The heading reads Reporting Metrics Absolute versus rate based. The bullet points are highlighted in yellow as the speaker reads them. There is footage of a forest with clouds scuttling by. Text says 300,000 tons of CO2 emissions total. How many tons per employee? How many tons per square feet of office space? How many tons per building? The PGE logo fades in. The screen reads "Together building a better California."

Video Transcript

Speaker: Today we are gonna be talking about greenhouse gases, what are those and how do we calculate the greenhouse gases and the reasons and the protocols that are in the market. It is emissions that create these greenhouse gas effect in our atmosphere. They are gases that have their property to absorb infrared radiation from the sun and keep it right here in our atmosphere. So our atmosphere around the Earth, it is to protect us from the UV, from the sun, and part of this sun radiation goes back into the atmosphere, but part of it gets trapped. The greenhouse gases are usually man-made gases that will get stuck here on the lower layer of our atmosphere and contribute to make these greenhouse gas, the greenhouse, like we'll have a greenhouse for our plants. So this is what is causing global warming, it is a major cause of climate change. All the scientific consensus is that we need to keep the warming of the planet underneath of two degrees Celsius. Right now we're about 1.2 degrees Celsius already warmed up. So we need to keep it under the two degrees Celsius. Why do we need to calculate the greenhouse gases? It is because we only have one planet to live on for now. But not only that, it is actually a business opportunity, many of our clients ask for that. Clients are requesting that we measure and plan for reduction of our greenhouse gas emissions, including PG&E, and it's becoming a market differentiator. If your company can demonstrate that does the greenhouse gas accounting and it is reduced in the emissions, you will have better business. PG&E since 2012 requires that older vendors and suppliers measure the environmental impact, reduce the environmental

impact and report it publicly. So we have basically no choice. So it is a good thing to do, and it is a business opportunity. So let's see what the greenhouse gases are. The greenhouse gases about 81%, that is most of the greenhouse gases, is gonna be CO2. But then we also have methane, nitrous oxide, and what we call the F-gases, the fluorinated gases. The majority of the gases are gonna be CO2, but these are very important that we measure because methane is 30 times more potent than CO2 in trapping heat in an atmosphere and nitrous oxide, it is 300 times more potent than CO2 and the three F-gases that we are gonna measure are 20,000 times more potent than CO2 in trapping heat. So they are critical and they are mandatory for any reporting of greenhouse gas emissions. So one way to analyze the matrix is to simplify the calculations and convert everything to CO2 equivalents. All the greenhouse gas calculations are based on CO2 equivalents, so we will measure methane, we will measure nitrous oxide, and we will measure the F-gases but they get converted into CO2 equivalents because everything get converted into a one single unit to simplify the results. We usually will talk about tons of, metric tons of CO2 equivalent. 1 million metric tons of CO2 it's gonna be one teragram. So you might just see teragrams or millions of metric tons in the different calculations. So where does the CO2 comes from? So CO2 it has many different sources, but mostly the largest part is going to be electricity generation and use as well as transportation. So now let's go into methane. Any organics that decompose and food waste is 7% of the greenhouse gas emissions worldwide will create methane and that's why livestock also creates methane. But there is one other thing that creates methane, natural gas. 90% of the natural gas is pure methane that we are burning right there and it is creating this very potent greenhouse gas. California already has a zero carbon goal by 2045 and natural gas in California is being phased out. All right, what about nitrous oxide? Most of the nitrous oxide that is in the atmosphere is gonna come from agriculture, fertilizers, pesticides and then there is also a little bit of byproduct coming from the generation of energy but mostly from agricultural sources. What about the F-gases? Those come directly from refrigerants, these are man-made gases and they are used as refrigerant. Commercial refrigerants, refrigerant in your fridge, air conditioning, fire suppression systems, everything that we do we put that and they are really dangerous, 20,000 times more potent than CO2. So, those are the six gases that we are gonna be measuring and those six gases will be converted into CO2 equivalents, so, you will give the carbon emissions from your company and it will be carbon emissions, but now you know that you are not just talking about carbon, you are talking about these six gases. One year after the Kyoto Protocol that was when we got the Greenhouse Gas Protocol, thus the name, and it was developed by the World Resource Institute and the world Business Council for Sustainable Development is the first and the most widely used international protocol for greenhouse gas emissions. However, we are also gonna see briefly and especially the calculator, the EPA developed simplified calculator for the USA standards sample is small businesses and low emitters which pretty much will cover anyone in the room. The Greenhouse Gas Protocol is just that, is a protocol. A step one, we are gonna set organizational boundaries and we will see in a second what that means. Step two, we are gonna set the operational boundaries that we are gonna calculate, we'll see them in a second. Then we are gonna identify where the emissions are coming from, we are calculating what, how many emissions we get, and we are gonna report them over time. Okay, so let's start with the step one, setting your organizational boundaries. An organizational boundary, it's which companies are gonna be under your control. We can

