Think it started. Welcome everybody. I'm very excited for this topic today. My name is Joe Anvik. I lead the carbon solutions in clean energy finance practice at Retech Advisors, a consulting firm here in the DC area and welcome to ULI Webinar and Renewable Energy Strategies for real estate. I think this is a very timely webinar given the massive uptick that we're seeing in deployment of both onsite and offsite renewable energy strategies and the commercial real estate space so very excited to have you all with us and to have three kind of market leading organizations. We're driving a lot of that progress on the call with us today as well, so if you go to the next slide, Speaking of those panelists again, my name's Joe and Vic at Retech Advisors. We've also got Alex from Prologis, Vishali from Kilroy, and Eric from Rosh. Great, I'm going to do a little bit of introduction first, and then we're gonna give these guys a chance to introduce themselves and their renewable energy journey. Let me get to that point so terms of agenda. I'll do maybe 10 minutes or a little less. A brief background on renewables in commercial real estate. There's been some very interesting and important trends that have been happening over the last couple of years. We'll do a brief round of speaker introductions. I'll have some structured question and answer with these folks and then we'll spend the bulk of the time on audience you and a so a couple of logistical things for you. All to
note. One is that this webinar is going to be recorded and a link's going to be sent around to everyone afterwards. It will be placed on ULI's knowledge Finder.

Please put your questions in the zoom Q&A function, not in the comments. Let me repeat that again. Put it in the zoom Q&A box, not the comments box, and we will get to those questions. If your question is for a particular speaker, please specify that person in your question. If you would my final notice just to apologize for my voice, I'm coming off a particularly nasty cold, so I feel a lot better than I sound, but if my voice cracks a couple of times, my apologies.

So if you go to the next slide here, the thing that's bringing us all together today is the release of the renewable energy strategies for real estate paper from ULI, it was a report that I had the great pleasure of reviewing as a technical reviewer and I think is gonna be a great resource for the market as the commercial real estate space looks to amplify and intensify its deployment of renewable energy in the fullest sense. So it's based on interviews with industry experts and with practitioners and pulls in lots of other resources from. Many other organizations. It's really the first report of its kind, though at least the first one that I've seen that specifically and comprehensively addresses how to tackle renewable energy strategies in commercial real estate. And the goal is ultimately to be very practical and help practitioners understand the business case for renewables and then execute and deploy at scale. So it provides some strategies around best practices. It provides some great kind of definitions and background information for those who are just getting started. Some project profiles on how to initiate a renewable energy strategy both for on site and off-site.

Solutions which we'll talk about in a minute and you
can access it at that URL there. So please check it out. It's available now.

If we go to the next slide, I'm only going to talk for a little bit. I want this to be mostly discussion, but a couple of basic concepts I want to introduce so that we're all kind of speaking the same language and to help folks who are kind of new to this space start to get up to speed. So let's talk a little bit about when we say renewable energy and commercial real estate. What do we really mean? What are the different deployment options that are available for renewables? I love this chart from resource energy.

