

Pete Langlois: And we're back good morning everybody here in the Americas watching us live for those of you or check us out later on in the recording.

Pete Langlois: It is Tuesday October 19 2021 welcome to the fourth installment of our energy awareness month webinars.

Pete Langlois: brought to you by department of energy's advanced manufacturing office, and specifically are better plants program I am P long long.

Pete Langlois: program manager in the events manufacturing, I was I worked on our education and workforce development activities and to that point we are so lucky to have the energy experts from the better plants program to help us out.

Pete Langlois: For those of you who may remember October is the month we're in and neck kicked off with manufacturing day.

Pete Langlois: Which is always a good reminder for us in the sector, there are 10 million people in the United States working in the manufacturing industries.

Pete Langlois: And we're looking to add probably somewhere on the order of maybe 4 million more opportunities over the course of the next decade.

Pete Langlois: So for that industry and industries in general to remain robust and vital key is the innovative nature of its workforce so we're very fortunate to have.

Pete Langlois: Again, like I said the expert here to help us understand many topics around energy awareness today understanding utility bills for natural gas.

Pete Langlois: I don't know where you might be, but for me at least here in the mid Atlantic region in the United States.

Pete Langlois: This is not the first weekend I started to think about natural gas here in my house and while it's pretty straightforward.

Pete Langlois: With regards to space eating and maybe some cooking and hot water, it can get pretty complicated and for your manufacturing enterprise, and certainly the bill can reflect that so we're fortunate to have.

Pete Langlois: Our speaker who will introduce here in a couple minutes to talk us through a lot of these issues we move on to the next slide remind everybody about the whole series that we are.

Pete Langlois: involved in Oh, but before that, of course, you are being recorded So if you don't want that to be posted all over the inner webs then take appropriate action.

Pete Langlois: Thank you.

Pete Langlois: we've had three of the webinars so far we're now into the areas of understanding, your utility bills today specifically around natural gas.

Pete Langlois: The schedule of all of the webinars is coming up here on the next slide, some of which are taking place for those of you who are watching us live.

Pete Langlois: or watching us in the very near future for the month of October 2021 You can check out registration pages for upcoming webinars as well as additional resources for all of these.

Pete Langlois: At the website on the bottom of the slide yes events COM slash energy awareness that is yes, events COM slash energy we're in this will keep that in the chat.

Pete Langlois: for you to go check out for again for those who is watching us live the next one is coming up exactly one week from today vector watermelons.

Pete Langlois: Thank you just a reminder for the course of the hour, we are together, you have questions, please use the chat function in the zoom meeting room.

Pete Langlois: I will be curating a bunch of those questions for our speaker later on, we get to the end of his presentation or forget something that so perfectly pressing and addressing something he's talking to right they will will interject right them but.

Pete Langlois: keep them rolling and we will have a lively Q amp a towards the end with that i'm going to introduce our speaker, but I thought we might go to a special guests first do we have the other slides available for that.

Eli Levine: well.

Eli Levine: If we don't that's all right pete I might be able to just to chime in with outside so that's not a problem.

Pete Langlois: Alright well Okay, yes, then I will introduce our speaker after you do that So here we go eli lilly and her manager, for the rest program telling us about something new that we're doing it doing.

Eli Levine: Yes, thank you and just to respond to the one question we've seen already all of the recordings will be available to watch, we are in the process of transcribing all of the recording so that they are compliant with the Americans with Disabilities Act and.

Eli Levine: we're able to post them on the web, just as soon as we have that will be posting all the recording so we have so.

Eli Levine: Far So although I don't have the slides available to share with you i'm very excited to talk about a new initiative that we are in the process of launching at the US Department of Energy, and that is called the better climate challenge.

Eli Levine: This is a new initiative to work with organizations as i'm decarbonisation of their.

Eli Levine: of their systems, and this is all across all better buildings and better plan so everyone from the commercial real estate multifamily housing.

Eli Levine: Schools prisons everybody, we want to work with you, and specifically for our industrial sector better plants wants to work with you on your pardon bolts so through this better climate challenge if you're interested.

Eli Levine: We are focusing on scope one in scope to admissions we're asking for no offsets we're allowing you to do a baseline of up to five years back, but we are challenging you to set a portfolio wide reduction golden carbon emissions of at least 50% over 10 years so.

Eli Levine: If this is something that you were interested in, we are very excited to work with you, you know, helping you set and meet ambitious.

Eli Levine: Carbon goals is something that we are very excited about is what a lot of companies are thinking about is how we're going to tackle this climate crisis that we are all facing so.

Eli Levine: More information to come, but if this is something you were interested in please contact me please contact the better plan team all of our contact information will be at the end.

Eli Levine: But through the better climate challenge we are interested in helping you set and achieve ambitious decarbonisation goals of up to 50% over out there, we go over 10 years.

Eli Levine: And we will provide if you could skip forward two slides.

Eli Levine: We will provide technical assistance, you know, will help you track and measure, it will collect and share best practices and highlight successful replicable strategies.

Eli Levine: Facilitating this type of peer to peer learning that better buildings and better plans have become known for as well as providing that that national recognition for your leadership, so if any of this interest you if you're willing to set a 50% reduction over.

Eli Levine: You know by 2030 and the other thing I want to flag is we recognize for the energy intensive manufacturing sectors, a 50% goal is.

Eli Levine: Is not presently bow realistically achievable, and so we will work with you to set a more realistic goal of 25% by the year 2013 so.

Eli Levine: If this interest you please reach out to me, we are happy to engage with you on this, we are looking to make an announcement in very short order so.

Eli Levine: This doesn't mean it will be your last opportunity to join, there will be ample opportunities to join, but if you are looking to get in on the ground floor and have.

Eli Levine: be included in that initial announcement in two weeks, please reach out sort us swiftly and we can send you the partnership agreement, there is more information on the web about all of this as well.

Eli Levine: So, thank you very much, and I hope you'll be able to join us on this better climate challenge as well next slide.

Eli Levine: Why join you hopefully know this it's good for your organization it's important for market transformation, you can leverage.

Eli Levine: Technical assistance and all the tools and resources do we have to offer, and we are looking to amplify your story and recognize you as a leader.

Eli Levine: So I appreciate you allowing me to come in and talk about this new initiative and pete I will turn this back over you to you to introduce us and feel who's our expert for today.

Pete Langlois: Perfect Thank you like we're very much looking forward to this expansion of the ways that we can provide additional technical assistance.

Eli Levine: To help you meet your.

Pete Langlois: Carbon reduction goals with that we're joined today by sent till sundar more thing.