choose either the ones that we have some equity, or the ones that we have some type of control, that's what they said, the approach for equity share and the approach for control. If you are gonna keep anything from the whole day, this is the critical part, setting your operational boundaries. Setting your operational boundaries is literally finding out where your greenhouse gas emissions are coming from. A scope one are direct emissions caused by you, you absolutely need to report. This is you causing a smoke in front of your face. It is the smoke coming out of the car that you own, it is the smoke coming out of the kitchen that you are burning, it is the smoke coming out of the furnace that you have in your place, out of a fireplace, out of an emergency generator that has diesel, anything that the smoke is in your, you can see the smoke, it is a direct emission caused by you, and absolutely must. Examples, gas-fire boilers, furnaces, owned-vehicles, refrigerants releases, emergency power generators and any process-related greenhouse gas emissions, that is a must. Now a scope two and a scope three are indirect emissions, are emissions caused by you but the smoke is not coming out of your side. The smoke is being out some, goes someplace else. So if I turn off the light switch, if I turn off the light, and lowering the greenhouse gas emissions, but I don't see the smoke when I turn it back on, I don't see any smoke coming hopefully, out of the light switch. So, I am causing now greenhouse gas emissions, but it is an indirect, it is being caused at the power plant, but it is caused by me. So the, these indirect emissions are separated between a scope two and a scope three. Scope one and scope two must be in your calculations for greenhouse gases. So, scope two are indirect emissions for purchased electricity, a steam or heat. And the emissions again are not in your place but they are being caused by you some place else. Now, a scope three are other indirect emissions and these are voluntary for reporting, and that includes air travel, commuting or solid waste. And this is what you need to decide if it makes sense for your company to calculate this and include that within your greenhouse gas emissions or not, because it really varies a lot between company and company. So you have a building in California that consume 2014, since we are getting the emission factors from that, 100,000 kilowatt hours, that's your annual energy bill, you estimate your energy bill and add them up, 12 months of how much, how many kilowatt hours you got. I'm telling you the emission factors. I'm just getting probably that from the Greenhouse Gas Protocol, so I'm saying that the emission factor is 619 pounds of CO_2 per megawatt hour. So, your emissions will be 100 megawatt that year, times 619 pounds per megawatt hour so that year, thus for your electricity consumption, you add almost 62,000 pounds of CO_2 into the air. We have to consider absolute versus rate-based reporting, for reporting, for you need to provide absolute numbers, then you wanna make sense of those numbers for planning within your company how to do better, and it will depend on your company, maybe you can say okay, so I had 300,000 tons of CO_2 emissions last year, but what do that means? How many tons per employee? How many tons per square feet of office? How many tons per vehicle? How many tons per building? How many tons, what do you do? Manufacturing like Apple, so how many emissions per employee if you want, and then next year, I'm gonna do better. I might have more employees, but I'm gonna do better per employee. So that is how you set your targets for improvement. So this is important that internally but you need to provide absolute numbers. The takeaways for the class is that we know that greenhouse gases are raising the temperature of the planet, and that it's mostly main and it is a, we need to do something about it because it makes economic sense, it is a good business, opportunity and because we are all in the

same boat. So with that, I thank you for this day in the three hours and if you have any questions, I'll be glad to take them.