

# Webinar

## CRREM North America Project Final Update

Date: December 04, 2024

00:00:00 --> 00:00:03: Hello and welcome to today's webinar hosted by the KREM  
 00:00:03 --> 00:00:04: North America Project team.  
 00:00:04 --> 00:00:06: To close out the work we've done over the last  
 00:00:06 --> 00:00:09: year and a half, we're really proud of this project  
 00:00:09 --> 00:00:12: and the robust stakeholder engagement process, and we're excited to  
 00:00:12 --> 00:00:14: share some of the outputs with you today.  
 00:00:15 --> 00:00:16: My name is Blakely Jarrett.  
 00:00:16 --> 00:00:19: I'm a Vice President with the Urban Land Institute and  
 00:00:19 --> 00:00:21: the global lead for ULI Greenprint.  
 00:00:21 --> 00:00:24: I LED this project alongside the other panelists on the  
 00:00:24 --> 00:00:26: call and I'll be your moderator for the next hour.  
 00:00:27 --> 00:00:31: Please use the Q&A function to submit questions as we  
 00:00:31 --> 00:00:31: go.  
 00:00:31 --> 00:00:34: We will go come through those and answer as many  
 00:00:34 --> 00:00:35: as we can at the end.  
 00:00:36 --> 00:00:38: And I also want to remind you this webinar is  
 00:00:38 --> 00:00:41: being recorded and anyone who registered for the webinar will  
 00:00:41 --> 00:00:44: receive an e-mail with a recording following today's session.  
 00:00:46 --> 00:00:46: Next slide.  
 00:00:48 --> 00:00:51: So we'll begin by introducing you to the Creme North  
 00:00:51 --> 00:00:52: America project team.  
 00:00:53 --> 00:00:56: We'll then provide an introduction to Creme and it's  
 00:00:56 --> 00:00:59: decarbonization  
 00:00:56 --> 00:00:59: planning framework will Orient you to this project and its  
 00:01:00 --> 00:01:00: key milestones.  
 00:01:01 --> 00:01:04: Then we'll walk through some of the stakeholder driven  
 00:01:01 --> 00:01:04: changes  
 00:01:04 --> 00:01:07: that we implemented to create more granular curves for the

00:01:07 --> 00:01:08: US and Canada.

00:01:09 --> 00:01:12: And we'll then conclude by reviewing some key stakeholder feedback

00:01:12 --> 00:01:14: and previewing what's next.

00:01:15 --> 00:01:15: Next slide.

00:01:18 --> 00:01:21: I'll start by saying that utilize really appreciative of the

00:01:21 --> 00:01:24: productive partnership we've built with this product team across 4

00:01:24 --> 00:01:26: organizations in three time zones.

00:01:26 --> 00:01:29: So we led the real estate stakeholder engagement for this

00:01:29 --> 00:01:34: effort, organizing the working group sessions, compiling stakeholder feedback and

00:01:34 --> 00:01:37: communicating with the industry In the US and Canada.

00:01:38 --> 00:01:42: Lawrence Berkeley National Lab served as the technical Co lead,

00:01:42 --> 00:01:46: sifting through stakeholder feedback, buying their independent scientific judgement to

00:01:46 --> 00:01:50: propose the best path forward to create more granular curves.

00:01:51 --> 00:01:53: And Crim was our other technical Co lead, working in

00:01:53 --> 00:01:56: tandem with Berkeley Lab from the start to ensure that

00:01:56 --> 00:01:59: criminal stakeholders were in the loop as the project progressed.

00:02:00 --> 00:02:03: And then finally, LaSalle Investment Management served as the real

00:02:03 --> 00:02:04: estate working group chair.

00:02:05 --> 00:02:08: During that, we had the practitioners voice involved throughout the

00:02:08 --> 00:02:08: project.

00:02:09 --> 00:02:10: Next slide.

00:02:12 --> 00:02:15: So specifically, I want to introduce you to the today's

00:02:15 --> 00:02:15: panelists.

00:02:16 --> 00:02:17: I've already introduced myself.

00:02:18 --> 00:02:21: I'm joined by Joshua Case from Lawrence Berkeley National Lab,

00:02:21 --> 00:02:26: Elena Alschuler from LaSalle Investment Management and Sebastian Loitner and

00:02:26 --> 00:02:28: Christopher Wright representing KREM.

00:02:29 --> 00:02:32: I also want to acknowledge Haley Tong and Marta Schantz,

00:02:32 --> 00:02:34: who are integral parts of this project team.

00:02:36 --> 00:02:36: Next slide.

00:02:42 --> 00:02:44: So now I will hand it off to Sebastian from

00:02:44 --> 00:02:46: KREM to introduce the KREM framework.

00:02:47 --> 00:02:49: Yeah, thanks Blakey for the intro.

00:02:49 --> 00:02:52: I will do a short and very general introduction to  
00:02:53 --> 00:02:54: the concept of CRAM.  
00:02:55 --> 00:02:59: When CRAM was founded back in 2018, the mission was  
00:02:59 --> 00:03:03: to provide real estate stakeholders first in Europe but then  
00:03:03 --> 00:03:08: also globally with a clear but science based target to  
00:03:08 --> 00:03:09: net 0 emissions.  
00:03:10 --> 00:03:15: The starting point for the CRAM pathways is a remaining  
00:03:15 --> 00:03:20: global carbon budget according to the IA, which aims to  
00:03:20 --> 00:03:23: limit global warming ideally to 1.5??.  
00:03:23 --> 00:03:27: And this budget is then downscaled to the real estate  
00:03:27 --> 00:03:28: specific sector.  
00:03:29 --> 00:03:33: And so we can derive intensity values on a square  
00:03:33 --> 00:03:37: foot or square meter basis from 2020 to 2015.  
00:03:38 --> 00:03:42: So now the idea behind our North America project, the  
00:03:42 --> 00:03:46: wars that so far crime pathways covered only the 15  
00:03:46 --> 00:03:50: largest city within the United States and there was only  
00:03:50 --> 00:03:52: one single pathway for Canada.  
00:03:53 --> 00:03:57: So our aim was to make pathways more granular that  
00:03:57 --> 00:04:02: all stakeholders within North America can apply our  
pathways in  
00:04:02 --> 00:04:03: their regions.  
00:04:05 --> 00:04:09: Our project work was made possible by the great support  
00:04:09 --> 00:04:13: of our project partners at ULILBNL and LaSalle, represented  
by  
00:04:14 --> 00:04:17: Alina and of course by all of you who have  
00:04:17 --> 00:04:21: actively contributed to this project over the now nearly two  
00:04:21 --> 00:04:25: years, either via the public comment period or via the  
00:04:25 --> 00:04:27: working group sessions.  
00:04:28 --> 00:04:30: So a big thanks here from our end.  
00:04:32 --> 00:04:35: On the next slide, we can see that FROM not  
00:04:36 --> 00:04:40: only represents carbon pathways, but also EUI pathways.  
00:04:41 --> 00:04:45: And why is it important to consider both carbon and  
00:04:45 --> 00:04:45: UI?  
00:04:46 --> 00:04:50: It is because with the current energy consumption levels and  
00:04:50 --> 00:04:54: the property sector, there won't be enough renewable energy  
to  
00:04:54 --> 00:04:57: offset the current energy demand.  
00:04:57 --> 00:05:00: So we at the OR in the real estate sector  
00:05:00 --> 00:05:02: really have to do our homework.  
00:05:02 --> 00:05:05: So in the 1st place, we have to make our  
00:05:05 --> 00:05:11: properties as efficient as possible, replace fossil fuels with  
electrified  
00:05:11 --> 00:05:16: heating system, increase on on site renewable energy

production as much as possible and then work also with building automation,

for example, smart metering, try to influence tenant behaviour for example by green leases.

And then in the very last step, if we have have done our homework and we see that there is still a gap between our performance we can achieve and net 0 emissions, we can work with market based solutions to get the OR to close the gap to to net 0 emissions.

But what we are currently seeing that in the industry or in the market there are more green energy contracts out there than green energy actually produced.

So the key message from the slide is efficiency first and and in the end as the very last step consider market based solutions.

And the next slide we can see how Creme can be used for for risk management.

As mentioned in the first slide, Gram derives pathways from 2020 to 2050 on square metre or square metre basis.

And then I have in the end an intersection point either at the asset level or at the whole portfolio level and then I can derive a relative risk.

The key message on this slide is because or as I have also included the bell shaped curve on the slide is CRAM pathways really reflect the market average.

So it's not about black and white or CRAM shouldn't be considered as a binary benchmark.

It should be considered as per definition as the market average.

So in the end there will always some properties which are above the curve and some properties which are below the curve.

And then I, I take a potential intersection point with the cram pathways and put it into my risk management or into my potential investment considerations or retrofit plans.

So, yeah, it is really important here not to say it's black or white or we often hear the term stranded assets or considered the asset to be worthless.

It's really to consider the relative risk.

00:07:33 --> 00:07:36: And I think in the upcoming slides, Alina will tell

00:07:36 --> 00:07:40: us a bit more about the intended purpose of decarbonisation

00:07:40 --> 00:07:41: pathways.

00:07:41 --> 00:07:44: So handing over to you, Alina.

00:07:46 --> 00:07:47: Thank you so much, Sebastian.

00:07:47 --> 00:07:49: You can go ahead to the, I believe we're on

00:07:49 --> 00:07:50: to the next section here.

00:07:52 --> 00:07:55: So just taking a step back from crime specifically to

00:07:55 --> 00:07:58: decarbonization pathways more broadly.

00:07:58 --> 00:08:02: I think there's been a a groundswell of support among

00:08:02 --> 00:08:07: the real estate community and our partners looking for

00:08:07 --> 00:08:11: pathways

00:08:11 --> 00:08:14: or targets with timelines associated with them to get a

00:08:14 --> 00:08:18: sense of are you on track or what is your

00:08:18 --> 00:08:22: relative transition risk on an energy and EUI basis.

00:08:22 --> 00:08:26: And so some of the sort of guiding principles for

00:08:26 --> 00:08:31: this project was we want to be able to understand

00:08:31 --> 00:08:36: carbon performance against a 1.5?? target and we want to

00:08:36 --> 00:08:38: separately be able to understand building energy use

00:08:38 --> 00:08:42: performance versus

00:08:42 --> 00:08:47: grid related risk.

00:08:47 --> 00:08:49: And that sort of interplay allows you to use green

00:08:49 --> 00:08:53: power, understand the gap of what's needed with additional

00:08:53 --> 00:08:57: technology

00:08:57 --> 00:09:00: or green power solutions.

00:09:00 --> 00:09:03: And that really is meant as a risk assessment tool.

00:09:03 --> 00:09:06: As we've been talking about, your relative performance

00:09:06 --> 00:09:09: against those

00:09:09 --> 00:09:12: benchmarks would give you a sense of a property's ability

00:09:12 --> 00:09:15: to meet evolving regulations and market demand.

00:09:15 --> 00:09:18: Next slide, please.

00:09:18 --> 00:09:23: So our goals for this working group were, first of

00:09:23 --> 00:09:26: all, to make sure we had the best available data

00:09:26 --> 00:09:31: for the United States and Canada for the inputs to

00:09:31 --> 00:09:32: this analysis, to really increase the granularity and make sure

00:09:32 --> 00:09:38: that it covers all of the geographies of the US

00:09:38 --> 00:09:42: and Canada, reflecting the variations in climate zone, the

00:09:42 --> 00:09:43: different

00:09:43 --> 00:09:44: grids and things like that.

00:09:44 --> 00:09:48: I think also the US and Canadian real estate community

00:09:48 --> 00:09:52: really wanted to understand more of the methodology and

00:09:52 --> 00:09:53: how

00:09:53 --> 00:09:54: it's determined.