I can't kind of credit for this, but resource has a really great chart here that kind of shows not only the different renewable energy. Resource feels they how they compare to each other in terms of their greenness. Now we can debate this label. This might be a good topic for discussion about whether we agree with resource on these points or not, but I'm not necessarily saying we all endorse this, but I think it's an interesting way to think about the market. Basically, on the least green side of the equation you have just buying power from the grid and you have buying carbon offsets. Then you have buying regional or state specific renewable energy credits where you're buying them from your local region, or you're buying them from the state, for example, then you have offsite renewables from specific generations sources where you were buying power or buying the Recs from a named source that you can sort of identify. And finally the most green option is simply doing on site renewables, putting solar on your roof, doing geothermal etcetera, so I think that's a good kind of taxonomical way to think about all the options here. You're going to hear the panelists today speak on a variety of these different options down at
There are a couple of key concepts to be aware of is you're gonna hear us refer to racks or emacs a lot, so those are essentially interchangeable terms. Recs are renewable energy certificates that are sort of give you the right to claim that you're producing or consuming green power when a MW hour of green power is generated. EECS is the more international terms, stands for energy attributes certificates, but Rex is what they're typically called in the US. One important concept when it comes to racks is that some racks can be bundled and others are unbundled. And we mean by that. If they are bundled, they are sold alongside the underlying power that they represent, so you were buying both kilowatt hours and the green attributes of those kilowatt hours if they are unbundled, you are buying them separately, so you may still buy power from your utility, but you may then go buy Recs from somewhere else. You're not actually buying power, you're just buying the environmental attributes associated with that power. So that's an important definitional thing to get clear before we start going a little bit more into what actually are the on site and offsite. Renewable energy implementation options. But when it comes to on site, there's a variety of ways to do renewable, solar, and otherwise. You can simply own the system directly. You can at least your roof, which is most common for solar to a third party who owns and operates the system. You can do a power purchase agreement where a third party owns the system and sells the power back to you. You can finance it through traditional means like loans and leases, and then there's a variety of community solar programs that are available to be both a host and a consumer of the power from community solar. Which we'll talk about a little bit more later, so there's a wide range of finance and internship options, all with their own pros and cons. And then in terms of offsite options. So this is cases where you're trying to invest in and or procure renewable energy from locations that are not on the site of the property options.
there include virtual power purchase agreements, which is similar to a PPA but more of a financial arrangement where you're essentially agreeing to get the Recs from a project that is offsite rather than on site you can make. Direct investments, direct equity investments in offsite renewables and buying a piece of a solar farm or a wind farm, for example. You can utilize a variety of utility green power options in both regulated and deregulated markets where you can just shift your utility contract over to green power and then of course buying Emacs or Rex would be considered an off-site option as well because those are coming from non on site sources. Basically I know that was a bit of a Tour de force but we're going to be throwing around a lot of terminology here today and I just wanted to give you some structure to think about that. And hopefully this will help you put some of the comments that you see from the panelists into the proper boxes. As we discussed this. And if we go to my final introductory slide, we are going to be discussing primarily solar energy today. The report from UI as well as a lot of the strategies that we're going to be talking about apply beyond solar as well. They can work for wind or geothermal, or building integrated photovoltaics. Things of that nature, but simply by virtue of most of the panelists having primarily focused on solar, we are also going to focus on solar today. So I just want to name that up front when it comes to solar. There are two important. If there's if you know sort of nothing else about where the solar industry is headed. Right now. There's two important things to know from the commercial real estate perspective. One is that the costs of solar energy have dramatically declined over the last decade, so this is a great chart that I often referenced from
the National Renewable Energy Laboratory that shows the cost in dollars per Watt for a 200 kilowatt commercial solar system. As you can see, the cost has come down to about 1/3 of what it was in 20 and 2010. The other interesting thing to see here if you can. That is that the majority of costs for installing solar are now soft costs, so hard costs are the actual equipment, the panels and the inverters and all the physical plant and the soft costs are everything else. So labor permitting financing all the other associated kind of rigore role that goes into installing a solar project. So now soft cost represents the majority of costs, which means that business model, innovation and finding more streamlined and more efficient ways to deploy solar. It's sort of more important than ever to making the economics work. And then on the right hand side is a great chart from the solar Energy Industries Association showing the growth. The cumulative growth in solar deployment in the US economy over the last few years. As you can see, the growth has been massive. I think it's something like a 40% year over year growth rate for the past decade, which is pretty rare to see that for any economic sector, or certainly for any energy generation sector and the growth in commercial, which is what we're primarily interested in. Residential and commercial has been right up there with utilities. Scale, it has been a little bit spotty on a year over year basis, but the general trend has clearly been upward. So the take away here is if perhaps you looked at solar 345 years ago and decided it wasn't right for you for whatever reason, the combination of the cost coming down, deployment rates going up, and all the various financing and ownership models that are now available may mean it's time to revisit now because a lot has changed in the last half decade. When it comes
to the economic and operational viability of solar and other renewables.

In commercial real estate.

Hopefully that gives a bit of background to set the stage for us as we get into the conversation here. That is all I had. So we're gonna think we can pull the slides down and go ahead and start with Q&A. So let's just as our first question.

If you could kind of briefly introduce yourself, just maybe a minute or so about who you are, who your organization is, what kinds of assets that you operate, and then what your journey has been in terms of renewable energy so far, and we can go from there. So let's start with Alex and then Vishali. And then Eric.

Great thanks Joe. Good morning and good afternoon to everybody.

Glad to be here. Appreciate it from you. I lost you lost Uli side Prologis is a owner of logistics real estate globally. We have approximately a billion square feet across almost 5000 customers and 11,000 units where our customers rent space for supply chains.

Just the cold storage, uh, you know, the goods that go through warehouses and my role within the organization is go through warehouses and my role within the organization is on our global energy team where we're focused on helping our building customers access renewables. Electrify their facilities for future Automation, EV and electric vehicle adoption and then at the same time look to reduce load anywhere we can through LED lights.

Or other retrofits? Uh so their global energy team is really intended to be a full stop solution for our customers to to access renewables. And then at the same time assist our real estate in developing solar storage and other electrified infrastructure.

Hi good morning, good afternoon. I'm happy to be here today. Thanks for having me. My name is Vaishali sampad.