Pete Langlois: from oak Ridge national lab he's an associate R amp D staff member and technical account manager for the better plans program and R and L.

Pete Langlois: He holds a master's degree in industrial engineering from West Virginia university go mountaineers where he was involved with their industrial system Center.

Pete Langlois: Prior to working at overs edge lab he worked at Hudson technologies, providing energy assessments technical assistance and leading custom and engineering projects.

Pete Langlois: centennial is a certified energy manager and a certified qualified specialist in the areas of process eating and steam, and the perfect person to walk us through our natural gas bills with that I will turn it over to him.

Senthil Kumar Sundaramoorthy: Thank you, be brief introduction, I just want to you know, make sure a couple of things can you see my screen and can you hear me OK.

Pete Langlois: I can hear you okay and i'm trying to switch screens, to make sure I can see the screen.

Eli Levine: Yes, I can see.

Senthil Kumar Sundaramoorthy: Okay perfect good morning everyone appreciate your spending time to attend this presentation so today's topic of discussion is going to be understanding your natural gas both.

Senthil Kumar Sundaramoorthy: So if you are looking into you know if you have a large portion of your utility bills going into you know your natural gas.

Senthil Kumar Sundaramoorthy: And if you are trying to understand the several different components that goes into your natural gas bills and you know also some of you might be looking at what quick ways can I save.

Senthil Kumar Sundaramoorthy: You know cost in your so you know if you guys are looking into all these aspects, then you are in the right place.

Senthil Kumar Sundaramoorthy: Before I go into the topic of discussion, I would like to give you a little bit of overview of what we do, through the better buildings better plans program for some of you in the call might already be partners and may very well be aware of all the.

Senthil Kumar Sundaramoorthy: resources that are available for you, and what we do to the better plan program but for those who are not this might help them to understand you know what we do, through the better buildings Program.

Senthil Kumar Sundaramoorthy: So better buildings better plans program is a public private partnership between US Department of Energy and manufacturers and it was basically established to help manufacturers and other industrial partners to improve their energy intensity.

Senthil Kumar Sundaramoorthy: So it all started with energy and over the years, bear plans evolved and we better pants in the.

Senthil Kumar Sundaramoorthy: interview several other initiators in terms of water savings and also to reduce waste.

Senthil Kumar Sundaramoorthy: and build on the success that it found through the energy program and again, one of the recent initiative like eli mentioned on the better climate is focusing towards reducing partners popcorn and scope to emissions.

Senthil Kumar Sundaramoorthy: So, from a benefits perspective partners will get to work with technical upon managers assigned to them, who will help them to use.

Senthil Kumar Sundaramoorthy: Several utilize several resources available through the battle plan program, be it, you know calculators so are.

Senthil Kumar Sundaramoorthy: Several software that helps them to reduce and find opportunities to save energy and reduce water intensity or waste, and not only that they also take advantage of the diagnostics to program where they can loan.

Senthil Kumar Sundaramoorthy: They can actually borrow instruments are free of cost from us, and there are several other guidance documents.

Senthil Kumar Sundaramoorthy: similar to what we are talking, today, there are several other guidance documents that partners can leverage to watching their.

Senthil Kumar Sundaramoorthy: Sustainability goals and not only that there are training opportunities, where through implant trainings partners get to learn from the experts, where you know experts go to partners, I spend time and.

Senthil Kumar Sundaramoorthy: Go to a significant comprehensive training for them to do energy assessments and identifying opportunities.

Senthil Kumar Sundaramoorthy: And not only that you know as partners go through this process, they once they achieved your goal, they be recognized as goal achievers and not only that along the way they also have other opportunities.

Senthil Kumar Sundaramoorthy: Through the better practice and bread or project awards where if they implement any better practice or better projects, they can nominate themselves to have for these award opportunities.

Senthil Kumar Sundaramoorthy: And last but not the least of the also US Department of Energy has several labs where we have technology days, where partners can come in and look at you know.

Senthil Kumar Sundaramoorthy: game first hand experience on the some of these new emerging technologies that are in the market and not only that, through the industrial technology validation program they can engage in a full scale pilot.

Senthil Kumar Sundaramoorthy: to test out these emerging technologies or new technologies and validate the savings and know that you know what what or what was being promised, is what is being delivered.

Senthil Kumar Sundaramoorthy: Under the better plans umbrella, we have close to 250 partners, and we are partners in almost all 50 states.

Senthil Kumar Sundaramoorthy: And our partner portfolio varies anywhere from wastewater treatment plan to pharmaceutical to automotive manufacturing companies.

Senthil Kumar Sundaramoorthy: But from a partner perspective, they get to have a networking opportunities they get to learn from others and share best practices through the better plans Program.

Senthil Kumar Sundaramoorthy: And that being said, so this.

Senthil Kumar Sundaramoorthy: guidance document is one amongst the series of other guidance document that we are releasing this month, last week, you heard from my colleague Chris talking about the electricity bills and next week you'll be hearing from Alex who's going to be talking about the waters.

Senthil Kumar Sundaramoorthy: So why are we, why are we talking about natural gas natural gas bills can be really complex and can be really hard to decipher because there are so many players in the market, and there are several different components that goes into your natural gas bills.

Senthil Kumar Sundaramoorthy: And some charges, you might see every month and some charges, you might not and not one size fits all right, and you know big companies or large industrials we have several different components compared to small industrials or even commercial and similar to residential.

Senthil Kumar Sundaramoorthy: So our goal is to put together a document that is easy for our partners and all of you in the call to understand and hopefully gain some knowledge on ways to reduce your utility costs.

Senthil Kumar Sundaramoorthy: Back in the day is called used to be a dominant fuel.

Senthil Kumar Sundaramoorthy: But call out its own problems, because it has completed an armful emissions, and then the process itself was not efficient, then you know, eventually, there was a shift that happened towards natural gas natural gas is a way better.

Senthil Kumar Sundaramoorthy: energy source, then call in terms of you know, emissions, it is a cleaner burning of it as clean burning properties than oil and coal and not only that.

Senthil Kumar Sundaramoorthy: Because of increased a local production, the price of natural gas decreased as well, which eventually you know the shift happened to natural gas.

Senthil Kumar Sundaramoorthy: A little bit of history or prior to 1818 in 1800s and natural gas was actually mechanically manufacture.

Senthil Kumar Sundaramoorthy: It where they gasified the coal to produce natural gas, but then the world process was not efficient and then eventually fracking was introduced back in the 1860s but.