00:09:43 --> 00:09:46: But I would like to make sure everyone understands that

00:09:46 --> 00:09:49: changing the methodology was not part of the scope of

00:09:49 --> 00:09:49: this project.

00:09:50 --> 00:09:54: It was really very much focused on geographic coverage and

00:09:54 --> 00:09:54: inputs.

00:09:55 --> 00:09:58: But in doing that, we also really gained a very

00:09:58 --> 00:10:02: deep understanding of the methodology and we did some

00:10:02 --> 00:10:06: work

00:10:02 --> 00:10:06: to compare these pathways with building performance

00:10:07 --> 00:10:11: standards and other

00:10:07 --> 00:10:11: commonly used tools such as Energy Star portfolio manager

00:10:11 --> 00:10:14: scores

00:10:11 --> 00:10:14: and the federal definition of 0 emissions buildings.

00:10:15 --> 00:10:18: So we're trying to sort of understand everything, put it

00:10:18 --> 00:10:20: in context, make sure it has the best inputs and

00:10:21 --> 00:10:22: really take a close look at it.

00:10:26 --> 00:10:26: Next slide.

00:10:26 --> 00:10:30: So just quick thank you to the project sponsors.

00:10:30 --> 00:10:34: This was a sort of Co funded, you know, stakeholder

00:10:34 --> 00:10:37: bottom up effort where a lot of us were talking

00:10:37 --> 00:10:40: about the need to dig in on this and everyone

00:10:40 --> 00:10:43: threw some money in the pot to Co fund it.

00:10:44 --> 00:10:47: And then we had, you know, over 300 people on

00:10:47 --> 00:10:50: the working group e-mail list and over 100 or 150

00:10:50 --> 00:10:53: people at every single working group session.

00:10:54 --> 00:10:56: So just thank you so much to all of our

00:10:56 --> 00:10:59: project sponsors and to everyone who participated.

00:10:59 --> 00:11:02: We just feel so great about the level of engagement

00:11:02 --> 00:11:05: and feedback that we got throughout this process.

00:11:05 --> 00:11:05: So thank you all.

00:11:10 --> 00:11:10: Great.

00:11:11 --> 00:11:13: So I'm going to walk y'all high level through the

00:11:13 --> 00:11:14: the project timeline.

00:11:15 --> 00:11:18: So we launched with a crim press release in May

00:11:18 --> 00:11:19: 2023.

00:11:20 --> 00:11:22: We then sort of the meat of the project, we

00:11:22 --> 00:11:24: hosted 5 virtual working group sessions.

00:11:25 --> 00:11:27: Those were open to the public.

00:11:27 --> 00:11:28: They were broadly advertised.

00:11:29 --> 00:11:31: And the purpose of it was those of those was

00:11:31 --> 00:11:35: to surface real estate stakeholders sort of key challenges

00:11:35 --> 00:11:38: with

00:11:35 --> 00:11:38: the Crim framework in the US and Canada and identify

00:11:38 --> 00:11:42: the opportunities that that we could work on to improve

00:11:42 --> 00:11:44: the granularity in the US and Canada.

00:11:45 --> 00:11:47: As Elena mentioned, we were really excited that we had

00:11:47 --> 00:11:50: over 100 participants join each of those sessions.

00:11:51 --> 00:11:54: You don't always expect that for a pretty niche, wonky

00:11:54 --> 00:11:56: topic, but we had a lot of excitement, a lot

00:11:56 --> 00:11:59: of really smart input, and we just really appreciate and

00:12:00 --> 00:12:02: we feel excited about that widespread momentum.

00:12:04 --> 00:12:07: About a year later, we published draft curves on our

00:12:07 --> 00:12:08: web page.

00:12:08 --> 00:12:12: We also published a methodology memo so that we could

00:12:12 --> 00:12:17: transparently document how we'd implemented feedback

00:12:17 --> 00:12:20: from those working group

00:12:21 --> 00:12:24: sessions to propose draft curves for the US and Canada.

00:12:24 --> 00:12:28: We then held a 45 day public comment period for

00:12:28 --> 00:12:31: folks to review the methodology memo, to review the draft

00:12:31 --> 00:12:34: curves and the inputs we had used for those curves

00:12:34 --> 00:12:37: and give us feedback on the ways that we could

00:12:38 --> 00:12:42: further improve the granularity and the accuracy.

00:12:42 --> 00:12:45: We got 22 submissions from individuals, but also from

00:12:45 --> 00:12:49: companies

00:12:50 --> 00:12:51: and then also from industry groups like me, Reed and

00:12:53 --> 00:12:55: the Real Estate Roundtable representing their collective

00:12:55 --> 00:12:57: membership voices.

00:12:57 --> 00:12:59: We really appreciate that feedback.

00:12:59 --> 00:13:02: Around that time, I also want to note that the

00:13:02 --> 00:13:03: Real Estate Roundtable sent a letter to U.S.

00:13:04 --> 00:13:07: Treasury and nay, Reid sent a letter to Crim outlining

00:13:07 --> 00:13:10: some sort of similar concerns and challenges that they saw

00:13:11 --> 00:13:13: with the framework.

00:13:13 --> 00:13:14: And then finally, yesterday, we we posted the final project

00:13:15 --> 00:13:16: deliverables that have incorporated all of that stakeholder

00:13:18 --> 00:13:21: feedback.

00:13:21 --> 00:13:23: And we're hosting this webinar today to update you all

00:13:23 --> 00:13:26: on our progress.

00:13:27 --> 00:13:30: Next slide, please.

00:13:31 --> 00:13:34: So I won't read all of these, but this gives

00:13:34 --> 00:13:37: you a sense of the major things this project focused

00:13:37 --> 00:13:38: on, driven by that working group feedback that I mentioned.

00:13:38 --> 00:13:39: So we looked at things like assumptions around future grid

00:13:39 --> 00:13:40: carbon intensity, the way that markets were divided up within

00:13:40 --> 00:13:41: the US and Canada, the number of asset classes included

00:13:41 --> 00:13:42: in the curves.

00:13:39 --> 00:13:42: We also compared Crim targets to some of the targets  
00:13:42 --> 00:13:46: set by building performance standards around the US and  
Canada  
00:13:46 --> 00:13:50: to see the sort of relative level of aggressiveness.  
00:13:51 --> 00:13:53: And then I just want to highlight, Elena mentioned this  
00:13:53 --> 00:13:56: earlier, but we agreed from the start that, you know,  
00:13:56 --> 00:13:59: because this is geographically focused on these two  
countries, we  
00:13:59 --> 00:14:02: couldn't fundamentally alter Crim's global methodology.  
00:14:02 --> 00:14:06: So any feedback that pertained to the global methodology,  
Crim's  
00:14:06 --> 00:14:10: governance or the Crim tool was really considered out of  
00:14:10 --> 00:14:11: scope for this project.  
00:14:11 --> 00:14:14: But we documented it in AUI memo that we'll touch  
00:14:14 --> 00:14:18: on later just so that we the feedback was received  
00:14:18 --> 00:14:19: and it was documented.  
00:14:19 --> 00:14:22: We just couldn't act on it in this particular project.  
00:14:23 --> 00:14:23: Next slide.  
00:14:26 --> 00:14:28: So I'm now going to hand it off to Josh  
00:14:28 --> 00:14:31: from Berkeley Lab to talk in more detail about the  
00:14:31 --> 00:14:32: project's technical analysis.  
00:14:35 --> 00:14:36: Thanks, Blakely.  
00:14:37 --> 00:14:40: Yeah, and thanks everyone for joining today and for the  
00:14:40 --> 00:14:42: engagement over the course of this project.  
00:14:42 --> 00:14:45: I know both Elena Blakely and Sebastian all spoke to  
00:14:45 --> 00:14:49: it, but we're really appreciative of the engagement we got  
00:14:49 --> 00:14:50: throughout this project.  
00:14:50 --> 00:14:54: And the feedback was was invaluable to, you know, us  
00:14:54 --> 00:14:57: producing the best possible work product here.  
00:14:58 --> 00:15:01: Just to quickly introduce myself, Joshua Case, I'm a  
technology  
00:15:01 --> 00:15:03: researcher here at Berkeley Lab.  
00:15:04 --> 00:15:07: Been with the lab for a couple years now, but  
00:15:07 --> 00:15:10: prior to that did work in real estates, mostly with  
00:15:10 --> 00:15:15: existing building portfolios from a ESG sustainability and  
energy efficiency  
00:15:15 --> 00:15:17: consulting perspective.  
00:15:17 --> 00:15:22: So long history working with real energy use in buildings.  
00:15:22 --> 00:15:25: So it was very excited when I joined the lab  
00:15:25 --> 00:15:27: to have this project transition to me.  
00:15:28 --> 00:15:30: And yeah, we're definitely really proud of the the effort  
00:15:31 --> 00:15:31: overall.  
00:15:31 --> 00:15:34: So this is going to be a balance of sort



00:15:34 --> 00:15:37: of one O 1 of the project and and making  
00:15:37 --> 00:15:40: sure everyone gets to the same page with, you know,  
00:15:40 --> 00:15:43: more nuance as I get deeper into it, as we  
00:15:43 --> 00:15:46: did talk about a lot of these concepts in the  
00:15:46 --> 00:15:49: previous working group sessions.  
00:15:49 --> 00:15:51: So I'll try to walk that line as as best  
00:15:51 --> 00:15:52: as I can.  
00:15:53 --> 00:15:58: Broadly speaking, the initial projects status when we started  
to  
00:15:58 --> 00:16:02: dive in, as was mentioned earlier, you know, we had  
00:16:02 --> 00:16:06: we had certain geographic divisions, so country level  
pathways for  
00:16:06 --> 00:16:10: the US and Canada and then major cities in in  
00:16:10 --> 00:16:10: the US.  
00:16:11 --> 00:16:14: So this was a good starting point, but obviously left  
00:16:15 --> 00:16:18: more to be desired in terms of granularity across the  
00:16:18 --> 00:16:22: board and then how comprehensive the the sub regions  
were.  
00:16:22 --> 00:16:24: So if you have a building that's maybe on the  
00:16:24 --> 00:16:27: outskirts of the city are using the countrywide curve or  
00:16:27 --> 00:16:29: do you use the city curve as much as we  
00:16:30 --> 00:16:32: could remove Gray area, It was definitely one of the  
00:16:32 --> 00:16:35: the core priorities of the of the effort to the  
00:16:35 --> 00:16:36: next slide.  
00:16:40 --> 00:16:43: So I presented this slide before, but just to, to  
00:16:43 --> 00:16:46: reiterate for folks, this was sort of the process we  
00:16:47 --> 00:16:47: went through.  
00:16:47 --> 00:16:50: You know, it is, there were stages to the process  
00:16:50 --> 00:16:52: here, but it was also iterative.  
00:16:52 --> 00:16:54: So we did go back and make sure that we  
00:16:54 --> 00:16:56: were doing the best possible things based off of what  
00:16:57 --> 00:16:59: we were seeing in in the future steps.  
00:16:59 --> 00:17:03: So, but probably speaking, you know, this was the, the,  
00:17:03 --> 00:17:06: the overarching order of operations here.  
00:17:06 --> 00:17:08: So we started with making sure that we have the  
00:17:08 --> 00:17:10: best geographic divisions.  
00:17:11 --> 00:17:15: This was nuanced from the standpoint of everyone wants  
granularity  
00:17:15 --> 00:17:18: and for, you know, pathways to be tailored to their  
00:17:18 --> 00:17:19: specific location.  
00:17:20 --> 00:17:23: But you need to balance that with overall complexity of  
00:17:23 --> 00:17:25: the tool with data availability.  
00:17:26 --> 00:17:30: If you don't have the right comprehensive data sets for

00:17:30 --> 00:17:35: the more granular geographic delineations, it's not going to have

00:17:35 --> 00:17:36: too much meaning.