I'm the director of sustainability and corporate social responsibility for Kilroy Realty. Kilroy is a reach where a developer, owner and operator of primarily commercial office spaces and life science
spaces with the presence in Seattle, Bellevue, Los Angeles, San Francisco, San Diego and now Austin, TX. So we're based solely.
The United States. We have about 15 million square feet of stabilized assets or stabilized portfolio and about eight and a half million square feet in the development pipeline. So a lot of activity going on there. We are really deeply committed to sustainability, and in 2018 we actually became carbon neutral operating of our scope one and scope 2 emissions by the end of 2020. And we did this through a combination of energy efficiency reductions on site. Renewable energy offsite renewable energy rec purchases and carbon offsets so I know we're going to get into that later today and I'm happy to discuss that with you guys. Live Australian team have touched on just about everything in that list of options that, uh, that I showed you guys really so excited. Excited to dive in and learn more about how you went about prioritizing that and then Eric class. But not least. Yeah, thank you. So I'm Eric tolden. I'm the senior director of ESG for Washery where our primarily and multifamily Reit's, located in the Mid Atlantic here in DC and we have assets in Virginia, Maryland, DC as well as in the Southeast. We were a diversified rate as of two to three years ago. And we've actually made that transition over to a more of a pureplay multifamily. I also made that transition because I've been here for about 7 weeks before Wash Tree I was with Cushman and Wakefield with energy and sustainability for the continent of the US. So excited to be here and talk about washery and experiences with solar. Alright, sounds good. I guess that Rockstar panel excited to have you guys with us. Let's start from the basics here. So one of the most common questions that we hear from commercial real estate owners is where do I get started? How do I? How do I go about narrowing down the opportunity in My Portfolio? And let's start
with on site renewables. Just to narrow us even further.
So all of you folks have done some amount of
on site renewable energy on your properties. How did you
go about sort of screening your portfolio? Was there a
way that you whittled down the property list based on
location?
The building type or leasing arrangement and what was your
logic and approach there? Whoever would like to jump in
and feel free?
I can go ahead and start at so we are
generating about 3 1/2 percent of our total energy
consumption
is coming from on site renewable so that kind of
tells you that it's always. It's a little bit of
a challenge for us to find it in our portfolio.
I can tell you which buildings don't work out for
us. It's our high-rise buildings. That's that one's really been
difficult for us because we don't have the real estate
and technology isn't there and doesn't really pencil out for
us to have on site solar. We really look at
kind of larger.
Campuses we have a lot of solar in in our
San Diego properties where we have campuses, lots of roof
space and carports and surface parking so you know you
have that ability to put that there and then in
sort of our suburban markets in LA and San Francisco
as well. We bring we have an energy consultant who
we bring on to help do our feasibility study. So
we've given them whole portfolios and regions to do studies
and that's kind of how our approach to it has
been and.
You know that is with our sort of existing assets.
Our new development. We do. We have a policy of
doing feasibility study for all new development projects and the
majority of them do have.
Some amount of solar.
And Michael, you mentioned that high rises tend to be
more challenging. You talked a bit more about why is
it the? Is it the roof space to to building
area ratio essentially?
Yeah, exactly that. I mean, you have sort of large
buildings, right? These are large, kind of hundreds of thousands of square feet, but with not a lot of real estate. I know that there is that you had mentioned earlier. The building integrated photovoltaic cells, something we haven't explored, kind of letting others explore that. That technology first, but.

In terms of the roof space, there it's there's roof space, but then also the the you know there's a lot of buildings around you so you don't have a lot of solar right. You've got a lot of the shading, so that kind of also impacts your ability to generate that power.

Yeah, to build officially we have some more mid rise high-rise assets in DC. So really big factor for us as well as my experience back in the day as geography and what I mean geography. Not only how much sun do you get, but what's the legislation and what's the market like? DC's got a really strong solar rec market, so it makes it so that you know even smaller systems become pencil out financially a lot easier. You have a very much a a legislative.

Environment which supports solar through a lot of different means and so when we look at different assets, especially as we expand into the Southeast, we're looking at not only the type of building with the type of market we're going into to understand, does this pencil out and a lot of solar consultants out there can really easily help you. Kind of whittle down if you have a very lengthy or long list of buildings. What markets are probably going to be more favorable if, especially if you have very similar buildings in various?

Markets Massachusetts, New Jersey DC. These are all really top markets when it comes to solar. It just gets a little harder when you go out to places like Texas where there's lots of sun, lots of space, lots of roof, but lots of cheap energy too. And so it makes it a lot a lot harder to pencil out financially.

And that that is actually true just to to build
on that. That's why it is, you know, favorable in markets like San Diego where we do see the energy costs are a lot higher.

Yeah, energy costs matter a lot and local as as you touched on Eric, local rec prices are widely varying. In the US, CDC is sort of. I don't want to say notorious because it's great for people doing solar, but it has like notoriously high local SRC prices, which makes really defines the economics of doing solar projects in DC. If you can say if you can sell those racks into the local market. Same thing in lots of other places as well that have kind of aggressive renewable energy portfolio standards. So there's a huge amount of regional variation. And Alex, how about how about you all in terms of selecting? Screening projects yeah, all of the same. Uh, you know, challenges and considerations that have been noted. Certainly utility policy. We've seen huge variations in the willingness of utilities to participate in net metering, which really allows us to take advantage of the renewable value throughout the day and then at the same time.

Biggest limitation is actually physical. The life of the roof. What material is that roof?

Does it have the structural capacity to allow for this solar to be situated there for 15 or 20 years? And so we spend a lot of time really mining our database of properties looking at those physical attributes and then trying to also tie that to the feeder or the substation in which a project may interconnect since we are starting to see grids.

You know very much at full utilization and that ability to back feed and leverage the net metering becoming more and more of a challenge for just getting projects approved. So our our actual hit rate on approvals from utilities has been decreasing as they have been running out of the circuit capacity in a localized area.

Got it interesting.

I guess while we're on the topic of local markets
and I should remind the audience again please, I see some good questions coming in via Q&A. We're gonna get to those in just a second, but keep them keep them coming and again, please specify the panelists if your questions for a particular person. But while we're on the topic of local markets and kind of making the economics work locally, one concept that's come up a bit is rec arbitrage. So for those who aren't familiar with the term, it's a lot fancier than it sounds fancier than it actually is, but it's basically if you were generating renewable energy.

Italy solar energy in a local market, you can sell those wrecks that that power generates into the local market where the prices are higher and then replace those wrecks with national Recs or cheaper wrecks from some other place. Do you still get the economic benefit of selling them, but you still get to claim that you're consuming green power or producing green power which the Rex enable you to do so for those of you that have experience with record vertrage, tell us about that. How did you go about making that decision to sell the racks and buy other Recs rather than simply retiring the reps that you produced?