Senthil Kumar Sundaramoorthy: The fracking that we know now is not what was happening in 1860s that then they sent torpedoes down the well and they put dynamite inside and exploded.

Senthil Kumar Sundaramoorthy: Inside the world to you know basically mindfulness Oh yes, which you know that it is not what is happening right now, because we do ironic fracturing.

Senthil Kumar Sundaramoorthy: To get natural gas, and not only that it really jump started after the horizontal drilling was introduced.

Senthil Kumar Sundaramoorthy: In the late 90s and beginning in 21st century is when you know the consumption, as you can see post 2000 both the consumption and production local production increase.

Senthil Kumar Sundaramoorthy: In the US, which you know really influenced the price of natural gas, the gas price came down, and you know became more popular.

Senthil Kumar Sundaramoorthy: The process here is pretty simple.

Senthil Kumar Sundaramoorthy: And gas companies for producing companies mind for gas explore in mind for gas, and they send it to gas processing plants were you know.

Senthil Kumar Sundaramoorthy: other contaminants and byproducts are removed and pipeline quality great natural gas is then transported to a group from pipeline companies transport gas to city gate from where you are local utility companies pick it up and deliver it to you guys.

Senthil Kumar Sundaramoorthy: Another important thing to understand here is.

Senthil Kumar Sundaramoorthy: The natural gas market and what options are available for industries as a buyer right, so there are two markets are regulated gas markets, and then there are deregulated gas market.

Senthil Kumar Sundaramoorthy: In a regulated market government control prices and utilities charge you for all the steps right from purchasing the gas to distributing the gas to your doorstep.

Senthil Kumar Sundaramoorthy: So it was pretty simple, but what happened is in a regulated markets installment was controlling the price, the price was cheaper and there was not enough incentive for producers to make more.

Senthil Kumar Sundaramoorthy: So, eventually, there was a supply and demand issue so.

Senthil Kumar Sundaramoorthy: And then there was also a monopoly situation from pipeline companies charging more so that's when you know the energy policy act and 99 to F ERC Commission or introduce the deregulation, so in a deregulated market the.

Senthil Kumar Sundaramoorthy: purchasing of natural gas is completely separated from the transportation and delivery of natural gas, so what this created is bottom line is.

Senthil Kumar Sundaramoorthy: It created a single nation market and it requires the supply and demand of natural gas, and not only that it increased competition because more players got involved and it actually.

Senthil Kumar Sundaramoorthy: acted as a favor for consumers, because now, they can go and shop around.

Senthil Kumar Sundaramoorthy: So the state that you see, I liked it in blue, these are the States that are deregulated value, how you know more options.

Senthil Kumar Sundaramoorthy: And in a direct lender in a regulated market that are highlighted in great you know, most probably the LDC is what is going to charge you along all the way.

Senthil Kumar Sundaramoorthy: For all the steps and deregulated market those states that you're seeing in blue.

Senthil Kumar Sundaramoorthy: There you'll have more options again within those States there might be several conditions that apply, but you might want to check with you know your local distribution company to see what options are available for you.

Senthil Kumar Sundaramoorthy: So deregulation, even though it offered a lot more flexibility, it became very complex, and I want you all to pay attention to the figure and what i'm talking and what i'm going to talk about right now, because this is going to be.

Senthil Kumar Sundaramoorthy: very vital in the information that i'll be sharing or when i'm explaining all the charges, you will be able to relate it to the figure.

Senthil Kumar Sundaramoorthy: So the process is gas companies.

Senthil Kumar Sundaramoorthy: produce and sell the gas in a baseball has market up market of business Center pricing point where a natural gas is traded daily so in a regulated market.

Senthil Kumar Sundaramoorthy: pipeline companies will pick it up and transmit to your local distribution company and the local distribution company is going to distribute it of distribute the gas to you to consumers.

Senthil Kumar Sundaramoorthy: So the route that natural gas gates is pretty simple, and you know everything from purchasing to distribution will be taken care of local distribution company.

Senthil Kumar Sundaramoorthy: But it gets a little tricky when you know, in a deregulated state now if you're in a deregulated state it can take several different drops.

Senthil Kumar Sundaramoorthy: It can still go through the route that I explained you before or it can actually take another round where now more entities are involved marketers, for example, they are a classic a third party entity, who purchase gas and sell.

Senthil Kumar Sundaramoorthy: to consumers, and not only that the if there is a very large industrial.

Senthil Kumar Sundaramoorthy: User they might have an option to directly purchase guess from the producers, so there are several different routes, it takes.

Senthil Kumar Sundaramoorthy: So you want to understand you know who's charging you for what and if you're in a regulated market, most probably, you just get one bill from your local distribution company which is basically your utility company.

Senthil Kumar Sundaramoorthy: Where you see all the charges listed, if not, you will, if you if you're in a deregulated market and you're taking advantage of all these options, then you might just get a distribution bill from your.

Senthil Kumar Sundaramoorthy: utility company, and then there might be other those just for gas commodity was from marketers are producers, depending on who you're getting the gas from.

Senthil Kumar Sundaramoorthy: and understanding the market alone is is not important it's also you need to know what pricing strategies or what pricing options are available, there are several natural gas purchasing options as a customer.

Senthil Kumar Sundaramoorthy: And you know feel we use consumers work with utilities and marketers all the time to.

Senthil Kumar Sundaramoorthy: Work on several different pricing options, but what i'm going to show you the most typical and common pricing strategies right The first one is the New York Mercantile Exchange strategy.

Senthil Kumar Sundaramoorthy: So what it does is for all the strategies we have two components, one is the gas commodity component and then the other one was called as a fixed basis or basis company which is basically a differential so i'll explain what it is all about.

Senthil Kumar Sundaramoorthy: So, in a in a Nymex contract price the floating prices, based on the the commodity costs that you will see in every home so Henry of his marketing up.

Senthil Kumar Sundaramoorthy: you're based out of Louisiana that's where you know trading started, so the Nymex price is basically matches the commodity price that is being displayed a trend rehab.

Senthil Kumar Sundaramoorthy: and your basis cost is a differential so that is a differential from you know there's the price differential between.

Senthil Kumar Sundaramoorthy: The price of entry up and at the local price your region price so then So if you are in a market where there is over supply but less demand, then that basis can be a discount.

Senthil Kumar Sundaramoorthy: But if you are in a market where there is, you know more demand and less supply, then that basis can be an adder and there are several other components like including transportation and storage that can go into basis, but what you got to understand, as in a Nymex.

Senthil Kumar Sundaramoorthy: configuration, you will have the commodity of component floating with market and then you need there will be a fixed basis cost.