00:17:36 --> 00:17:39: And so that was something that we did have to

00:17:39 --> 00:17:42: balance and I think we ended up in a good,

00:17:42 --> 00:17:44: good spot across both the US and Canada.

00:17:44 --> 00:17:46: I'll get into where we landed on those.

00:17:48 --> 00:17:51: Once the geographic divisions were set up, it was about

00:17:51 --> 00:17:56: establishing the best empirical data sources for starting EU wise,

00:17:56 --> 00:18:00: so starting energy use intensity values as a key input

00:18:00 --> 00:18:02: into the Creme pathways overall.

00:18:03 --> 00:18:07: And then from there it was about building what CREME

00:18:07 --> 00:18:11: defines as weighted emission factors, which are essentially an emission

00:18:11 --> 00:18:15: factor that is appropriate for the entire consumption of a

00:18:15 --> 00:18:16: building.

00:18:16 --> 00:18:19: So it's taking into account both the energy mix of

00:18:19 --> 00:18:23: an individual asset in addition to the cleanliness of the

00:18:23 --> 00:18:26: grid both now and into the into the future.

00:18:27 --> 00:18:30: So this was also an iterative process, but we wanted

00:18:30 --> 00:18:32: to make sure that we did things again as granularly

00:18:32 --> 00:18:36: as we could while still maintaining accurate and and comprehensive

00:18:36 --> 00:18:37: data sources.

00:18:38 --> 00:18:41: And then from there, the last step of the process

00:18:41 --> 00:18:44: was looking through the inputs to the new, the new

00:18:44 --> 00:18:45: final targeted UI process.

00:18:45 --> 00:18:49: I say new from the standpoint that this was something

00:18:49 --> 00:18:52: that was implemented in Creme V2 and I'll get a

00:18:52 --> 00:18:55: little bit more into this as we go in terms

00:18:55 --> 00:18:59: of what we were able to provide within the existing

00:18:59 --> 00:19:04: methodology and then additional comparison reference points next slide.

00:19:07 --> 00:19:07: All right.

00:19:07 --> 00:19:11: So just broadly speaking, this is a sort of bulleted

00:19:11 --> 00:19:15: summary and this is within our technical report as well

00:19:15 --> 00:19:19: of the major changes that were recommended through through the

00:19:19 --> 00:19:21: the analysis and the project.

00:19:23 --> 00:19:25: I, I won't go through each of these individually for

00:19:25 --> 00:19:26: the sake of time.

00:19:26 --> 00:19:31: But just broadly speaking, the major change that we

instituted

00:19:31 --> 00:19:35: relative to both the US and Canada curves was a

00:19:35 --> 00:19:40: rounding process that was happening with the sector level UI

00:19:40 --> 00:19:40: targets.

00:19:41 --> 00:19:44: Without getting too much into the the details here, numbers

00:19:45 --> 00:19:47: are being rounded down to the nearest 10s digit which

00:19:47 --> 00:19:48: led to some inequity.

00:19:48 --> 00:19:51: If you know building you know we give the example

00:19:51 --> 00:19:54: here of the the commercial energy use intensity of of

00:19:54 --> 00:19:55: the US was 78.3.

00:19:55 --> 00:19:59: We wanted to make sure that was being rounded down

00:20:00 --> 00:20:00: to 70.

00:20:01 --> 00:20:04: Kremens confirmed with us that we are using the 78.3

00:20:04 --> 00:20:08: value directly as part of the calculation process now.

00:20:08 --> 00:20:09: So that was something that.

00:20:10 --> 00:20:13: Give a little bit more equity to the to the

00:20:13 --> 00:20:15: targets across the board for Canada.

00:20:15 --> 00:20:18: We were able to break the the geography down into

00:20:18 --> 00:20:19: provinces.

00:20:20 --> 00:20:24: This was again both relative to what data was available,

00:20:24 --> 00:20:27: which a lot of it was at the province level

00:20:27 --> 00:20:30: and you know did give some level of, of clean

00:20:30 --> 00:20:32: granularity there.

00:20:33 --> 00:20:36: We then went through the process of making sure we're

00:20:36 --> 00:20:39: using the best possible sources of, of data.

00:20:40 --> 00:20:43: The primary source for UI information in, in both the

00:20:43 --> 00:20:48: US and Canada were government issued and verified energy

00:20:48 --> 00:20:51: use

00:20:48 --> 00:20:51: surveys of actual energy use in buildings.

00:20:51 --> 00:20:53: This was important for us.

00:20:53 --> 00:20:56: We know that there is a gap that exists between

00:20:56 --> 00:20:59: the, the, the best intentions of an energy model design

00:20:59 --> 00:21:02: of a building and the actual consumption of that asset

00:21:02 --> 00:21:03: once it's in operation.

00:21:04 --> 00:21:07: And so the operational performance is really what you are

00:21:07 --> 00:21:10: evaluating when you're looking at a building relative to the

00:21:10 --> 00:21:11: to the pathway.

00:21:11 --> 00:21:14: And so SEIU and SEU were were the two primary

00:21:15 --> 00:21:16: sources there.

00:21:17 --> 00:21:20: We went through the process of also making sure the

00:21:20 --> 00:21:23: best most updated projections were being used for electric

00:21:23 --> 00:21:25: grid

00:21:23 --> 00:21:25: factors now and into the future.

00:21:26 --> 00:21:29: And then we did some splitting of property types that

00:21:29 --> 00:21:31: I'll get into in in the summary slides for each

00:21:31 --> 00:21:33: of the two regions next slide.

00:21:38 --> 00:21:41: So for the US same general process again that we

00:21:41 --> 00:21:42: followed here.

00:21:42 --> 00:21:46: C Beck's Rex in addition to Fannie Mae survey were

00:21:46 --> 00:21:50: used in order to make sure the best starting UI

00:21:50 --> 00:21:51: values were used.

00:21:52 --> 00:21:57: In terms of the geographic subdivisions, it didn't necessarily

00:21:57 --> 00:22:00: make

00:22:00 --> 00:22:02: sense for us to split things by state for a

00:22:02 --> 00:22:06: number of reasons.

00:22:06 --> 00:22:09: One being that you have states that are covering multiple

00:22:09 --> 00:22:14: climate zones and then you have E grid regions or

00:22:14 --> 00:22:16: electric grid regions that are overlapping different different

00:22:16 --> 00:22:19: States and

00:22:19 --> 00:22:24: and states in a partial way.

00:22:24 --> 00:22:27: So we found that the best approach both in terms

00:22:27 --> 00:22:30: of materiality of the geographic divisions to the pathways

00:22:30 --> 00:22:33: themselves

00:22:33 --> 00:22:37: and in terms of data availability was to subdivide the

00:22:37 --> 00:22:39: US into both climate zones and E grid regions.

00:22:40 --> 00:22:43: So if you were to overlay a map of we

00:22:43 --> 00:22:48: used C BEX climate zones, which are slightly less granular

00:22:48 --> 00:22:52: than ASHRAE climate zones.

00:22:52 --> 00:22:56: If you were to overlay that with the grid regions

00:22:56 --> 00:23:00: across the US and then divide that into different geographic

00:23:00 --> 00:23:02: subdivisions, you'd end up with 57 different regions across

00:23:02 --> 00:23:06: the

00:23:06 --> 00:23:07: US that are using the most appropriate value for both

00:23:07 --> 00:23:13: the climate zone of that region and the and the

00:23:13 --> 00:23:17: electric grid operating region.

00:23:17 --> 00:23:23: And so this, as I noted, led to 57 different

00:23:23 --> 00:23:27: delineations.

00:23:27 --> 00:23:31: C vacs and Rex were used across the climate zones

00:23:31 --> 00:23:34: and then both E grid and cambium, which I've spoken

00:23:34 --> 00:23:36: about in previous previous presentations here were used for

00:23:36 --> 00:23:37: the

00:23:37 --> 00:23:41: starting and future electric grid projections.

00:23:41 --> 00:23:45: From here, we're going to get into each of the

00:23:45 --> 00:23:49: two regions and and some of the findings.

00:23:49 --> 00:23:53: And so that'll also get into the property type changes

00:23:53 --> 00:23:57: that we made.

00:23:38 --> 00:23:38: So next slide.

00:23:43 --> 00:23:43: All right.

00:23:43 --> 00:23:45: So this is probably the densest of the slides that

00:23:45 --> 00:23:48: we're going to have here and apologies to people's eyes,

00:23:48 --> 00:23:50: but it was the best way for us to get

00:23:50 --> 00:23:53: all this information onto a onto an individual slide here.

00:23:53 --> 00:23:56: These are also again in the the technical report, I

00:23:56 --> 00:24:00: have shown this slide before the slides, the the absolute

00:24:00 --> 00:24:04: values of the starting position have changed slightly based off

00:24:04 --> 00:24:07: of some of the the feedback that we got and

00:24:07 --> 00:24:08: some changes that were made.

00:24:08 --> 00:24:11: But for the most part, this is similar to what

00:24:11 --> 00:24:11: we had shown.

00:24:12 --> 00:24:16: On the left side of the chart, we're showing Creme

00:24:16 --> 00:24:18: V2 both starting and final UI targets.

00:24:19 --> 00:24:23: And then the left side shows the new property type

00:24:23 --> 00:24:24: breakdowns.

00:24:24 --> 00:24:28: As you can see, you know Rezi multifamily, the first

00:24:28 --> 00:24:32: one we have listed here, we split into three different

00:24:32 --> 00:24:35: property types for for the US and each of these

00:24:35 --> 00:24:39: 3 is then associated with each of the climate zones

00:24:39 --> 00:24:40: across the board here.

00:24:40 --> 00:24:44: Since climate zone was the primary driver of differences in

00:24:44 --> 00:24:47: AUI, that's what we're displaying here.

00:24:48 --> 00:24:50: The one addition we have to this chart is the

00:24:50 --> 00:24:53: year range you'll see under each of the the climate

00:24:53 --> 00:24:54: zones.

00:24:54 --> 00:24:58: So for multifamily high rise greater than 20 units, we

00:24:59 --> 00:25:02: have 2031 through 2038 as the the the levelling year

00:25:02 --> 00:25:03: range.

00:25:04 --> 00:25:07: And so this is the point at which the final

00:25:07 --> 00:25:10: target needs to be hit for an individual building.

00:25:11 --> 00:25:13: The reason why we have a range of years here

00:25:13 --> 00:25:17: is because we have different E grid regions associated with

00:25:17 --> 00:25:19: each of the each of the climate zones.

00:25:19 --> 00:25:21: And so this is to give a bit of a

00:25:21 --> 00:25:24: better picture of not just the aggressiveness of the absolute

00:25:24 --> 00:25:27: target, but when that target needs to be to be

00:25:27 --> 00:25:27: hit.

00:25:28 --> 00:25:34: Next slide here we're going to show some some

00:25:36 --> 00:25:39: comparisons.