That's a good question, and just I mean for a little clarification, if you look at groups like Energy Star. If you do perform rec arbitrage, you kind of, you still get the avoided emissions to your credit, but you lose your location based emissions credit, so you can't and grasp some folks might be familiar with location based market based. You can still claim market based emissions avoidance, but you lose your location because you sold the way the rights and you bought.

Right, so a great example is here in DC. The rec market is extremely strong and wrecks are worth a lot more than maybe when you're source them nationally, so a lot of folks like including Washery. Well, we're going to sell our Recs for our solar installations or our multifamily properties because of that strong rec market actually helps pencil out the finances of deploying solar on the roof. You have the opportunity to then go and buy
a cheaper rec from, say, West Texas so that you still can have a wreck with that.

Power generation, however, you sold that location based rack and so a lot of owners also get confused with this because they say, well, you know technically on, you know in Greg's been programs like that my I should have zero emissions while you actually sold your emissions right away and you bought various ones. And so the difference between a market based emission which you can buy with a local or national rec. And the difference between a location based emissions which can only be on site really is really is key. So we looked at it. Financially, to help us pencil out the investment and the strength of the rec market. And then we report out as such. So when we do our reporting out we we have to report out both our market based and our location based emissions and we want to make sure there's a clear difference between those two because one uses Rex and the other uses on site renewable energy.

Yeah, and I you know to dig in a bit. For a lot, just really doesn't have a lot of energy consumption. Despite this large footprint, our customers maintain their utility accounts. They have a direct relationship to purchase that energy, and so when making ref decisions. It is very much a consultative decision with our customers to say what are your carbon accounting goals? How are you classifying the energy that you're buying from the building and we've seen a real spectrum from customers saying we want the least expensive power possible. Sell the rec so that we can subsidize the solar power and replace it with a like renewable attribute a like rec. At the same time, customers have said.

No, thank you. We are interested in having a bundled wreck directly associated with the solar that you're producing at the site. And so we make those decisions on a case by
Certainly in New Jersey, where the rec market has been strong and we have a large presence. We've seen the ability to dramatically subsidize solar power through rec arbitrage. And we've been in a unique position where some of our customers on in other markets have not been interested in their Recs and actually been able to use Recs between projects to help solve customer pain points. And you know, essentially create an internal market to deliver wrecks where an end customer and end user can can claim them, so it's really not a tried and true. We always take one. Approach, uh, it really comes down to corporate policy of our customers and how they wanna count those renewable Attributes. Interesting, it's quick, follow up. Have you noticed any patterns among customers like are there certain sectors that are more interested in a more aggressive rec strategy versus others or kind of any? Any way you can sort of breakdown that market meaningfully? Yeah, you know we we have some of the largest customers in the world is our in our footprint. At the same time, the vast majority of our our customers are actually local and regional companies that are trying to find a path to. Net zero or as close to their version of Net zero as possible and a lot of this is mandated by their supplier relationships so. The large organizations are having a very positive downward effect on these more local and regional organizations. To say we do expect you to meet certain standards. We are seeing those standards being pretty lenient knowing that, uh, in a lot of the country, it's not the easiest to access renewables and so their goal is to typically find ways just to have an on-site solar presence. As opposed to. Really getting into the accounting piece we're sitting with just a lot of the smaller organizations. Step one is access solar and then step two will be quantify that and
begin to report out. So we expect here very soon that every customer in our our portfolio is going to have some need for renewable attributes of some kind. We're going to do everything we can to reduce load. As I mentioned earlier, reduce load in these facilities. Uh, just through smart efficiency measures. But then for the balance to the extent we can do on site or offsite renewables first, that will be the priority. And then from there really wrecks to fill in the gaps, and while that is an arbitrage, it may be the only way to really access renewables for some customers in parts of the country where on site or even off site renewable access is. Of a pretty far away off. Got it OK, that's helpful and I guess while we're on the topic of tenants and customers here, maybe for Eric and Vishali. So to what extent have you engaged tenants in your solar or on site renewable energy strategy? I mean, do you have tenants directly participating in purchasing renewables? You talk about it as part of your kind of engagement strategy. Kind of how do tenants factor in or not factor in here? You want to go first for Shelly?