Senthil Kumar Sundaramoorthy: And index price is similar to a Nymex contract, whereas an index price your gas commodity cost is not only based on Andrea, but it could be several other hubs depending on where.

Senthil Kumar Sundaramoorthy: you're located, so the closest have prior to show your price might be representative of the process down to your facility.

Senthil Kumar Sundaramoorthy: And the basis again it's the same concept, but in this case, you can float your basis for part of the cost as the market.

Senthil Kumar Sundaramoorthy: and fixed price as the name indicates, both the competence, both the commodity, competent and the basis components are fixed.

Senthil Kumar Sundaramoorthy: So if you are a customer who are who will have a very good idea of your natural gas usage through estimates usage then Nymex.

Senthil Kumar Sundaramoorthy: Contract might work for you, but if you are a customer who do not have any idea of you know you do not, I don't really estimate my usage and we have no idea we have so much.

Senthil Kumar Sundaramoorthy: You know fluctuation in our you say that index price might be a good option, because it allows for you know.

Senthil Kumar Sundaramoorthy: Flexibility in volume.

Senthil Kumar Sundaramoorthy: And if you are a customer who don't want you know I don't want to risk it.

Senthil Kumar Sundaramoorthy: You know, I just want to pay a fixed price, then you know fixed price configuration might work best for you.

Senthil Kumar Sundaramoorthy: But keep in mind fixed price might not necessarily mean that you know, yes, you are, you are, you know it is less risky.

Senthil Kumar Sundaramoorthy: But you pay a price for that, because then you won't be taking advantage of when the market is lower for natural gas, the gas price goes up and down.

Senthil Kumar Sundaramoorthy: But then you will not be able to take advantage of that so when.

Senthil Kumar Sundaramoorthy: The bottom line is when you are choosing the any pricing strategy, you have to look at the overall contract price, not just you know what is the price of gas in the market.

Senthil Kumar Sundaramoorthy: Because again like I said the basis would be an adder or a discount so you want to look at the overall contract price when you look at just the commodity price in.

Senthil Kumar Sundaramoorthy: On the surface, it might look like oh my Nymex is much better than index, but you know, but when you look into the other basis component, then you might be able to decide, you know which one is more optimal for your configuration.

Senthil Kumar Sundaramoorthy: Another important aspect one common mistake that companies do is estimating the usage right so, especially in the pricing strategies that I talked about customers can lock the floating price to a fixed price they can change the floating price to a fixed price at any point of time.

Senthil Kumar Sundaramoorthy: So when they do that our they are required to estimate their usage so.

Senthil Kumar Sundaramoorthy: You have to estimate the usage as close as possible, the reason why I say, that is, if you are under estimating the usage and then you know you're consuming more than whatever consumption that you're taking in.

Senthil Kumar Sundaramoorthy: You know edition will be sold to you had a much higher rate than market. Similarly, the other way around, if you are overestimating your usage.

Senthil Kumar Sundaramoorthy: Then you will be selling back to the marketers at a much lower price than the market price end of the day, you know marketers are here to make money so that's all they you know get your profit, so you, the more closer you.

Senthil Kumar Sundaramoorthy: estimate estimated usage, the large chunk of money that you can say we have this.

Senthil Kumar Sundaramoorthy: let's actually start digging into an actual example you're so again, there are several components that goes into your bill.

Senthil Kumar Sundaramoorthy: And some of them can be fixed charges, some of them can be variable charges and based on your consumption, so there could be meter charge that could be demand charge and transportation charge and.

Senthil Kumar Sundaramoorthy: usage consumption charge, and you know consumption charge can be charged in blocks, which i'll be talking about later, but.

Senthil Kumar Sundaramoorthy: But the point here is again if you are a small customer and if you're using you know you just have you know comfort heating equipment your portion of the bill might be very small compared to a large industrial who have you know process eating.

Senthil Kumar Sundaramoorthy: equipment and boilers gerbils might be a significant chunk of your overall total utility bill.

Senthil Kumar Sundaramoorthy: Nevertheless, the components that are going to be discussed your typical so no matter what type of customer, you are, you will be seeing you know these charges in of those.

Senthil Kumar Sundaramoorthy: So the customer charges utilities charge you for any customer service they provide any administration fee, and also the meters that be installed in your facility and sometimes you know it might not always be called as customers are sometimes you might see this as a meter chat.

Senthil Kumar Sundaramoorthy: And this is a fixed charge it's not variable What I mean is subject to change, so what I mean by that is.

Senthil Kumar Sundaramoorthy: The it depends upon the when when you see me recharge it depends upon the number of meters, the more meters, you have, the more the fastest Similarly, if you have a bigger line larger line.

Senthil Kumar Sundaramoorthy: coming into your facility, then you know more, the cost of the meter so.

Senthil Kumar Sundaramoorthy: And what happens is, if you if you are, if you are adding a production line and if you're adding a line, then that might increase this portion of your bill as well, this is mostly unavoidable, this is a charge that you have to pay the.

Senthil Kumar Sundaramoorthy: utilities, but, but you can get an understanding of you know what charges that are really going into the meter charge by talking to your elysee.

Senthil Kumar Sundaramoorthy: The consumption charges, basically, the total amount of natural gas delivered to your facility, the usage, that the physical volume of natural gas that you're using in your facility.

Senthil Kumar Sundaramoorthy: And, most of the time, you will see the usage units in volume but typically if you are doing any sort of analysis, you do it and energy in it, so you can easily convert the volume to energy unit.

Senthil Kumar Sundaramoorthy: With the Bu factor on energy factor that you will be seeing this and i'll show the conversion, as we go along this presentation.

Senthil Kumar Sundaramoorthy: But, but again, these charges can be shown as gas recorded costs or purchase gas costs are you know it can be called a several different charges.

Senthil Kumar Sundaramoorthy: And again, these charges will be in blocks, sometimes it will be just a standard rate all your consumption will be charging a flat rate or sometimes the consumption will be broken down, and you will be charged in blocks so i'll be talking about more about this in the rate structure.

Senthil Kumar Sundaramoorthy: and keep in mind the chart that you see the rate that you see as consumption rate.

Senthil Kumar Sundaramoorthy: is basically coming from the pricing strategy that we talked about so the consumption cost is going to be heavily influenced by what pricing strategy that you chose initially in your contract.

Senthil Kumar Sundaramoorthy: The Nymex the index and fixed pricing, so that is what the cost that you're seeing the rate that you're seeing is coming from the pricing strategy you choose, so the more active on pricing strategy is just the more you can save on the consumption Charles.