00:25:36 --> 00:25:39: The comparisons here weren't super easy for us to do

00:25:39 --> 00:25:42: just because we were going from, you know for the  
 00:25:42 --> 00:25:46: most part the country level curves as compared to now  
 00:25:46 --> 00:25:48: 57 different geographic divisions.  
 00:25:48 --> 00:25:50: But I did my best here to sort of give  
 00:25:50 --> 00:25:54: a sampling of different pathways broken down by the the  
 00:25:54 --> 00:25:58: major geographic divisions that we talked about before.  
 00:25:58 --> 00:26:01: So I picked three different grid regions that were  
 representative  
 00:26:01 --> 00:26:04: of, you know, a cleaner grid, a dirtier grid, and  
 00:26:04 --> 00:26:07: then one that fits somewhere in the middle.  
 00:26:07 --> 00:26:09: And then you'll see sort of along the bottom within  
 00:26:09 --> 00:26:10: the legend.  
 00:26:10 --> 00:26:13: We tried to also make sure that those grid regions  
 00:26:13 --> 00:26:16: covered the a good variety of the climate zones from,  
 00:26:17 --> 00:26:19: you know, hot, very hot all the way through to  
 00:26:19 --> 00:26:20: to cold or very cold.  
 00:26:22 --> 00:26:27: And So what we're showing here is for distribution  
 warehouses,  
 00:26:27 --> 00:26:31: a lot of these curves landing above, some landing below.  
 00:26:31 --> 00:26:33: And I think that was sort of the the theme  
 00:26:33 --> 00:26:36: throughout the effort is we did see changes in in  
 00:26:36 --> 00:26:38: both directions across the board here.  
 00:26:38 --> 00:26:42: But hopefully this gives a decent picture of where things  
 00:26:42 --> 00:26:44: were versus where things are now.  
 00:26:45 --> 00:26:49: We could hop to the next slide here.  
 00:26:50 --> 00:26:51: So here we're showing US offices.  
 00:26:51 --> 00:26:54: This one is a little bit tighter in terms of  
 00:26:54 --> 00:26:55: the differences between the two.  
 00:26:56 --> 00:26:59: And you can see that the Creme V2 target actually  
 00:26:59 --> 00:27:02: felt pretty pretty much in the middle relative to the  
 00:27:02 --> 00:27:06: the output final targets of the of the new curves.  
 00:27:06 --> 00:27:10: Final targets are driven mostly by degree days, both heating  
 00:27:10 --> 00:27:11: and and cooling.  
 00:27:12 --> 00:27:15: And so it would make sense that with greater granularity  
 00:27:15 --> 00:27:18: across different climate zones, you would end up with a  
 00:27:19 --> 00:27:22: greater granularity of targets across the board here.  
 00:27:23 --> 00:27:26: The other note here is you'll, you'll see that the  
 00:27:26 --> 00:27:29: leveling year is a little bit later than than the  
 00:27:30 --> 00:27:32: the national curve was previously.  
 00:27:33 --> 00:27:36: And then the next slide, this is one of the  
 00:27:36 --> 00:27:40: the more major changes that we that we saw, which  
 00:27:40 --> 00:27:42: is for large multifamily.

00:27:42 --> 00:27:44: So these are high rise multifamily assets.

00:27:45 --> 00:27:49: We ended up with a lot of curves that were

00:27:49 --> 00:27:53: that were above the country level curve for for crown

00:27:53 --> 00:27:54: B2.

00:27:55 --> 00:27:57: Again, this wasn't the case for every property type.

00:27:57 --> 00:28:00: And hopefully the UI target summary gives you a good

00:28:00 --> 00:28:02: lay of the land in terms of which ones became

00:28:02 --> 00:28:05: more aggressive as part of this process, which ones became

00:28:05 --> 00:28:05: less aggressive.

00:28:06 --> 00:28:09: And you can see that the the variation in in

00:28:09 --> 00:28:10: leveling years here.

00:28:10 --> 00:28:14: One thing you will notice in these charts that I'll

00:28:14 --> 00:28:17: I'll point out is that the middle grid region, so

00:28:17 --> 00:28:20: the ones that are represented by the lavender purple colors

00:28:20 --> 00:28:22: tend to be more aggressive.

00:28:23 --> 00:28:26: The reason for that is actually tied more to the

00:28:26 --> 00:28:29: fact that they that middle grid region happens to be

00:28:29 --> 00:28:31: in a warmer climate zone.

00:28:31 --> 00:28:34: So it has lower starting points in terms of more

00:28:34 --> 00:28:39: mild weather and lower final targets as well because of

00:28:39 --> 00:28:43: the less heating degree days associated with those regions.

00:28:45 --> 00:28:46: Up to the next slide.

00:28:49 --> 00:28:53: So Elena mentioned before that we also did a comparison

00:28:53 --> 00:28:58: early on in the project around building performance

00:28:58 --> 00:28:59: standards and

00:28:58 --> 00:28:59: the Creme pathways.

00:29:00 --> 00:29:03: So those who have been working group participants have

00:29:04 --> 00:29:07: seen

00:29:04 --> 00:29:07: the chart on the left already, which is a comparison

00:29:07 --> 00:29:11: of the solid lines representing building performance standard

00:29:11 --> 00:29:15: targets.

00:29:11 --> 00:29:15: So absolute targets that are set over, you know compliance

00:29:15 --> 00:29:18: periods yielding sort of the stair step shape.

00:29:19 --> 00:29:23: And then the KREM curves themselves obviously

00:29:23 --> 00:29:26: representing a more

00:29:23 --> 00:29:26: smoothed process from start to finish.

00:29:26 --> 00:29:29: But we are, you know, we did see with the

00:29:29 --> 00:29:32: original what we broadly wanted to see, which is that

00:29:32 --> 00:29:37: BPS targets of minimum requirements for energy or

00:29:37 --> 00:29:40: environmental performance

00:29:37 --> 00:29:40: of your building are above the, the Creme pathways.

00:29:41 --> 00:29:43: I think that's always something you would want to see.

00:29:43 --> 00:29:47: As you know, BPS policies are, are really a manifestation

00:29:47 --> 00:29:49: of, of transition risk.

00:29:50 --> 00:29:53: And so we, we did want to also run this

00:29:53 --> 00:29:56: comparison based off of the new pathways and, and this

00:29:56 --> 00:29:58: one did come out pretty interesting.

00:29:59 --> 00:30:02: We didn't have timer availability to do this more

comprehensively

00:30:02 --> 00:30:04: and we would love to do that moving forward.

00:30:04 --> 00:30:08: But we did pick out multifamily as one that we

00:30:08 --> 00:30:11: ran the updated curves through.

00:30:11 --> 00:30:15: And you can see it, it maintains its position as

00:30:15 --> 00:30:19: being under the, the BPS policy targets, but it is

00:30:19 --> 00:30:21: a little bit more proportional.

00:30:21 --> 00:30:24: So in the original 1 you saw Boston was was

00:30:24 --> 00:30:28: pretty close in terms of the original KREM pathway versus

00:30:28 --> 00:30:29: the BPS standard.

00:30:30 --> 00:30:33: With the new pathways, they ended up running pretty cleanly

00:30:33 --> 00:30:37: and more proportionately between Boston and and New York City.

00:30:37 --> 00:30:41: So this is definitely an interesting finding.

00:30:41 --> 00:30:44: And 1:00, we'd love to dive into deeper as BPS

00:30:44 --> 00:30:48: is probably the most prominent transition risk that exists today

00:30:48 --> 00:30:49: across the the US.

00:30:51 --> 00:30:57: Next slide, another very dense slide here, but running through

00:30:57 --> 00:31:01: the overall UI targets for Canada.

00:31:01 --> 00:31:04: This is broken down across two different slides as we

00:31:04 --> 00:31:06: had to list out each of the provinces here.

00:31:06 --> 00:31:09: But again, the major change with this visual is the

00:31:09 --> 00:31:11: levelling year that we're showing.

00:31:12 --> 00:31:15: Notice that there isn't a range of years with this

00:31:15 --> 00:31:19: one and that's because the same geographic divisions are being

00:31:19 --> 00:31:21: used for climate zone and for grid region.

00:31:21 --> 00:31:27: So grid regions were by provinces where the the starting

00:31:27 --> 00:31:28: UIUI values.

00:31:28 --> 00:31:31: So each one had a a specific and absolute leveling

00:31:31 --> 00:31:33: year associated with it.

00:31:34 --> 00:31:36: You can go to the next slide just to show

00:31:36 --> 00:31:39: the other provinces across the board here.

00:31:40 --> 00:31:43: And you'll notice we did try to align as much

00:31:44 --> 00:31:48: as possible the new property types across the board here,

00:31:48 --> 00:31:51: meaning the US and Canada as much as we could



00:31:51 --> 00:31:53: have the same property types we did.

00:31:54 --> 00:31:57: But we did run into limitations with our data sources

00:31:57 --> 00:32:00: and the way that buildings were were characterized within, within

00:32:00 --> 00:32:03: the energy consumption surveys that were that were used.

00:32:03 --> 00:32:06: So because of that, we only have two different divisions

00:32:06 --> 00:32:09: for multifamily just as an example here versus the US

00:32:09 --> 00:32:10: where we had three.

00:32:12 --> 00:32:12: All right.

00:32:12 --> 00:32:15: We can hop to the next slide to look at

00:32:15 --> 00:32:17: some comparison of Canada pathways.

00:32:19 --> 00:32:22: Thanks to to Sebastian for getting these charts together.

00:32:22 --> 00:32:26: But you could see sort of an office building here

00:32:26 --> 00:32:30: sort of sitting in the middle of the different provinces

00:32:30 --> 00:32:33: that are broken down now as a starting point and

00:32:33 --> 00:32:38: then towards the end ends up being slightly less aggressive

00:32:38 --> 00:32:41: than a lot of the geographic breakdowns.

00:32:41 --> 00:32:41: On the final side.

00:32:42 --> 00:32:44: We could hop to the next slide.

00:32:46 --> 00:32:51: This is showing the results for a distribution warehouse, you

00:32:51 --> 00:32:52: know, for these.

00:32:52 --> 00:32:54: And again, you know, we see variety across each of

00:32:54 --> 00:32:56: these property types 'cause there's a number of different inputs

00:32:56 --> 00:32:57: that go into them.

00:32:57 --> 00:33:00: And that's, that's sort of what we what we plan

00:33:00 --> 00:33:02: to see coming into it.

00:33:02 --> 00:33:07: In this case, distribution warehouses were pretty universally less aggressive

00:33:07 --> 00:33:09: than the Creme V2 version.

00:33:09 --> 00:33:14: And then hopping to the next slide, also true for

00:33:14 --> 00:33:20: large multifamily that these curves were above the the original

00:33:20 --> 00:33:21: Creme B2.

00:33:21 --> 00:33:25: This makes sense from the standpoint of we are splitting

00:33:25 --> 00:33:29: out multifamily as as high rise buildings which do tend

00:33:29 --> 00:33:35: to have substantively higher energy intensities relative to other multifamily

00:33:35 --> 00:33:36: buildings.

00:33:39 --> 00:33:40: We go up to the next slide.

00:33:40 --> 00:33:43: I'm going to get into just the feedback that we

00:33:43 --> 00:33:48: received post public comment period revisions that we made associated

00:33:48 --> 00:33:49: with those comments.

00:33:49 --> 00:33:53: So thanks again for everyone for putting in the time

00:33:53 --> 00:33:57: and effort to both read our report and to provide

00:33:57 --> 00:33:58: granular feedback on it.

00:33:59 --> 00:34:01: Just to run through these quickly.

00:34:01 --> 00:34:05: So we did have a couple stakeholders point out a

00:34:05 --> 00:34:10: issue that we had with essentially residential on site fuel

00:34:10 --> 00:34:12: use that was not natural gas.

00:34:12 --> 00:34:15: So fuel oil use on site in addition to propane,

00:34:15 --> 00:34:19: things like that, that was being classified as carbon free

00:34:19 --> 00:34:22: energy and it obviously shouldn't have been.

00:34:22 --> 00:34:24: And so we were able to correct those emission factors.

00:34:25 --> 00:34:28: It was a, you know, relatively minor but substantive

00:34:28 --> 00:34:30: difference.