Sure, no problem. Yeah, so for us? Well I guess I should preface this by saying that our structure is that we have a PA so we lease out the space. You know the the rooftops and then purchase the power from the developer to sell back to our tenant. So that's kind of our structure. So with that being said, you know we have found that developers are more favorable to entering into these agreements. When we, the landlord, are responsible for the utility bills, so we tend to focus on buildings where we are, you know, the owner of the utility bills and these tend to be typically multi tenant buildings, and so in that in those cases I think there's probably less tenant engagement. I think we always are cognizant of the agreements being at least break even if not favorable in terms of the cost of utilities, right? We don't want to,
Like our tenants, we're not trying to spike our utilities, and that's usually how they play out for us, especially in California. We have some cases where we have, uh, you know, a single tenant in kind of a modified gross building, meaning that they kind of manage most of the operations that we pay the utility bills, and so with those tenants, we're talking to one of them right now. We will be responsible for entering into the agreement for the PA, but then we will be able to retire those wrecks. And because we keep the attributes for the rec for the the generation and then that will they'll be able to flow that into their ad. Station for that building. Gadget and quick follow up. They just came in from the audience that I think is a really good question, which is since you guys are a read and you're the owner of the system. Under these PA's, did you form it? Did you form a tears or a taxable REIT subsidiary in order to capture the tax benefits? Or how does that work from a tax perspective? Yeah, so no. We are actually not the owner at all, so that's yeah, so there's a developer who, sorry I should have been more clear. The reason we don't own it is because we're a week, so it doesn't pencil out. We don't get the tax benefits. I don't think the current TR that we have doesn't have the appetite for solar. Something that we've talked about maybe in the future, but not at them at the moment, and so we don't the the solar. And Eric about you guys in terms of tenant engagement. Yeah, so as since we're mostly a residential owner, obviously we're going through construction right now. So beyond just after the site or the panels are completed, we're going through resident engagement because we have a lot of questions around what is going on with our roof. Why are there cranes in the middle of the city? Why is there noise? So a lot of our property
management is working with our residents to understand and notify residents that this is what is occurring is what's happening.

The sites that we opted for solar are.

Basically whole building metering with tenant build back and so we have that option to tie it in and reduce our energy load even though we're selling the wrecks and one of the the.

Positives of that is with Energy Star. For instance, with your Energy Star score, your Energy Star score is based off of your source energy. Use intensity, not your site's energy use intensity. So basically it's by installing installing the solar. We reduce our source EUI because we're reducing that transmission loss. That generation related energy use. Even though our site energy use intensity will remain unchanged because it's still how much energy our site uses. So our energy store star score.

Is expected to go up upon completion of this solar projects, which is really great, especially here in DC because of local legislation. Again, I bring this one up. DC has the building energy performance standards, so which directly correlate today with Energy Star scores? And so we have to hit some minimums when it comes to Energy Star performance, and so we need to get our Energy Star scores up and continuously going up over the next. You know, five 10-15 years to make sure we're always in compliance.

With DC Deps and one great way of doing that, even though we are essentially selling off the location based emissions rights, we are reducing our site source EUI by directly using the energy produced by the panels in our buildings.

Got it.

Got it helpful.

So it sounds like 7 weeks on the job you're already getting questions like why are there cranes on my building?

Yeah, yes, I've already had calls about.
Being the life of an issue professional.

Well, we have so many good questions coming in. Let's just go straight to audience Q&A and spend the last 25 minutes on that. Thanks for the questions. Keep them coming. One that I think is interesting for anybody who'd like to take it. So the questions around how much of a building's consumption can you reasonably offset through on site renewables and solar in particular? I know there's a lot of conditionals on that question. Depends on the building type and the consumption profile, and lots of other things. But one person was basically saying when they looked at this, they've seen that solar is an essentially a fraction of the actual.

Consumption of the building. What has been your experience in terms of how much you're able to offset and what some of the factors are that influence that?

Yeah, we we spent a lot of time thinking about sizing especially. As there are so many changes occurring with automation, the impact of LED we have on site just electrification of vehicles. And so where do you? Where do you land when it comes to on site solar and our focus tends to be inside the four walls? At least at this point inside the four walls and taking a somewhat conservative view on what our average consumption in the warehouse is, after looking at.

Hundreds of warehouses. We've determined kind of an average consumption profile and then looking at what our customers 80% offset would be and how that reconciles compared to the average. Traditionally with these behind the meter systems solving on site load, we are long on roof space, typically only using about. 25 to 30% of my roof because the consumption is actually not great enough to even warrant using the full roof, so that limitation is not present. If anything we run up against not enough consumption to really make a project worthwhile, and we've been doing everything we can
to think about how to make our smallest system size that we cut off even smaller. So we're looking at even sub 300 kW systems now to be able to assemble.

Batches of those uh, to help customers with lower uh consumption in their facility. Because we, we believe everybody should have every customer of ours should have access to renewables on site if they're in a favorable state where the policy makes sense and the roof can support it so.

That's totally the opposite. In the last touch facility for us, where we're in a urban environment more akin to, you know the the other portfolios we're talking about today where we are light on roof space. And maybe there's a lot of equipment on those roofs, and it's definitely been a challenge we see. On the flip side of needing to think through creative ways to.

Maximize the solar efficiency through larger panels on site. Tends to be our approach.

Gotcha now Michael, I'm guessing that you don't have the problem of too much roof. Not enough consumption at given your asset portfolio. So how does that look from your perspective?

Yeah, absolutely. I mean, I definitely say it's kind of a mixed bag based on use type and you know, as Alex mentioned, just you know footprint and so you know where we're seeing kind of the least amount of consumption is in our life science. Basis so we are, you know, we're especially in our new development. We a lot of the new development projects are life, science and so consumption. Your UI is just a lot higher than they are in office spaces, and we're still putting solar there. That's really driven a lot to by our commitment to being 100% lead. Golden lead platinum certified of all of our new developments, which is tied to executive compensation. And we tend to need solar to to get to that platinum level. But the consumption itself is probably. Close to I think 7 to 10% depending on the building. I'm definitely see a lot more.