Senthil Kumar Sundaramoorthy: To maximum daily quantity is something similar, but a little different than what you see as demand charges in your electricity bills, so what it means is this represents the quantity that a buyer can take from a supplier.

Senthil Kumar Sundaramoorthy: at any given day, so this is the maximum quantity that a utility is obligated to send to your facility anything more can be interrupted, they will they will probably you know supply you more, but you know you have to keep in mind that the additional amount can be interrupted.

Senthil Kumar Sundaramoorthy: and

Senthil Kumar Sundaramoorthy: And also one other thing to remind us, you know.

Senthil Kumar Sundaramoorthy: The way that these they calculate the maximum daily quantity is they can look at just the last one year and see what is the highest consumption month.

Senthil Kumar Sundaramoorthy: and divided by the number of days and calculate that quantity or they can go as back as 36 months and look at your is consumption month and do it by you know, the number of days and come up with the maximum value quantity, and you know that's what you see your in your bill.

Senthil Kumar Sundaramoorthy: If you are, if you are a sub if you are getting more than the maximum daily quantity then whatever amount that.

Senthil Kumar Sundaramoorthy: The charges like if it is more than what was the promise then they'll charge accordingly, if you if you consume less than the maximum value quantity they'll still charge you for what what what was determined in the strategy that they use for historical usage.

Senthil Kumar Sundaramoorthy: transportation and distribution charges are against based on the volume of natural gas delivered to your facility depending on who you're getting the gas from the.

Senthil Kumar Sundaramoorthy: It can change so typically pipeline companies are responsible for transportation and your utility companies is responsible for the distribution portion.

Senthil Kumar Sundaramoorthy: But if you are in a regulated market all of these components will be in one you'll be seeing the transportation bill you'll be seeing the distribution rate and then you will be seeing the gas commented period.

Senthil Kumar Sundaramoorthy: or sometimes you won't even see the transportation rate, because that can be embedded into the guest commodity costs.

Senthil Kumar Sundaramoorthy: And if you are getting deregulated market and getting gas from marketers, then you will get a separate bill for just transportation and gas commodity and a separate bill from your utility for your.

Senthil Kumar Sundaramoorthy: period of for your distribution charges and again this is also being able to influence from the pricing strategy number the basis costs that I was talking about, so the transportation costs can be embedded into the basis calls so whatever you choose.

Senthil Kumar Sundaramoorthy: can really influence the charges that you're going to see on your transportation and distribution charges.

Senthil Kumar Sundaramoorthy: That are other charges that you know you're tricking might value for and typically you know large users.

Senthil Kumar Sundaramoorthy: They might see a story charge and your lease charge you for supplying the gas for time in need or during a demand even because, as a user as a consumer, from your perspective, your.

Senthil Kumar Sundaramoorthy: usage might fluctuate but from a user perspective, it can be constant so to accommodate for this mismatch they charge you for storage and whatever story that is left after delivering it to you that's the portion that they will charge you for in your storage.

Senthil Kumar Sundaramoorthy: As a storage costs.

Senthil Kumar Sundaramoorthy: And there are several other different writers as well, along with.

Senthil Kumar Sundaramoorthy: The story charging again the distribution management program surcharge the utilities typically charge you for the maintenance and safety of the natural gas pipelines.

Senthil Kumar Sundaramoorthy: The energy efficiency program surcharge is if they have enrolled in any energy efficiency Program.

Senthil Kumar Sundaramoorthy: They charge you for that as well and andromeda cost recovery is mostly going towards you know data for that cost for any of those.

Senthil Kumar Sundaramoorthy: treatment or remediation for contamination to the environment or any insurance charges, they be so they recover their costs through the normal cost recovery charges.

Senthil Kumar Sundaramoorthy: There are other non energy charges that you might see in the booth when I have the customer fees, the metering fees.

Senthil Kumar Sundaramoorthy: Like We talked before, that is, you know not related to your consumption, so that might be an honor the charge and that might be other charges like late payment fees that you might see and.

Senthil Kumar Sundaramoorthy: Lack of due to lack of funds they charge you for that as well, so you might see those charges, and you know this might not be a recurring charges so sooner you identify, you will not be seeing this combination of this and sales tax as well.

Senthil Kumar Sundaramoorthy: As I mentioned to you before.

Senthil Kumar Sundaramoorthy: utilities in your bills, you might see the volume of gas or the gas apply to you in volume units in hundred cubic feet or thousand cubic feet.

Senthil Kumar Sundaramoorthy: Or you might in rare cases, you might also see energy is the mbu, but if you have volume units.

Senthil Kumar Sundaramoorthy: look out for a video factor in your best, because that is the conversion that you need to use to convert the volume of gas into energy unit so typically one 1000 cubic feet is equal to one mm EDU or one day katon.

Senthil Kumar Sundaramoorthy: But you know you can use the video the video factor is actually the eating value of the guests, that is being delivered and that media factor can vary depending upon you know that very monthly depending upon the type of the quality of gas that is being delivered to your facility.

Eli Levine: Until one question we got that might want to see if I might be able to answer in real time was playing next please explain further the energy efficiency charts you were talking about on the previous slide.

Senthil Kumar Sundaramoorthy: The energy efficiency program surcharge.

Eli Levine: mm hmm.

Senthil Kumar Sundaramoorthy: Right, so the energy efficiency program surcharges Basically, they are so let's say that you know, a utility is.

Senthil Kumar Sundaramoorthy: is actually buildings is actually switching from.

Senthil Kumar Sundaramoorthy: Say boilers right, for example, they're going from a much.

Senthil Kumar Sundaramoorthy: More efficient boiler to, if you will, so any energy efficiency things that they implement at power plants or utilities, so they charge for that to the customer.

Senthil Kumar Sundaramoorthy: I hope that answers the question so any so anything that is being taken that is being implemented at a utility level at a power plant level.

Senthil Kumar Sundaramoorthy: So they charge you for that data today want to record that cost from the customer, so that is what that is the charge that will be seeing as energy efficiency program surcharge if that makes sense.

Eli Levine: You gotta thanks for the comment onwards.

Senthil Kumar Sundaramoorthy: Perfect so.

Eli Levine: We all.

Senthil Kumar Sundaramoorthy: We saw all of these components and several different things that goes into the other so let's.

Senthil Kumar Sundaramoorthy: Try and calculate the price of gas, so if you are looking to get a high level overview of you know Okay, what is the dollar per me do that i'm paying.