00:34:28 --> 00:34:30: And so we're glad we were able to both get

00:34:30 --> 00:34:32: that flagged and rectify that issue.

00:34:33 --> 00:34:36: The next few items that we have here were more

00:34:36 --> 00:34:39: clarifications that were asked for as part of the stakeholder

00:34:39 --> 00:34:42: process, but people had asked about the transition from E

00:34:43 --> 00:34:46: grid to Cambium regions that the new final version of

00:34:46 --> 00:34:48: the report does get into in more detail.

00:34:48 --> 00:34:51: So hopefully that'll help clarify for people what we did

00:34:51 --> 00:34:51: there.

00:34:51 --> 00:34:54: We did work actively with the the Cambium team last

00:34:54 --> 00:34:57: year to make sure that we took the best approach

00:34:57 --> 00:35:00: across the board with this showing pathways in both kWh

00:35:00 --> 00:35:03: and KBTQ is something that we did try to do

00:35:03 --> 00:35:07: wherever possible heating degree day and cooling degree

00:35:07 --> 00:35:11: day calculations.

00:35:07 --> 00:35:11: There is some understandable confusion and and need for or

00:35:11 --> 00:35:16: you know want for clarification here, mainly because degree

00:35:16 --> 00:35:20: days

00:35:16 --> 00:35:20: are calculated in different ways unfortunately depending on

00:35:20 --> 00:35:21: the region

00:35:20 --> 00:35:21: that you're in.

00:35:21 --> 00:35:24: So we did have to take, you know, the US

00:35:24 --> 00:35:29: and Canada standardized best practice approaches that are

00:35:29 --> 00:35:33: used by

00:35:29 --> 00:35:33: platforms like Energy Star and convert that wherever we

00:35:33 --> 00:35:36: needed

00:35:33 --> 00:35:36: to into IEA data for the purposes of final target

00:35:36 --> 00:35:37: setting.

00:35:37 --> 00:35:40: The international process for degree days was a bit different

00:35:40 --> 00:35:42: and so the report gets into that now with with  
00:35:42 --> 00:35:43: more detail.

00:35:43 --> 00:35:46: We also added an ASHRAE climate zone numbers to the  
00:35:46 --> 00:35:49: existing CBEC climate zones so that you know which ASHRAE  
00:35:49 --> 00:35:53: climate zones are nested underneath the CBEC climate zones.

00:35:54 --> 00:35:57: And then we did also go through an effort of  
00:35:57 --> 00:36:02: adding more granular subregion and property type energy mixes into  
00:36:02 --> 00:36:04: the input data set.

00:36:04 --> 00:36:06: So previously this had been done at the sector level.  
00:36:06 --> 00:36:10: So the energy mix between electricity, gas and and other  
00:36:10 --> 00:36:14: being done both at the commercial level and the residential  
00:36:14 --> 00:36:15: level.

00:36:16 --> 00:36:18: We got a good amount of feedback asking to get  
00:36:18 --> 00:36:20: more granular than this and we were able to to  
00:36:20 --> 00:36:21: do so with available data.

00:36:21 --> 00:36:25: So showing energy mix at the property type level more  
00:36:25 --> 00:36:29: granularly than the sector was definitely an important part of  
00:36:29 --> 00:36:30: the the process here.

00:36:32 --> 00:36:35: We also note here some of the outer scope feedback  
00:36:35 --> 00:36:39: which I think we'll be you know getting into more  
00:36:39 --> 00:36:40: in subsequent slides.

00:36:41 --> 00:36:43: Hop to the next slide for me and I am  
00:36:43 --> 00:36:45: going a little long here, so I will try to  
00:36:45 --> 00:36:47: run through these a little bit quicker.

00:36:49 --> 00:36:53: On the last working group column and messaging around this,  
00:36:53 --> 00:36:56: we did also, as Linda was mentioning, get into some  
00:36:56 --> 00:37:00: additional reference points for EUI targets over time.

00:37:01 --> 00:37:03: This is, you know, a very tough nut to crack  
00:37:03 --> 00:37:06: overall in terms of how to apply the best energy  
00:37:06 --> 00:37:11: efficiency requirements for buildings while also holding the grid accountable  
00:37:11 --> 00:37:13: for doing their part of the the the process.

00:37:13 --> 00:37:14: Overall.

00:37:14 --> 00:37:16: There's going to be some give and take and going  
00:37:16 --> 00:37:17: to be some Gray area there.

00:37:18 --> 00:37:21: But we did run through sort of additional comparison points  
00:37:22 --> 00:37:24: when it came to final EUI targets.

00:37:24 --> 00:37:26: And we will be releasing a short memo with with  
00:37:26 --> 00:37:29: some of those findings based off of what we had

00:37:29 --> 00:37:29: available.

00:37:30 --> 00:37:33: Really with the intention of of hoping that we could

00:37:33 --> 00:37:36: dive deeper into this in the future and be more

00:37:36 --> 00:37:40: comprehensive across all property types and deliver the best possible

00:37:40 --> 00:37:43: value to building owners as they look to evaluate their

00:37:43 --> 00:37:44: buildings.

00:37:45 --> 00:37:47: You can hop to the next slide just to show

00:37:47 --> 00:37:51: a visual of how some of these additional technical reference

00:37:51 --> 00:37:51: points work.

00:37:51 --> 00:37:54: So we have Office and Warehouse here and then we

00:37:54 --> 00:37:58: have some reference lines that were added to show equivalent

00:37:58 --> 00:38:01: Energy Star scores associated with these final targets.

00:38:01 --> 00:38:04: So you can see Office score of 99 puts you

00:38:04 --> 00:38:07: very well below the Creme UI targets and score of

00:38:07 --> 00:38:09: 95 puts you just above.

00:38:10 --> 00:38:13: With Warehouses it was slightly different scores of 95 and

00:38:13 --> 00:38:13: 99.

00:38:14 --> 00:38:17: These are all sort of interesting findings and ones that

00:38:17 --> 00:38:20: we want to make sure that yeah, we included everything

00:38:20 --> 00:38:22: that was available to us in terms of the the

00:38:22 --> 00:38:26: output references and then, you know, set the stage for

00:38:26 --> 00:38:29: potential future work that can be done to help evaluate

00:38:29 --> 00:38:32: these targets more in a more nuanced way moving forward.

00:38:33 --> 00:38:33: Next slide.

00:38:36 --> 00:38:39: These are within the technical report, but just to to

00:38:39 --> 00:38:43: frame this a little bit, the other comparison beyond ESPN

00:38:43 --> 00:38:47: 95, which is shown here in orange, We also did

00:38:47 --> 00:38:50: a process to build a set of net zero energy

00:38:50 --> 00:38:54: targets based primarily off new building institutes 0 energy

00:38:54 --> 00:38:58: and database, but also leveraging Ashley 100 to be a

00:38:58 --> 00:39:02: little bit more comprehensive across different property types.

00:39:03 --> 00:39:05: And so this shows this and the next slide are

00:39:05 --> 00:39:09: going to show the comparison between those again also

00:39:09 --> 00:39:11: available

00:39:09 --> 00:39:11: within the the technical report.

00:39:11 --> 00:39:14: So you can have to the next slide and I

00:39:14 --> 00:39:17: think one of the the takeaways here was that there

00:39:17 --> 00:39:20: is a lot of work to be done in terms

00:39:20 --> 00:39:23: of squaring the circle of of what a really good

00:39:23 --> 00:39:28: final energy target should be for for an individual, individual

00:39:28 --> 00:39:29: building next slide.

00:39:31 --> 00:39:35: So just to sum up the technical deliverables across the

00:39:35 --> 00:39:38: board, here we have our methodology memo.

00:39:38 --> 00:39:39: We're now calling it a technical report.

00:39:39 --> 00:39:44: I think it's graduated in terms of its semantic there

00:39:44 --> 00:39:47: a look up of ZIP codes to the KREM pathways

00:39:47 --> 00:39:52: and then a the pilot technical analysis which should be

00:39:52 --> 00:39:54: forthcoming relatively soon.

00:39:55 --> 00:39:57: And then on the KREM side, we our part of

00:39:57 --> 00:40:01: our deliverables, we're also giving the direct inputs to Creme.

00:40:01 --> 00:40:04: So this is weighted emission factors across those 57 regions

00:40:04 --> 00:40:07: and the Canadian provinces in addition to starting EUI values

00:40:07 --> 00:40:11: and degree days for final target calculations, which have now

00:40:11 --> 00:40:14: been produced into curves and the associated risk

00:40:14 --> 00:40:16: assessment tool,

00:40:16 --> 00:40:20: which should be available shortly.

00:40:20 --> 00:40:21: And and with that, I think I'll be handing it

00:40:21 --> 00:40:24: back to you, Blakely.

00:40:24 --> 00:40:24: Great.

00:40:24 --> 00:40:25: Thank you, Josh.

00:40:25 --> 00:40:29: So I'll spend the next few minutes walking you through

00:40:29 --> 00:40:33: some of the the out of scope stakeholder feedback that

00:40:33 --> 00:40:37: we received, which we documented in that first ULI memo.

00:40:37 --> 00:40:41: It's linked up top and is posted on our project

00:40:41 --> 00:40:41: web page.

00:40:43 --> 00:40:48: So first, stakeholders underscored that while CRIM measures

00:40:48 --> 00:40:52: 2 elements

00:40:52 --> 00:40:55: of transition risk, so it measures greenhouse gas related

00:40:55 --> 00:40:59: transition

00:41:00 --> 00:41:03: risk and energy use risk, an asset that is off

00:41:03 --> 00:41:05: track relative to its CRIM curve shouldn't be considered

00:41:06 --> 00:41:09: stranded.

00:41:09 --> 00:41:11: So there are other factors that contribute to transition risk

00:41:12 --> 00:41:15: like tenant preferences and local policy.

00:41:15 --> 00:41:17: Sebastian mentioned this up top earlier in today's

00:41:19 --> 00:41:23: presentation.

00:41:23 --> 00:41:28: And this really is sort of a a stakeholder and

00:41:28 --> 00:41:31: investor education piece around terminology and, and

00:41:31 --> 00:41:34: understanding what the

00:41:34 --> 00:41:37: curves measure and and what they don't measure.

00:41:37 --> 00:41:40: Second, stakeholders noted that friends EUI targets are set

00:41:40 --> 00:41:43: by

00:41:43 --> 00:41:46: downscaling the global greenhouse gas budget to the

00:41:46 --> 00:41:49: building level

00:41:28 --> 00:41:29: based on grid intensity.

00:41:30 --> 00:41:33: So this penalizes buildings that rely on dirtier grids by

00:41:33 --> 00:41:35: setting more aggressive EUI targets.

00:41:36 --> 00:41:39: And So what we heard over and over is that

00:41:39 --> 00:41:43: stakeholders would really like to separate that methodology for EUI

00:41:43 --> 00:41:47: targets from the carbon intensity of the grid, so they

00:41:47 --> 00:41:50: can work clearly show the role of building level versus

00:41:50 --> 00:41:55: grid decarbonization responsibility to meet their global climate goals.

00:41:56 --> 00:42:01: And then finally, stakeholders noted insufficient transparency and robustness around

00:42:01 --> 00:42:05: Crim's governance structure and around the mechanisms to provide input

00:42:05 --> 00:42:07: and feedback to the global organization.

00:42:08 --> 00:42:11: I will note CRIM has launched a new nonprofit earlier

00:42:11 --> 00:42:13: this week and we'll hear more about that later.

00:42:14 --> 00:42:17: They do have plans to to revisit their governance structure.

00:42:19 --> 00:42:20: So I'll go to the next slide, please.