Solar consumption in kind of our office spaces, especially down
in San Diego where we have like carports for miles
and we just, you know, can can generate a lot
of solar.
Yeah for us. I mean we have right now solar
in DC, you know again, mid high-rise buildings. Not a
lot of roof space. I would say you really also
want to consider your total energy use and spend at
your building. So for instance, in both of our buildings
we have electricity and natural gas, and so you know
our electricity generated by solar panels might make up 20
to 25% of our electricity use. But it makes up
a fraction of that of our total.
Energy use because we're not factoring in the heating load
provided by natural gas, and so it really does vary
depending on you know. Obviously the.
The location and the size of the roof and your
availability of panels and how much roof space are you
willing to lose? As for lack of a better word.
But I I would agree. You know some 20%.
You know, probably closer in the 10s if that.
Got it interesting difference. Just among this group, much
less
than the broader broader market, so question more of a
broad question, I think is what tools or resources have
you all found to be most useful in evaluating renewables
for your portfolios? And I would extend that question to
be both on site and off-site options. Are there particular
papers or consultants or feasibility tools or other frameworks
that
have been most useful for you that you would recommend?
Do to other similar firms.
This is for procuring renewables.
This can be for either. Do you know identifying and
developing on site renewables or for or for procurement off-
site,
whichever? Whichever you'd like to focus on, but just
generally
any tools that you've found useful.
Yeah, I mean, we're not. We're not solar experts, we're
not renewable energy experts, so we have a consultant that
we bring on board to help us kind of coordinate
the feasibility studies. They got to bid for us. They
help us negotiate contracts along with our lawyers, so that's
been really helpful for us to make sure that we get a favorable deal.
Consultants.
Sorry, sorry.
Sorry, we also use consultants when it comes to. I mean, energy markets are extremely complex, especially when you gauge out nationally and so by using energy market professional who does this day in day out and also has relationships with various developers and can help go out to bid when it comes to developing and construction services can help coordinate with rec sales or rec procurement? I mean the rec markets.
Not necessarily something where I can just go out and buy Rex straight from a wind farm generator. Generally you have to use a third party broker or consultant and there's a lot of great ones out there that can source Rex nationally or locally. And a lot of them can also help with on site deployment.
Yeah, one of our biggest challenges is actually accessing our customer utility data. We don't hold the meter utilities have a direct relationship with their utility account holder, and so some of the green button tools, the API tools that help us access.
Almost real time meter data and and then we're able to refresh that on a pretty regular interval is incredibly helpful through the sizing and development process, but then also through operations as we look to just reconcile.
Utility bills and make sure that our our system performance is reflecting accurately on our customers utility bill. We rely very heavily on that direct utility API connection to the utility.
Got it.
That's great, helpful, and I see a couple of folks asking for specific consultant recommendations, so maybe we can. Maybe we can follow up with those folks afterwards, and if you guys have a particular vendors you'd like to recommend, but the so a question around appraisals and valuations. So how are you guys seeing the presence or the lack
of solar other renewables on site affecting property valuations?

Market.

Alex yeah.

If you want.

We recently began exploring with appraisers, actually. What are market roof rents throughout the country? And we we actually were not able to establish any comp database. So you know, first and foremost I think the jury is really out when it comes to. What our market cash flows that a property owner could expect. You know rental rates even for parking spaces or trailer drops are really well established and documented and known. Roof rents and even rents associated with standalone battery storage assets are still bit, you know, in their infancy and not cataloged so you also have the the the sum of conundrum of the terminal. This of these renewable assets, is it a 20 or 25 year system? But if it is, is your roof going to last that long so all of these factors really compound to taking up kind of a conservative view on the NOI from the cash flow stream to the building and then using conservative cap rates in the same way we would cap a building based on and Ali, you have to just discount it. But it's an area that we are excited to be collaborating with. The valuations and appraiser community. Just knowing that more and more buildings will have these renewable assets on site. There's, there's a lot of work to be done, and we're excited to see more of a market establish so that those prices are are better defined. We've also seen you know through the SPAC markets, owners of. Renewable assets on who are publicly traded or or who have IPO seeing massive valuations so we're always stuck between. What would Wall Street believe the valuation of this asset cash flow to be an enterprise value versus just it's another rental stream at your building? How would an appraiser view it? Purely from the standpoint of building
so? Complicated, interesting. Yeah, Eric. How about you, yeah, I mean, I mean, Alex kind of nailed it like it is complicated. Back when I was at Cushman we couldn't get a good solid answer on price per square foot for a roof rental space on solar because we had a lot of developers approaching industrial owners saying hey, I want to, you know, install solar on your roof and you know I'll pay you X amount per square foot and a lot of those owners were said. Was that good? Is that bad? I don't you know where? Where were the comps? So it is is something where I feel like increasingly people are getting smarter about it and more knowledge and data points are coming out about it and.

For folks that that own the panels, I mean we have to think about you know our disposition of these assets. If we do in the future, you know what's the value to that potential buyer. And I think that really goes back to like everything else in the US, being really regionally specific. So in DC, the value of these panels you know is intrinsic and it is linked to the DC legislation. And what the rec values are and how that's going to probably go down with time. You know, over the next 10 years, 20 years and but being able to pass that that on to the buyer as a potential revenue stream as well as avoiding having to purchase an increasingly more expensive electricity from the grid.