Senthil Kumar Sundaramoorthy: Then you can actually use average gas costs, the main advantage of calculating the average he has cost is for simplicity of analysis, it does not require digging into specific charges.

Senthil Kumar Sundaramoorthy: As fixed and variable costs, our the simplicity simplicity, as a trade off with accuracy so in average gas costs all you're doing is take your total bill cost.

Senthil Kumar Sundaramoorthy: And dividing it by your total gas energy consumed you're not taking into account what the one blockage structures and stuff like that just simply dividing.

Senthil Kumar Sundaramoorthy: The total bill caused by the gas energy consumed, and you know if you're in if you're getting it in volume, you can just multiply that volume by big factor, then you will get average gas costs.

Senthil Kumar Sundaramoorthy: So our next guest plus can give you a ballpark numbers for large industries who have less fixed costs and variable costs, but the edit tends to increase, for you know medium and smaller industries where the fixed charges are major or equal equal to the variable charges.

Senthil Kumar Sundaramoorthy: But if you really want to dig deeper so let's say that if you are looking to estimate savings for any energy.

Senthil Kumar Sundaramoorthy: efficiency projects that you're planning to implement what you really have to look into is the marginal gas costs, so what I mean by that is.

Senthil Kumar Sundaramoorthy: margin gas cost is so what would be the rate I would be saving if I say one last mbu or what would be the rain that i'll be paying if I consume more.

Senthil Kumar Sundaramoorthy: One more MBT you right So if you are in a block rate structure, for example, if you are saving one mm EDU you will be seeing in the last block in Block three right you won't be saving any of the other blocks, so that is why marginal cost.

Senthil Kumar Sundaramoorthy: May plays a major factor when you're basically you know you'll get more accurate energy savings and pay back calculations, so the way that you calculate.

Senthil Kumar Sundaramoorthy: calculate the difference in gas costs for one less MCA for me to you that you pay for so take that and then take the environment to calculate and run little charge and tax.

Senthil Kumar Sundaramoorthy: For the mcs reduced and then divided by the you know for me to, basically, what is the cost that you will pay for one lesson and video and multiply that by the video factor.

Senthil Kumar Sundaramoorthy: So if you are saving less than 15 so in this example 15 632 mcf if you're saying less than 15 600 mcf.

Senthil Kumar Sundaramoorthy: You can use this right marginal costs, but if you let's say if you save 20,000 mcs, so in that case, what you have to do is, you have to do a weighted average so whatever 15,006 72.

Senthil Kumar Sundaramoorthy: and whatever is left like four or 5000 in 20,000 blocks, so you have to take a weighted average on those two blocks and come up with the marginal cost.

Senthil Kumar Sundaramoorthy: So, for the same example we saw average cost is showing us 4.57 per mmm good you, whereas marginal cost is showing 3.9 for a movie that's starting to 15% difference, so you can be off in your analysis payback analysis and savings analysis by you know.

Senthil Kumar Sundaramoorthy: Whatever person days that you are, you know, seeing between the difference in average cost and marginal cost so if you are looking for any energy efficiency programs and want to estimate savings marginal cost cost is what you need to use in your analysis.

Senthil Kumar Sundaramoorthy: Before you do any sort of analysis.

Senthil Kumar Sundaramoorthy: Calendar ization is something that you need to think of so what it means by that what categorization means is you are normalizing your gas gas consumption for billing periods so let's take a classic example right, you are trying to come up with energy intensity.

Senthil Kumar Sundaramoorthy: mbu or the products that you produce your consumption that you are seeing in your this might not necessarily be the first day of the month to the last day of the month, your utility bills very all the time.

Senthil Kumar Sundaramoorthy: And you know you might see a different days in your electricity bill, you might see a different days in your natural gas bills and within the month or so that might be a different changes so while you add what your production, most probably, you are.

Senthil Kumar Sundaramoorthy: You know, noting it down from the first day of the month to the last day of the month.

Senthil Kumar Sundaramoorthy: So to basically account for this mismatch you basically calendar is to come up with more representation of what is actually going on, so the way you do, that is.

Senthil Kumar Sundaramoorthy: Take the total consumption and divided by the number of days in the bill, then you will get a per day consumption and if you're doing it.

Senthil Kumar Sundaramoorthy: you're trying to estimate for December 2000 this in for the month of December, then what you got to do is take that monthly.

Senthil Kumar Sundaramoorthy: daily consumption and multiply that by the number of days in the month that you're planning to estimate so so basically characterization will help you to actually give you, you know what is the.

Senthil Kumar Sundaramoorthy: It is the, it is the best representation of what is actually happening from energy intensity perspective, so that you account for these errors in your building a taste.

Senthil Kumar Sundaramoorthy: rate schedules and rate structures are created by utilities to differentiate different type of customers and rate schedules typically are.

Senthil Kumar Sundaramoorthy: You might see one day schedule for industrial one break schedule for commercial and one rate schedule for residential so it basically will differentiate the different type of customers.

Senthil Kumar Sundaramoorthy: And within braids get us there are range structures so rate structures are further segmented.

Senthil Kumar Sundaramoorthy: So, within a range schedule, for example in industrial schedule that might be different rate structures for large industrial for medium industrial and for small industrial.

Senthil Kumar Sundaramoorthy: So our typical you know rate structure is shown you're on the transportation charge.

Senthil Kumar Sundaramoorthy: You can see the customer charged the demand chart and the delivery charge not only you can be charged in block rates on your consumption, but what you have to keep in mind is you might be seeing a block rate structure in your transportation charges as well.

Senthil Kumar Sundaramoorthy: A classic example of.

Senthil Kumar Sundaramoorthy: On a schedule for industry, as you can see, they are charging in blocks.

Senthil Kumar Sundaramoorthy: And for the first \$3,000 you are charged at 25 cents, the next 2000 terms is charged at 22 cents and so on, so whenever you see a block restructure the way that you need to calculate your consumption is.

Senthil Kumar Sundaramoorthy: let's take for an example, if you are consuming 20,000 terms, though, and then you see let's take the same example of the commodity charge and ABC in the rate schedule now your first \$3,000 will be calculated or.

Senthil Kumar Sundaramoorthy: 25 cents per turn and the next to those in terms and you go all the way down and the rest of the 5000 terms will be calculated at 11 cents so whenever you see a block rate structure.

Senthil Kumar Sundaramoorthy: This is the way you need to calculate your total commodity chart if it's flat rate it simple because all.

Senthil Kumar Sundaramoorthy: Your consumption will be charged at one flat rate, but, most probably, if you are an industrial environment, you will be seeing a block rate structure, so I just want to give you guys an idea of how the commodity charge is being calculated when a blockade structures involved.