00:42:20 --> 00:42:24: So now we're going to spend the next few minutes

00:42:24 --> 00:42:28: walking you through what's next for CRIM and decarbonization curves.

00:42:29 --> 00:42:31: Christopher, I'll hand it to you to speak to that

00:42:31 --> 00:42:34: new crim nonprofit and some of the upcoming governance changes.

00:42:42 --> 00:42:42: Thank you.

00:42:42 --> 00:42:46: I need permission to start my camera eve.

00:42:48 --> 00:42:50: Let's see, can we upgrade Christopher?

00:43:00 --> 00:43:00: See.

00:43:08 --> 00:43:09: I can start.

00:43:10 --> 00:43:12: Yeah, I think it'd be great if you go ahead

00:43:12 --> 00:43:12: and start.

00:43:12 --> 00:43:13: We will try and fix someone.

00:43:13 --> 00:43:15: If someone can upgrade Christopher to a panelist so he

00:43:15 --> 00:43:17: can show his video, that would be great.

00:43:17 --> 00:43:18: Thank you.

00:43:18 --> 00:43:21: So, so as like they said, we, we set up

00:43:21 --> 00:43:24: a new nonprofit and this is this is actually a

00:43:24 --> 00:43:25: big step.

00:43:27 --> 00:43:29: It was there we go.

00:43:30 --> 00:43:30: Thank you.

00:43:32 --> 00:43:35: So it was originally in a European research project and

00:43:35 --> 00:43:36: then it has grown into a global initiative.

00:43:36 --> 00:43:41: So, so particularly on the governance side, it's much more,  
00:43:41 --> 00:43:44: it's much easier to think of this as an  
00:43:44 --> 00:43:48: organization with this a clear, a board with a clear  
00:43:48 --> 00:43:53: remit, governing bodies and operational team, how it fits  
together  
00:43:53 --> 00:43:56: if you have a legal entity behind it.  
00:43:56 --> 00:43:59: So that we have now established it's a, it's a  
00:43:59 --> 00:44:02: nonprofit organization that was also an important objective.  
00:44:04 --> 00:44:07: The core operational team, including Sebastian here remains  
in place.  
00:44:07 --> 00:44:10: So that ensures the continuity on that side.  
00:44:10 --> 00:44:15: We've also secured some philanthropic funding for this  
transition.  
00:44:16 --> 00:44:19: We will appoint a new CEO, Sven Beanart, who was  
00:44:19 --> 00:44:23: leading this on the operational side since the inception has  
00:44:23 --> 00:44:25: decided to step down.  
00:44:25 --> 00:44:29: So, so that's we need to replace him, you know,  
00:44:29 --> 00:44:33: small shoes to fill and that will be a priority  
00:44:33 --> 00:44:36: for the for the early next year or as soon  
00:44:37 --> 00:44:38: as possible.  
00:44:38 --> 00:44:42: Basically the key principles of CRAM will remain in place.  
00:44:42 --> 00:44:46: So it's, it's designed to be independent of narrow commercial  
00:44:46 --> 00:44:47: or political interests.  
00:44:47 --> 00:44:51: So it has has some objectivity built into it.  
00:44:52 --> 00:44:53: It's open source.  
00:44:54 --> 00:44:55: We believe that this is a public good.  
00:44:56 --> 00:45:00: The market benefits from having this resource available.  
00:45:02 --> 00:45:04: And so that's going to be an important principle going  
00:45:04 --> 00:45:05: forward.  
00:45:05 --> 00:45:06: It's global in scope.  
00:45:06 --> 00:45:09: So it means that there needs to be some methodologies  
00:45:09 --> 00:45:11: that provide some comparability across countries.  
00:45:12 --> 00:45:16: It's particularly important for real estate investors that hold  
globally  
00:45:16 --> 00:45:19: diversified portfolios across different property types.  
00:45:19 --> 00:45:22: And then finally, scientific integrity, it needs to maintain the  
00:45:23 --> 00:45:25: highest standards in methodology and data.  
00:45:26 --> 00:45:30: And that's obviously means you have to constantly update it,  
00:45:30 --> 00:45:34: you have to constantly review available data sources.  
00:45:34 --> 00:45:38: And so that, that's a dynamic process, but that's basically  
00:45:38 --> 00:45:40: what decides the the design.  
00:45:42 --> 00:45:44: I should say that the pathways are a tool for  
00:45:44 --> 00:45:45: for risk management.

00:45:46 --> 00:45:49: We know that 1 1/2 degree pathway is an important  
00:45:49 --> 00:45:51: marker for many investors and the market as a whole.  
00:45:51 --> 00:45:55: So that is the reason why that pathways been chosen.  
00:45:55 --> 00:45:59: But we recognize this is the case that the market  
00:45:59 --> 00:46:03: participants have different preferences for risk and we'll price  
this  
00:46:03 --> 00:46:05: risk differently.  
00:46:05 --> 00:46:08: There are also other elements that influence carbon related  
risk  
00:46:08 --> 00:46:09: that I completely agree with.  
00:46:10 --> 00:46:14: So these pathways as, as as was mentioned earlier, are,  
00:46:14 --> 00:46:17: are averages for, for regions and and building types and  
00:46:17 --> 00:46:22: they will be kind of specific characteristics of buildings that  
00:46:22 --> 00:46:25: might explain why why a particular asset is is above  
00:46:25 --> 00:46:27: or below a certain pathway.  
00:46:27 --> 00:46:30: So it's a risk management tool that I think, I  
00:46:30 --> 00:46:32: think can be used in the in the wider market.  
00:46:34 --> 00:46:37: I sit on an interim board together with the two  
00:46:37 --> 00:46:39: other investors.  
00:46:39 --> 00:46:41: The idea is to expand that over time.  
00:46:42 --> 00:46:45: And I think in this transition period, we have, we  
00:46:46 --> 00:46:48: have 3 broad goals or 41 is to set up  
00:46:48 --> 00:46:53: an organization that can provide more regional granularity in  
terms  
00:46:53 --> 00:46:54: of the pathways.  
00:46:55 --> 00:46:56: That's clearly a demand.  
00:46:56 --> 00:47:00: And it's natural that this type of initiative starts with  
00:47:00 --> 00:47:04: more of a global standard kind of a uniform methodology.  
00:47:04 --> 00:47:08: But then over time, as the market starts using the  
00:47:08 --> 00:47:12: pathways, as we get feedback on, on the on their  
00:47:12 --> 00:47:16: value, we start regionalizing some of the some of the  
00:47:16 --> 00:47:17: work.  
00:47:17 --> 00:47:19: And I think this North America project has really shown  
00:47:20 --> 00:47:20: the value of that.  
00:47:21 --> 00:47:25: We're also going to cover more property types to make  
00:47:25 --> 00:47:29: sure that this is applicable to to larger parts of  
00:47:29 --> 00:47:34: the market robust and well governed organization that's  
clearly and  
00:47:34 --> 00:47:35: ambition.  
00:47:35 --> 00:47:38: So what that means is that we're going to review  
00:47:38 --> 00:47:40: the governance setup that we have.  
00:47:40 --> 00:47:44: That means the the board, it's composition, the scientific  
committee,



00:47:45 --> 00:47:48: which which is has central role in updating the pathways.

00:47:48 --> 00:47:51: So the size of that committee, the composition of the

00:47:51 --> 00:47:54: committee and the role of the committee is important.

00:47:54 --> 00:48:00: And then potentially other bodies, including regional stakeholder groups that

00:48:00 --> 00:48:04: can tie in market participants and views with KREM on

00:48:04 --> 00:48:05: an ongoing basis.

00:48:05 --> 00:48:08: So instead of having these as kind of ad hoc

00:48:08 --> 00:48:13: relationships and we certainly have relationships with many regional groups

00:48:13 --> 00:48:17: already, but to build on those and and formalize it

00:48:17 --> 00:48:20: slightly so that there is a better communication both to

00:48:20 --> 00:48:24: KREM and from KREM to those regions, we intend to

00:48:24 --> 00:48:26: learn from similar organizations.

00:48:26 --> 00:48:29: And so we're going to seek expert input from an

00:48:29 --> 00:48:33: independent expert with some relevant experience in the real estate

00:48:33 --> 00:48:36: space that can advise us on how to set this

00:48:36 --> 00:48:36: up.

00:48:37 --> 00:48:41: And then the setup itself will be subject to some

00:48:41 --> 00:48:43: kind of public consultation.

00:48:43 --> 00:48:47: So, so we can get input also from the from

00:48:47 --> 00:48:51: the market on how how this initiative can best be

00:48:51 --> 00:48:52: governed.

00:48:53 --> 00:48:58: In addition, this last point that that Blakely made mentioned

00:48:58 --> 00:49:02: on the transparency is we're going to issue a process

00:49:03 --> 00:49:07: guide or some kind of documentation on how pathways are

00:49:07 --> 00:49:13: updated, how they're decided and the roles of various governing

00:49:13 --> 00:49:16: bodies, including stakeholder groups.

00:49:16 --> 00:49:20: And there'll be a comment period around that because it's

00:49:20 --> 00:49:23: central to the credibility of the initiative.

00:49:24 --> 00:49:26: I think at this up until now that hasn't been,

00:49:26 --> 00:49:30: I mean that the information has been there, but it

00:49:30 --> 00:49:33: hasn't been communicated, but perhaps as well as it should

00:49:33 --> 00:49:33: be.

00:49:34 --> 00:49:37: And I think it's really important for the market to

00:49:37 --> 00:49:39: to not be to have that information that that that

00:49:39 --> 00:49:42: the update process is predictable in terms of when it

00:49:42 --> 00:49:45: will happen and on what basis it will happen.

00:49:45 --> 00:49:52: So that helps everyone plan and and makes also

00:49:52 --> 00:49:52: communication

00:49:52 --> 00:49:52: easier.

00:49:53 --> 00:49:58: So I would say right now we've just set up  
00:49:58 --> 00:50:04: this, this nonprofit, it's a, so it's fairly fresh.  
00:50:04 --> 00:50:06: We decided to go out with, with what our ambitions  
00:50:06 --> 00:50:06: are.  
00:50:06 --> 00:50:09: We don't have that many answers right now, but we  
00:50:09 --> 00:50:12: do this because it's important for you to know that  
00:50:12 --> 00:50:15: this process is starting and that will probably we will,  
00:50:15 --> 00:50:18: we will reach out and and that will take take  
00:50:18 --> 00:50:21: the input that's already been put together here.  
00:50:21 --> 00:50:24: That's very helpful and then also engage with you further.  
00:50:25 --> 00:50:27: So if you know if anybody wants to reach out  
00:50:27 --> 00:50:30: to us, you can do it through the operational team,  
00:50:30 --> 00:50:33: through Sebastian or or through myself on the board.  
00:50:36 --> 00:50:38: Thank you, Grace.  
00:50:38 --> 00:50:40: We can go to the next slide.  
00:50:44 --> 00:50:47: So I also wanted to pull some highlights from a  
00:50:47 --> 00:50:50: second UI memo that's also published on the project web  
00:50:50 --> 00:50:50: page.  
00:50:50 --> 00:50:53: It's linked up top and this one really outlines what  
00:50:53 --> 00:50:57: we heard from stakeholders around how practitioners in the  
US  
00:50:57 --> 00:51:00: and Canada view crim and then some of the best  
00:51:00 --> 00:51:03: practices for contextualizing crim results with other analysis.  
00:51:04 --> 00:51:06: So this sort of goes back to clearly communicating what  
00:51:06 --> 00:51:09: crim does measure and what it doesn't measure and sort  
00:51:09 --> 00:51:11: of contextualizing those results.  
00:51:12 --> 00:51:14: So I will just go top level through some of  
00:51:14 --> 00:51:15: those principles.  
00:51:15 --> 00:51:17: You can read the memo for more details.  
00:51:17 --> 00:51:19: So 1 is the crim.  
00:51:19 --> 00:51:21: CRIM is a top down benchmark.  
00:51:21 --> 00:51:24: So it doesn't really provide decision useful data at the  
00:51:24 --> 00:51:27: asset level because those assumptions may not be accurate  
when  
00:51:27 --> 00:51:29: you drill down to the the asset level at that  
00:51:29 --> 00:51:30: level of granularity.  
00:51:31 --> 00:51:33: And so it's best used as a relative portfolio level  
00:51:34 --> 00:51:35: indicator of transition risk.  
00:51:35 --> 00:51:38: I think you've heard that throughout today's presentation.  
00:51:39 --> 00:51:42: The second bullet which I think you've heard throughout  
today's  
00:51:42 --> 00:51:44: presentation is that CRIM is a partial measure of transition  
00:51:44 --> 00:51:44: risk.