And as well as, secondly, the avoidance of penalties coming out by these local municipalities. So with New York and local on 97 with DC BEPS with Boston's hairdo increasingly, municipalities are setting performance standards for all buildings, whether they're residential, industrial or commercial office. And being able to avoid penalties or fines by being, you know, a lower emitter or a good energy performer whichever 1.

It really brings value to that asset because now if
we, you know sell a building, we can say well
we're compliant with DC BEPS you know through X date
because of our solar generation and our reduced energy usage
and all sorts of solutions, whereas building why may just have to owners are becoming more buyers and more savvy about. Well, you know in 10 years is this victim going to be a building to be a victim of what we call stranding like you are now outside of the realm? Or the bounds of. Allowed limits by the legislation you're being fined. You're not meeting you, know the Paris Accords 1 1/2 degree or two degree outlook. So you're building is becoming more stranded in this increasingly carbon free economy. Yeah, there's really anything from.

On that front.

100% Echo what Alex and Eric were saying. I have even asked kind of our finance team what the value of solar is or the value of our renewable energy systems are and they don't really haven't. We haven't really done the exercise to get a clear answer. For that I would just say though as you know, having that we don't own the solar. You know, as Eric has said, you really need to think about your disposition so it's important. To understand your contracts and make sure that they don't have a negative impact on your ability to sell your buildings. We've had seen instances where developers might try to put in clauses where they might be able to interfere with your sale of your building, so those kinds of things are really important to be cognizant of, but everything else I you know, I think we echo it depends on the region. It depends on. You know your risk of not having the solar panels and and being, you know, getting penalized in the future. So all of those come into play for play for us as well. Speaking of a little bit about pain points and risks, so when it comes to deploying renewables and maybe we can focus on on site first, but I'm curious to hear about offsite as well. What have been your biggest
barriers like if you could wave a magic wand and
change one thing about the world or about policy or
about your organization if you want to go there. If
you could change one thing that would enable you to
deploy renewables and faster rates, what would that thing be
and why is it a pain point?
I don't know like I don't know if this is
where this is available. I don't pretty sure it's not
available in California, it's more of community solar.
So having that availability I think would help us to
deploy it faster. We are we. Do you know our
utilities are also have their own net zero goals, so
that's helping us. The grid is getting cleaner faster, so
that helps us meet our renewable energy goals, but that's,
you know, a long time out and so having community
solar I think would.
The Magic wand I would.
Waive
and that was that was my number one as well.
Yeah, I would say.
It's a community. Solar allows scale, allows you to solve
your on site problems. If if our on site opportunities,
I should say with commercial anchor customers. But then
you're
also a part of the community and helping support access
to renewables for, you know, residential and nonprofit off
takers,
which is phenomenal and that really helps scale.
I mean just in line I couldn't agree more in
line with that.
Legislation is the biggest pain point. That's the biggest hurdle
of deploying renewable Florida was on the brink of phasing
out net metering before Disantis just vetoed it. So I
mean legislation can can make you renewables thrive. It can
also kill it. And so.
Legislation is is critical to making it be economically viable
and feasible, as well as just, you know, incentivizing it.
So providing those opportunities through legislation will
essentially will be
really key and we couldn't think about it even more
with the SEC rolling out. You know the fact that
we're going to be reporting out greenhouse gas emissions.
We’re going to be reporting out climate change impacts. On our SEC documents like so. One of the things we always struggle with and not to go off on a tangent here is the utility companies. We still struggle on getting how much data we can get out of utility companies at this point, let alone fighting. You know legislation to allow or make utility. Companies provide us that data so that we can properly report out to the SEC our greenhouse gas emissions. So legislation is my number one. That's the one thing that that holds us up or can really accelerate us. Was that? And and just to add 1 quick thing, we have seen some favorable legislation around solar or solar readiness on sites requiring that new buildings have solar. Unfortunately, we've also encountered in a lot of those same situations the utility grid can't actually support anymore solar, so grid modernization is critical and policy to support the utilities modernizing to accommodate more renewables. On the grid is is key for this all to work. Alright, lost my mute button as I was immersed in Q&A questions, so we kind of touched on this already or several of you did, but I wanna I wanna double down on it a bit and a great question here. Do you see a future where real estate companies can become a solution provider for their tenants to fulfill their ESG commitments? To what extent do you see this as a value add or a new business opportunity? And I know you all are engaging with tenants in different ways, but kind of in the say, 510 years from now where we have this market matures. Our programs mature. What's the sort of culmination of that? How can we be solutions providers to our tenants on their ESG commitments? Yes, so that's really a core function of our our
day-to-day and and we were seeing a lot of issues
with long term PA's and short term leases and and
the mismatch associated there and decided just to take an
ownership role in solar and so our core product is
solar smart focused on helping our building customers
access on
site renewables. But we expect.
This.
Year to also begin supporting our customers with accessing
off-site
renewables.
As well as, uh, renewable attributes and offsets because it
is not easy for a lot of these smaller organizations
who are in a local regional place to find the
best providers at the best price. And so leveraging our
scale and our commitment to this is our goal.
Interesting, so a bit of a bit of a procurement.
Yeah, leveraging our best practices from our ESG team and
how they manage Prologis we will. We will be providing
that to our customers.
Got it about Kilroy and washy.
Yeah, I mean we are, you know, as building owners
we're on the kind of upstream of their value chain
of our tenants and our tenants. Have you know they're
they're come from a lot of the media and the
tech sectors? They have their own carbon neutrality goals
and
they really drive us to make the decisions that we
make to help them meet their goals. You know, we
have, as I mentioned earlier, we are carbonates, operating of
our scope one and scope 2 emissions. So this is
all of our, you know, electricity and gas that's paid
for bike.
Away, but these are in, you know it covers all
the buildings that our tenants are are located and so
this helps them to meet their goals and they're asking
us where you know where our utility is coming from
and you know, just making sure that they are, you
know carpentry, operating of their scope 3.
So.