Senthil Kumar Sundaramoorthy: And that can be different rate structure strategies again flat pricing is simple all of your consumption is charged at one flat rate.

Senthil Kumar Sundaramoorthy: And that could be decreasing block rates, which means the more consumption, the rates might be lower, the more the unit cost might be lower.

Senthil Kumar Sundaramoorthy: So you will see, and the increasing blockade again vice versa, the more the consumption is the more your rates are, and then there is a floating strategy where the rates vary according to the market.

Senthil Kumar Sundaramoorthy: So you will probably see a decreasing block rate were in a market where you know you are more supply, but you know, there are not much consumption so you'll see a decrease in block rate.

Senthil Kumar Sundaramoorthy: And where you see increasing block rate is where, in a market where you see the supply is less, but there is more demand so utilities want you to manage your consumption, which is why they do the increasing corporate strategy.

Senthil Kumar Sundaramoorthy: There are several things you can look for any of those to identify opportunities the savings are relative and depends on the size of the facility and usage of natural gas.

Senthil Kumar Sundaramoorthy: You don't necessarily have to spend money to realize the savings, but with a little bit of planning and getting into a granular level analysis on your booth can help you achieve your savings i'm going to dig a little bit deeper on some of these high level.

Senthil Kumar Sundaramoorthy: opportunities that you can implement.

Senthil Kumar Sundaramoorthy: So if you own a deregulated market take advantage of it shop around for competitive pricing.

Senthil Kumar Sundaramoorthy: and see Walker who which market offers the best price and what makes sense for your for you as an organization rate structure is critical when looking into alternatives and Ryan, and try and recreate the bills to see if.

Senthil Kumar Sundaramoorthy: That is a real benefit, you can take multiple again there are multiple components that goes into the bills so compare the prices and recreate the bills and make sure that you know if you are getting the right benefits in Europe is getting into the nitty gritty details.

Senthil Kumar Sundaramoorthy: The biggest opportunity, along with shopping in and creating with suppliers, is to find the right purchasing contract.

Senthil Kumar Sundaramoorthy: Remember what I talked about the purchasing strategy Nymex index and flat rate so make sure what aligns well with your organization goals and calculate the contract price, instead of just looking at the market pricing and make sure that you choose a more favorable strategy.

Senthil Kumar Sundaramoorthy: And also, in a deregulated market sorry in an optimum rate selection is another strategy that you can see.

Senthil Kumar Sundaramoorthy: Your as a industry, you have changes happening all the time that might be operation changes, you might shift products, and you know your operation.

Senthil Kumar Sundaramoorthy: Ours can alter, so there are several different changes going on, however, make sure that changes are actually being captured by your utility what I mean by that is, if you are adding so let's say you are consuming.

Senthil Kumar Sundaramoorthy: 50,000 turns or 40,000 tons right, so you will be in a medium general service rate structure.

Senthil Kumar Sundaramoorthy: let's say if you add a line if you add another production unit right, you will be consuming more so you will go under the large general service, you might jump to a large end service which might end up.

Senthil Kumar Sundaramoorthy: Being a lot more favorable than medium general service right so make sure that you are confirming the changes in operations.

Senthil Kumar Sundaramoorthy: And you know now so that you know, again, there are different rates and for different rate schedules, make sure that you know you are choosing the right optimum rate structure for your facility and for your operations.

Senthil Kumar Sundaramoorthy: Depending on which state your facilities are located, you might be eligible for sales tax exemptions.

Senthil Kumar Sundaramoorthy: Usually, you need to do something called as a predominant use study, which will help you to prove that certain percentage of your usage goes into manufacturing your product your product.

Senthil Kumar Sundaramoorthy: In that case, you can apply for sales tax exemption and you might be eligible for partial sales tax or even you know fully.

Senthil Kumar Sundaramoorthy: The graph in the left the map and the Left indicates the tax rates, the blue or the state or the more the sales tax rate is and the one on the right.

Senthil Kumar Sundaramoorthy: You see, those are the states with sales tax exemptions, though, the ones highlighted in blue are the stage with state tax exemptions.

Senthil Kumar Sundaramoorthy: The one in green Bay do not have any sales tax the one highlighted in red, they do not hollow for any sales tax exemptions and you know you're still you know is having some exceptions, with some conditions apply, but if you are in a state that allows you for sales tax exemptions.

Senthil Kumar Sundaramoorthy: undergo a predominant case study you study and then we'll be able to save significant amount in your sales tax and the more blue or the state is the more amount of money, you can say, depending upon the type of customer, you are large or small or medium.

Senthil Kumar Sundaramoorthy: tracking your natural gas usage is another best practice, which will help you to identify you know anomalies in your operation.

Senthil Kumar Sundaramoorthy: Do he offers couple of tools that can help you to do a top down and bottom up approach, where you can see how much gas, you are getting and where is the gas going, and you know what documents are consuming.

Senthil Kumar Sundaramoorthy: Your what what is the usage from a system level, so you know you can identify the energy footprint tool is a tool that is free of cost for partners.

Senthil Kumar Sundaramoorthy: which will help you to identify any gaps in your usage.

Senthil Kumar Sundaramoorthy: Any gaps in your purchases usage and the Energy Performance indicator tool is another tool which will help you to identify.

Senthil Kumar Sundaramoorthy: What does your energy intensity and if you see if you are seeing any anomalies at the energy intensity level, and you know help you identify opportunities there as well.

Senthil Kumar Sundaramoorthy: There are other opportunities late payment fees, I can tell you it is so surprising to see.

Senthil Kumar Sundaramoorthy: Many people oversee these late payment fees and you know it can be pretty significant can be as much as 5% of your total natural gas bill so make sure that you know if you are seeing the Late Payment fee bring it to the attention of your.

Senthil Kumar Sundaramoorthy: administrative department and make sure that they fix that and credit usher and refunds is another opportunity.

Senthil Kumar Sundaramoorthy: For you guys, so what what happens is, if you are purchasing a facility, and if you are trying to establish a relationship with the utility that is supplying gas to that facility right they might ask you to.

Senthil Kumar Sundaramoorthy: Deposit a certain amount of money as accredited assurance, but many times is customers miss it, you know.

Senthil Kumar Sundaramoorthy: We usually don't refund that money they typically refund the money within six months, or one year period, or they can give you a credit in every month bill so make sure that you know, keep track of the pressure and refunds and talk to you a little itty to get it back.

Senthil Kumar Sundaramoorthy: and demand response program is again.