00:51:45 --> 00:51:49: So it specifically measures greenhouse gas risk and energy use

00:51:49 --> 00:51:49: risk.

00:51:50 --> 00:51:53: A building may be off track relative to KREM and

00:51:53 --> 00:51:56: still retain financial value because tenants are willing to lease

00:51:56 --> 00:51:59: it and buyers are willing to purchase it.

00:52:01 --> 00:52:05: The third is that for greenhouse gas related transition risk,

00:52:05 --> 00:52:08: KREM is viewed as one tool to measure that risk

00:52:08 --> 00:52:11: and to give portfolio owners a 1 1/2 degree aligned

00:52:11 --> 00:52:16: greenhouse gas budget for their portfolio or a typical building.

00:52:16 --> 00:52:19: We did hear the owners also use things like greenhouse

00:52:19 --> 00:52:23: gas based building performance standards and associated

00:52:23 --> 00:52:26: proxy for their greenhouse gas related transition risk.

00:52:28 --> 00:52:32: And then regarding energy use transition risk, stakeholders

00:52:32 --> 00:52:35: continue to

00:52:32 --> 00:52:35: express that they prefer a method to assess energy use

00:52:35 --> 00:52:38: transition risk that's not dependent on grid variables.

00:52:39 --> 00:52:43: So the current EUI methodology results in EUI targets and

00:52:43 --> 00:52:46: timelines that aren't technically feasible for a lot of buildings

00:52:46 --> 00:52:47: in the US and Canada.

00:52:49 --> 00:52:52: We lay this out actually in the LBNL tactical memo

00:52:52 --> 00:52:55: if you'd like to see a comparison of some of

00:52:55 --> 00:52:58: the crim EUI targets relative to other technical standards.

00:52:59 --> 00:53:02: So for this reason, many owners in the US and

00:53:02 --> 00:53:05: Canada prefer to use Energy Star, including the one to

00:53:05 --> 00:53:08: 100 score Energy Star certification Next Gen.

00:53:08 --> 00:53:11: and target Finder to measure and communicate that energy

00:53:11 --> 00:53:12: use

00:53:11 --> 00:53:12: transition risk.

00:53:13 --> 00:53:18: And then stakeholders also expressed an interest in

00:53:18 --> 00:53:21: exploring how

00:53:18 --> 00:53:21: to use Energy Star to set UI targets in Pathways

00:53:21 --> 00:53:22: next slide.

00:53:30 --> 00:53:33: So we will go ahead and Add all the registrants

00:53:33 --> 00:53:36: for today's webinar to our mailing list to keep you

00:53:36 --> 00:53:38: all in the loop on any future initiative related to

00:53:38 --> 00:53:41: Crim or to D CARB curves in the US and

00:53:41 --> 00:53:41: Canada.

00:53:42 --> 00:53:44: We ask you to also watch our web page for

00:53:44 --> 00:53:45: updates.

00:53:45 --> 00:53:49: So for one, Josh mentioned earlier that pilot technical

00:53:45 --> 00:53:49: analysis

00:53:49 --> 00:53:53: from Berkeley Lab, it's going to show EUI equivalents for  
00:53:53 --> 00:53:54: EPA Energy Star scores.

00:53:55 --> 00:53:57: As soon as that's ready, we'll we'll be posting it.

00:53:57 --> 00:54:00: We'll also post, you know, any additional industry letters.

00:54:00 --> 00:54:03: We posted Crim's press release this week about the new  
00:54:04 --> 00:54:06: nonprofit and as sort of our centralized hub.

00:54:07 --> 00:54:09: And then I also wanted to update you on a  
00:54:09 --> 00:54:13: few industry activities that may be informed by the outputs  
00:54:13 --> 00:54:15: of this CRAN North America project.

00:54:16 --> 00:54:19: So 1 is that the USEPA will be holding stakeholder  
00:54:19 --> 00:54:23: listening sessions to explore the concept of creating  
pathways for

00:54:23 --> 00:54:27: commercial real estate in the US, building on existing federal  
00:54:27 --> 00:54:31: guidelines and tools like Portfolio Manager, Target Finder  
and others.

00:54:32 --> 00:54:35: And then I also wanted to highlight there are other  
00:54:35 --> 00:54:39: potential opportunities for ULI working Group participants to  
participate or

00:54:39 --> 00:54:43: support ongoing collaboration around D CARB pathway tools  
and frameworks

00:54:43 --> 00:54:44: in the US and Canada.

00:54:45 --> 00:54:47: So we'll share those opportunities with the mailing list, but  
00:54:47 --> 00:54:49: please reach out and let us know if you want  
00:54:49 --> 00:54:50: to support this work.

00:54:51 --> 00:54:55: We will maintain that friend project at ULI e-mail account.

00:54:56 --> 00:54:59: And then finally, I just want to highlight that US  
00:54:59 --> 00:55:02: and Canadian real estate organizations will continue  
engaging their stakeholders

00:55:02 --> 00:55:03: on this topic.

00:55:03 --> 00:55:07: So for example, I know nee REIT supporting Reit's and  
00:55:07 --> 00:55:11: setting portfolio specific sustainability goals using US GB CS  
Perform

00:55:11 --> 00:55:12: platform.

00:55:15 --> 00:55:18: So that gets us to the end of our slides.

00:55:19 --> 00:55:22: So, Grace, if you want to bring down the the  
00:55:22 --> 00:55:25: presentation, so we recognize that we are coming up on  
00:55:25 --> 00:55:28: the end of the hour, we're going to try and,  
00:55:28 --> 00:55:30: and go, you know, 10 or 15 minutes over just  
00:55:31 --> 00:55:33: to answer some of the questions that we received.

00:55:34 --> 00:55:36: We got quite a few questions, but for those of  
00:55:36 --> 00:55:39: you who need to drop, I'm going to go ahead  
00:55:39 --> 00:55:40: and drop a link in the chat.

00:55:41 --> 00:55:45: We put together just like a three question survey to

00:55:45 --> 00:55:47: get your feedback on this project.

00:55:47 --> 00:55:50: If you participated in how it went to let us

00:55:50 --> 00:55:52: know if you'd like to be involved in any next

00:55:52 --> 00:55:55: steps and to, to let us know of any tools

00:55:55 --> 00:55:58: or resources that would be helpful for you in your

00:55:58 --> 00:56:01: decarbonization planning moving forward.

00:56:01 --> 00:56:02: So I went ahead and dropped it in the chat.

00:56:02 --> 00:56:04: If you have to leave at the bottom of the

00:56:04 --> 00:56:05: hour, please open up that survey.

00:56:05 --> 00:56:07: We'd love to, to hear your feedback.

00:56:11 --> 00:56:14: So I'd like to start with a, a question that

00:56:14 --> 00:56:17: we got from Dwayne as the non-technical person on the

00:56:17 --> 00:56:19: line that took a stab at this.

00:56:20 --> 00:56:23: Josh, could you explain in more detail how the the

00:56:23 --> 00:56:27: underlying crim methodology, which again we couldn't touch

00:56:27 --> 00:56:30: project, how it sets EUI curves for for a specific

00:56:30 --> 00:56:34: building dependent in part on the grid's carbon intensity and

00:56:34 --> 00:56:37: kind of link that to how that's beyond the the

00:56:37 --> 00:56:39: ability of building owners to control?

00:56:39 --> 00:56:42: Yeah, how, how do the leveling targets in years work

00:56:42 --> 00:56:43: is the question.

00:56:43 --> 00:56:45: We've gotten 4 different times.

00:56:46 --> 00:56:47: Yeah.

00:56:47 --> 00:56:49: And I'll, I'll do my best to to give a

00:56:49 --> 00:56:50: quick answer here.

00:56:50 --> 00:56:53: I did also answer Dwight in the Q&A, a couple

00:56:53 --> 00:56:54: page references.

00:56:54 --> 00:56:57: I'm going to see if I can share my screen

00:56:57 --> 00:57:01: on this 'cause it is a helpful visual here if

00:57:01 --> 00:57:05: I can do it, screen share hopefully is working.

00:57:07 --> 00:57:07: Yeah.

00:57:07 --> 00:57:12: So these breakdown our understanding of where different

00:57:13 --> 00:57:17: inputs within the Creme process manifest themselves in the

00:57:17 --> 00:57:19: pathways themselves.

00:57:19 --> 00:57:21: So the top one we're showing here, US office is

00:57:22 --> 00:57:22: just for reference.

00:57:23 --> 00:57:25: This applies to to any property type, any region.

00:57:26 --> 00:57:29: The starting point for the curves, which is really based

00:57:30 --> 00:57:33: off of the starting median intensity, then applied to the

00:57:33 --> 00:57:37: weighted emission factor starting in 2020, you have the

shape  
of the curve itself.

00:57:37 --> 00:57:38: So how aggressive the the the downscaling is, which is  
00:57:38 --> 00:57:42: driven by the budgeting process and those weighted  
00:57:42 --> 00:57:46: emission factors  
00:57:46 --> 00:57:50: as they're translated back into the energy pathway here.  
00:57:51 --> 00:57:54: And then, you know, the final target on the CO2  
00:57:54 --> 00:57:57: pathway is obviously straightforward as net zero.  
00:57:57 --> 00:58:00: But the energy pathway, we have this concept of the  
00:58:00 --> 00:58:03: levelling year that was introduced in, in V2.  
00:58:03 --> 00:58:07: So a point at which the EUI levels off because  
00:58:07 --> 00:58:11: the building is essentially at a level of efficiency deemed  
00:58:11 --> 00:58:14: appropriate for a net 0 ecosystem.  
00:58:16 --> 00:58:18: And so the way that this target year is, is  
00:58:18 --> 00:58:22: developed actually have a different visual down here that that  
00:58:22 --> 00:58:23: shows it pretty well.  
00:58:23 --> 00:58:27: So the final EUI targets are calculated via degree day  
00:58:27 --> 00:58:31: methodology that we've talked about in previous working  
groups and  
00:58:32 --> 00:58:34: we do get into detail up here in terms of  
00:58:34 --> 00:58:36: how that breaks down.  
00:58:37 --> 00:58:39: But that finally UI target if you were to put  
00:58:39 --> 00:58:41: it on this this Y axis and just draw a  
00:58:41 --> 00:58:44: line to the left, wherever that intersects with the the  
00:58:44 --> 00:58:47: original, the pre V2 version of the energy pathways that's  
00:58:47 --> 00:58:49: down scaled from the CO2 budget.  
00:58:49 --> 00:58:54: The intersection point between those two is your levelling  
year  
00:58:54 --> 00:58:59: for that given building grid region and property type and  
00:58:59 --> 00:58:59: I.  
00:58:59 --> 00:59:02: Try to say that in like a little more plain  
00:59:02 --> 00:59:02: language.  
00:59:02 --> 00:59:03: Please let.  
00:59:03 --> 00:59:06: Me try to say it back to you, OK, so  
00:59:07 --> 00:59:12: the actual EUI target is based on the IEA pathway.  
00:59:12 --> 00:59:15: And I know there was a question that we may  
00:59:15 --> 00:59:18: not get to about why that was picked, but that  
00:59:18 --> 00:59:21: is the what it's all downscaled from is there's an  
00:59:21 --> 00:59:23: IEA 2050 net zero scenario.  
00:59:23 --> 00:59:27: And in that global scenario it says that this is  
00:59:27 --> 00:59:31: how much energy real estate is using and then that  
00:59:31 --> 00:59:35: is divided down across and divvied up all the pie.  
00:59:36 --> 00:59:40: So that based on heating and cooling degree days, this

00:59:40 --> 00:59:42: is the energy target for buildings.