I'm curious to hear if you are you sort of proactively messaging that to your tenants. They're gonna engagement strategy,

or are you? Or is it kind of a reactive

responsive thing if they ask and talk more?

About no, yeah, I think it's.

When we became when we made the commitment publicly, we

sent a message out to our tenants. We send memos out to our tenants a couple times a year, kind of giving them updates on our sustainability programs and where

we are. And our SG and and our goals and accomplishments. And so we did. Sort of we market this to the tenants in our multi tenant in multi tenant buildings because this doesn't cover those triple net buildings where

the the tenants pay the bills and then yeah as

they we get a lot of questions.

Especially lately lots of tenants who are, you know, asking for the utility data we give them access to Energy Star portfolio manager. We let them know that you know these buildings are carbon carbon neutral.

So.

Yeah, we were engaging with our residents around well, so it really depends on how our building metering is set up to the amount of impact that we can directly have. But we certainly are communicating with our residents and

as an individual resident, a lot of or residents just aren't aware of programs that might be out there. In DC. There's a lot of clean choice options that residents can opt into, but a lot of our residents are directly metered with the utility company, so for us they're scope 3 emissions.

And we don't necessarily see their bills get their bills,

know how know their energy performance and states like Virginia.

It's really hard to even get aggregated data sometimes for our buildings that have various individually needed residents. What we
can do is educate not only residents around energy performance
and greenhouse gas emissions. However, you know in some markets you know a lot of times, like in DC, Clean Choice, DC and other various options where as a resident. My own utility bills I can opt to go for more renewable energy now there is a cost to that and so how can we work with suppliers and clean choice to figure out the best means of getting that to residents who don't necessarily want to see a drastic increase on their utility bills but also want to be part of the solution when it comes to reducing greenhouse gas emissions in their local area? So a lot of it is education based and then obviously when it comes to the physical attributes of the building. Can we do turnovers or or upgrades? We're bringing LED lighting. We're bringing energy to our appliances and we're trying to make it as easy as possible for residents to save energy. Beautiful well that hour went fast. I feel like I talked to you guys for a couple days straight about this stuff. I got one more question but thank you for a great panel and just to echo, I heard several folks say in the chat. This was a great discussion and I agree. So thank you. But my closing thought if you could in 30 seconds if you would know we have a hard stop here as you look to the future. What's the thing you're most excited about as far as the potential for renewable energy and commercial real estate? You can't say community still because we already talked about that something other than community. Solar. 30 seconds. You go. I'll go first. Yeah. Yeah, I can jump in and say it. It is really exciting when you have trucking organizations you know. Meal meal kit companies, medical supply device folks, logistics companies, all calling and asking for the same thing which is help with achieving some level of their goal towards net zero
and just that common consciousness towards these objectives.

Is really exciting and it is ramping at a much faster pace than we've ever seen in the past. And so you know, as long as we can keep renewable deployment at scale and that there's the workforce to install these the systems at scale, the opportunities appear really endless at this point and it's just exciting for that. That common objective of all these kind of disparate Organizations, yeah, you're here, Eric. And then Michael gets the last word.

Yeah, I mean I was gonna say similar to what Alex said. I mean, residents are more pleasingly more interested in greenhouse gas and climate change, and being part of the solution. And so how can we do that? Would we? We're seeing a lot of changing technology. We're seeing our assets a lot more EV vehicles or electric vehicles. So how do we make sure the challenge of. Building the infrastructure necessary to meet the growing demand of the electrification of vehicles. Because we're seeing a lot more in our buildings and our and our apartment buildings, while also greening the grid. It's going to be really tough because to Alex's point, a lot of grids aren't ready for that much load to come on, and so it's going to take a really big investment and a push for us to push. You know, policy and regulation to improve our infrastructure when it comes to our electrical capacity.

Yeah, I'm going to. I agree with Alex and Eric as well, but I kind of want to add a little bit more to that as we're sort of trying to accelerate quickly to. Net. 01 of the things that we have to consider, I think is also carbon capture. I know it's not really renewable energy per se, but you know something that we are one of the challenges we face. As I mentioned earlier, our life science spaces E is really high. They still use gas lines. I
don't see that coming out of our building soon. Really, the only way to get to net zeros without gas. So the other option is maybe carbon capture and other sort of technologies. To help us address you know our our our sources of power. As the grid gets cleaner.

OK, I love it. A lot of reasons to be excited. It's a fun time to be doing what we do. I think we would all agree to be in the kind of the zeitgeist that we're in towards. Net zero and renewable energy deployment right now. So thank you guys for a very timely panel. Just as a reminder, go ahead and check out the ULI report. It's at www.uli.org renewable energy. All one word smushed together, and that once again, Alex Eric Vishali. Thank you so much. At the time this was great. Thank you. Thank you everybody.