Senthil Kumar Sundaramoorthy: utilities credit you for curtailing and managing your consumption during peak demand periods.

Senthil Kumar Sundaramoorthy: For right now, very few States California new are some utilities in California and New York offer this demand response program, but it is rapidly expanding.

Senthil Kumar Sundaramoorthy: So to summarize it is the natural gas is being a predominant fuel industries, in fact, the usage is three times more than electricity and 10 times more than coal.

Senthil Kumar Sundaramoorthy: Understanding the individual competence of your bill and digging deeper on breaks can use instructors can help you identify opportunities.

Senthil Kumar Sundaramoorthy: No cost opportunities, in fact, and as we discuss using the right cost bed average or marginal costs can help reduce uncertainty in your savings and pay back calculations.

Senthil Kumar Sundaramoorthy: So what next steps you can do go go back to the basic go to your bills.

Senthil Kumar Sundaramoorthy: collect data on your usage collect data on you know production other variables that influence your usage.

Senthil Kumar Sundaramoorthy: and understand what rate structure, you are in what rate schedule, you are in and see what pricing strategy, you have with the you know.

Senthil Kumar Sundaramoorthy: If you're getting it from a marketer if you're in a deregulated state see what pricing opportunities that you can take care of take advantage of.

Senthil Kumar Sundaramoorthy: Now, and recreate the bills shop for marketers negotiate with them, and if you are going on a fixed strategy, make sure that you estimate your usage as close as possible.

Senthil Kumar Sundaramoorthy: And these are some of the savings that can you know or all by just recreating your bills and falling these cost saving strategies can result in significant savings.

Senthil Kumar Sundaramoorthy: If you have any questions again, I know that you know we covered a lot of information in a short period of time, but you can download the understanding your utility bills, I think it will show you the link very shortly.

Senthil Kumar Sundaramoorthy: So it has a lot more details, and if you have any questions, please reach out to your technical account managers, or you have my contact information, so you can reach out to me.

Senthil Kumar Sundaramoorthy: Thank you, can you.

Pete Langlois: Know appreciate that.

Pete Langlois: This, I find this stuff fascinating and scary and frustrating, and why does it have to be so complicated.

Pete Langlois: Thank you for moving on to this because I do want to leave up here for a few minutes, the contact information of both for for myself for anything as relates to.

Pete Langlois: Events manufacturing office that's me right there in the top central there in the middle and eli lilly mean for the better plans program as well.

Pete Langlois: I find the whole rate structure and pricing structure thing.

Pete Langlois: Both both fascinating but probably something that is just overlooked way too much here's my my question, maybe for a smaller manufacturer that has multiple facilities.

Pete Langlois: And, assuming that they're nearby either in the same.

Pete Langlois: distribution area, or what have you.

Pete Langlois: What they typically do one range structure for everything and pricing structure, when in fact it might be to their benefit to really dive down into the specifics of each location or is it something where you do normally set it up by location and then look at it, that they're.

Senthil Kumar Sundaramoorthy: Normally, normally, it is beneficial or it is actually they do it by location, it does not matter for your company to it depends on each.

Senthil Kumar Sundaramoorthy: location where your facilities being located and it works better, in your in customers favor, especially if they are in a market where you know.

Senthil Kumar Sundaramoorthy: There is over supply, but there is no demand, then they will have a much lower rate compared to a market where there is high demand.

Senthil Kumar Sundaramoorthy: And there is less supply so typically they will be, it will it will go for each facility, where they are located, and that is what is beneficial for customers as well.

Pete Langlois: And thank you, you mentioned something early on, about the maximum daily quantity or whatever, and I wasn't quite sure if that was.

Pete Langlois: Something a limiting factor in terms of how much they can actually get or it had been a number set because it was essentially similar to a demand charge and you would see for an electrical bill, can you elaborate on that one little from.

Senthil Kumar Sundaramoorthy: Right, so what it what it says speed is that is the at any given day that quantity is what your utility is obligated to send to you.

Senthil Kumar Sundaramoorthy: Anything more than that, they will probably send it right and they'll charge you in the future months.

Senthil Kumar Sundaramoorthy: But they don't have the right, are they don't have the data they are not obligated or you don't have the right to get more and it might be interrupted, because you know if there is any demand event, they want to address that even rather than supplying it to you.

Senthil Kumar Sundaramoorthy: If it makes sense.

Pete Langlois: Thank you, but it in one let's say it doesn't have the potentially massive impact on your bill as the demand charge would on your electric bill correct.

Senthil Kumar Sundaramoorthy: It can be significant because you know they are looking at the indifference upon what strategy, they are using to calculate the maximum daily quantity.

Senthil Kumar Sundaramoorthy: They can look as far as one year or they I mean they can look at the last year consumption or they can look as far as 36 months consumption, so if you had a demand event like two years back, that can still hit you okay so and.

Pete Langlois: you'll want to make sure.

Pete Langlois: Obviously, going well, you mentioned a lot about the marginal cost and that's that's really good to understand, but you also would want to avoid a spike the.

Pete Langlois: Exact set Max daily level you're and you're paying for that for up to three years.

Senthil Kumar Sundaramoorthy: Right right right and that is the whole concept of the demand response program that I was talking about, because you typically utilities want you to curtail your usage and manage your usage during demand events so getting into those programs will help you, you know same one evening.

Pete Langlois: Thank you for that we're coming right to the top of the hour, thank you for joining us so much, and thank you, the centennial as well as your collaborators on the work on this it over attentional Apps.

Pete Langlois: We appreciate the effort and, as he mentioned anybody, of course, is a better plans partner, please contact your technical account manager for additional help.

Pete Langlois: And if you're not a better plans partner, you might want to think about being one.

Pete Langlois: But we will certainly be responsive to any questions you have a good point you interaction and more resources.

Pete Langlois: free of charge just reach out to us the email addresses that you see we've alluded to the prior webinar last week about understanding your electricity bills, thank you for that, and you can catch all of the webinars.

Pete Langlois: recordings will be posted eventually once we have everything set up with the transcriptions on our better billing solution Center web pages and other.

Pete Langlois: Do eat better plans resources, the next one coming up in 167 hours for those of you here with us live.

Pete Langlois: Understanding your water bills Tuesday October 26 join us again, then, and then they'll be another presentation on Thursday the 28th.

Pete Langlois: to wrap up our energy awareness month activities, thank you for joining us thank you again for our speakers sent deal and eli levine and have a wonderful rest of your day.

Senthil Kumar Sundaramoorthy: Thank you all thank you appreciate it bigger.