00:59:43 --> 00:59:47: And I think that's been part of what we've been

00:59:47 --> 00:59:51: talking about is how we compare that sort of global

00:59:51 --> 00:59:57: budget derived energy target to things like Ashtray 100, Energy

00:59:57 --> 01:00:00: Star and BIBPS standards, et cetera.

01:00:01 --> 01:00:03: And then how fast you have to get to that

01:00:03 --> 01:00:06: target is determined by how dirty your grid is.

01:00:06 --> 01:00:09: So if you're on a dirtier grid, you have to

01:00:09 --> 01:00:12: get to that target faster 'cause you're burning your carbon

01:00:12 --> 01:00:13: budget faster.

01:00:13 --> 01:00:15: And if you're on a cleaner grid, then you have

01:00:15 --> 01:00:16: more time to get to that target.

01:00:20 --> 01:00:23: 100% correct, well characterized.

01:00:23 --> 01:00:23: Thank you, Elena.

01:00:25 --> 01:00:26: Thank you both.

01:00:28 --> 01:00:31: Josh, there's a question around whether we're going to provide

01:00:31 --> 01:00:33: an EUI technical target supplement as part of the final

01:00:33 --> 01:00:34: updates.

01:00:34 --> 01:00:36: Maybe you could just give a little more context for

01:00:36 --> 01:00:38: that pilot technical analysis.

01:00:39 --> 01:00:40: Yeah.

01:00:40 --> 01:00:43: So sort of as part of our initial effort as

01:00:43 --> 01:00:48: we're establishing starting UI values, we used empirical survey data,

01:00:48 --> 01:00:52: verified survey data wherever we could, But there were a

01:00:52 --> 01:00:57: few different situations where the empirical data wasn't enough for

01:00:57 --> 01:00:59: us to characterize things appropriately.

01:00:59 --> 01:01:04: And in those scenarios, we leveraged Energy Star and Energy

01:01:04 --> 01:01:09: Star scoring methodologies to produce essentially a median a score

01:01:09 --> 01:01:12: of 50 building and the equivalent site EUI.

01:01:12 --> 01:01:15: So we had these calculations already built out.

01:01:15 --> 01:01:17: And so we were able to, you know, take that

01:01:17 --> 01:01:21: concept and push it to a more aggressive Energy Star

01:01:21 --> 01:01:24: score, which would be, you know, we're, we're not specifying

01:01:24 --> 01:01:26: or prescribing any particular score.

01:01:26 --> 01:01:29: That is, you know what what is needed across the

01:01:29 --> 01:01:32: board, but gives a reference point relative to what you

01:01:32 --> 01:01:35: know, the language that that a lot of building owners

01:01:35 --> 01:01:38: in the US and Canada speak, which is portfolio manager  
01:01:38 --> 01:01:40: and portfolio manager Energy Stars scores.  
01:01:40 --> 01:01:43: And so that memo, we're going to talk a little  
01:01:43 --> 01:01:46: bit about the, the, the target, final targets and compare  
01:01:46 --> 01:01:49: those to the visuals that I was showing previously.  
01:01:51 --> 01:01:56: ASHRAE 100 MBI but mainly the Energy Star.  
01:01:56 --> 01:02:00: Different increments of Energy Star scores and what the  
equivalent  
01:02:00 --> 01:02:04: site EUI would be associated with those, which hopefully  
would  
01:02:04 --> 01:02:06: be a good starting point for further work to be  
01:02:06 --> 01:02:10: done to develop more sophisticated target setting longer  
term.  
01:02:12 --> 01:02:13: Thanks, Josh.  
01:02:14 --> 01:02:17: So we also have a handful of questions related to  
01:02:17 --> 01:02:20: the grid and emission factors.  
01:02:20 --> 01:02:21: So there was one, you know.  
01:02:21 --> 01:02:25: Is it true that KREM, the grid weighted emission factors  
01:02:25 --> 01:02:29: don't incorporate state specific D card plans, Instead they're  
done  
01:02:29 --> 01:02:30: at the E grid level?  
01:02:33 --> 01:02:33: Yeah.  
01:02:33 --> 01:02:38: So essentially the way that the the starting emission factors  
01:02:38 --> 01:02:40: are built off of of E grid.  
01:02:41 --> 01:02:43: So it's 2020 through 2022.  
01:02:45 --> 01:02:48: The data source that was used for the longer term  
01:02:48 --> 01:02:52: emission factors is a product called Cambium developed by  
the  
01:02:52 --> 01:02:54: National Renewable Energy Laboratory.  
01:02:55 --> 01:02:57: And the Cambium version that we are using is Post  
01:02:57 --> 01:03:01: Inflation Reduction Act, which is an important thing we  
wanted  
01:03:01 --> 01:03:02: to make sure was done.  
01:03:03 --> 01:03:08: Cambium's process does get down to the generator levels of  
01:03:08 --> 01:03:11: individual power plants and modeling them out.  
01:03:12 --> 01:03:15: And so as much as state plans were already integrated  
01:03:15 --> 01:03:18: into utility plans, which are already then integrated into the  
01:03:18 --> 01:03:22: existing and future planned energy mix, there's a very long  
01:03:22 --> 01:03:25: way of saying yes, for the most part those state  
01:03:25 --> 01:03:27: level plans are are included there.  
01:03:27 --> 01:03:31: I can't say it includes every single proposed plan at  
01:03:31 --> 01:03:34: the state level, but the granularity of the data source  
01:03:34 --> 01:03:38: is such that it absolutely could include because you're getting  
01:03:38 --> 01:03:40: down to individual generation assets.



01:03:43 --> 01:03:43: Great.

01:03:44 --> 01:03:47: Will there be average pathways for each grid region?

01:03:51 --> 01:03:51: No.

01:03:51 --> 01:03:55: So each grid region will essentially have one pathway for each climate zone that exists within that that great region.

01:03:55 --> 01:03:59: There was no real way to aggregate those in an

01:04:00 --> 01:04:02: in an average way.

01:04:02 --> 01:04:03:

01:04:06 --> 01:04:09: So there's another question around whether we have a spreadsheet

01:04:09 --> 01:04:12: of the actual electricity emission factors per kWh for each

01:04:12 --> 01:04:15: region, and not just the weighted emission factors.

01:04:17 --> 01:04:19: Each region, yeah.

01:04:19 --> 01:04:22: So we, you know those are taken directly from Cambium.

01:04:23 --> 01:04:25: And so yeah, we could definitely point in the direction

01:04:25 --> 01:04:26: of where those those are available.

01:04:27 --> 01:04:29: And then I think we, we do give an example

01:04:29 --> 01:04:32: within the report that has that, but definitely reach out

01:04:32 --> 01:04:34: if you're looking to, to dive deeper on it.

01:04:34 --> 01:04:36: Happy to provide what you need.

01:04:37 --> 01:04:39: Yeah, I should say for all of these questions, we're

01:04:39 --> 01:04:40: not going to get to everything.

01:04:40 --> 01:04:42: We will do our best to follow up to the

01:04:42 --> 01:04:43: extent that we know who asked them.

01:04:43 --> 01:04:46: But you know the person who's asked this question about

01:04:46 --> 01:04:49: the electricity emission factor, feel free to to follow up

01:04:49 --> 01:04:51: and we'll connect you to that resource.

01:04:53 --> 01:04:56: I think we can maybe try to do an FAQ

01:04:56 --> 01:04:57: document after this.

01:04:57 --> 01:04:59: We're basically on a budget, but we'll do our best

01:04:59 --> 01:05:02: to publish all these questions and answers.

01:05:06 --> 01:05:06: OK.

01:05:06 --> 01:05:09: So I think we can get to at least one

01:05:09 --> 01:05:12: more question, which is this is from Chris Pike.

01:05:12 --> 01:05:15: It says the analysis focused on the single IEA 2050

01:05:15 --> 01:05:19: pathway, one that wasn't used by the IPCC or other

01:05:19 --> 01:05:20: climate assessments.

01:05:21 --> 01:05:23: This is but one of many possible pathways.

01:05:23 --> 01:05:26: So what are the implications of using this pathway or

01:05:26 --> 01:05:28: more robust set of pathways?

01:05:31 --> 01:05:35: I mean, I think there is like several arguments.

01:05:35 --> 01:05:39: I think 1 main argument was that the time we

01:05:39 --> 01:05:42: we decided for the IEA was that IPCC relied a

01:05:42 --> 01:05:46: lot of a lot on carbon capture and storage technologies,  
01:05:46 --> 01:05:51: which a lot of scientific articles stated that they won't  
01:05:51 --> 01:05:53: be available in the near future.  
01:05:54 --> 01:05:58: And then I think IPCC is like more I announced  
01:05:59 --> 01:06:03: pledger scenario and the IEA is more like a what  
01:06:03 --> 01:06:08: needs to be done to to achieve the 1.5?? scenario  
01:06:08 --> 01:06:12: in the future and to be Paris aligned.  
01:06:14 --> 01:06:19: But I think there is an extensive article on the  
01:06:19 --> 01:06:25: IEA website which separates like how IPCC or what their  
01:06:25 --> 01:06:32: methodology is and and how IEA handles handles kind of  
01:06:32 --> 01:06:32: things.  
01:06:34 --> 01:06:36: I'm actually going to lob one final question.  
01:06:37 --> 01:06:40: So will there be a single family pathway in the  
01:06:40 --> 01:06:42: future or anyone that the folks in the line could  
01:06:42 --> 01:06:45: work with and how that could be done says, for  
01:06:45 --> 01:06:48: example by comparing EU is within racks for different  
01:06:48 --> 01:06:49: building  
01:06:49 --> 01:06:51: types.  
01:06:51 --> 01:06:53: So do we have any update on a possible single  
01:06:56 --> 01:06:56: family pathway in the future?  
01:06:56 --> 01:06:57: Maybe.  
01:07:00 --> 01:07:03: I'll love that, the crim team.  
01:07:03 --> 01:07:07: I think we brought up that and, and, and this  
01:07:07 --> 01:07:10: project that single family is indeed very important and we  
01:07:10 --> 01:07:14: got a lot of feedback not only North America but  
01:07:14 --> 01:07:18: also in Asia Pacific that a lot of banks especially  
01:07:19 --> 01:07:21: due to their collaterals near the single family pathway.  
01:07:21 --> 01:07:26: So I think we have to see how we could  
01:07:26 --> 01:07:30: work with existing data and what Josh already derived for  
01:07:30 --> 01:07:33: multifamily and the data we used in North America.  
01:07:33 --> 01:07:37: And then going forward we can see how we maybe  
01:07:39 --> 01:07:40: can derive the the pathways also for single family properties.  
01:07:41 --> 01:07:43: Great.  
01:07:43 --> 01:07:43: So with that, I'll go ahead and close out today's  
01:07:44 --> 01:07:46: webinar.  
01:07:46 --> 01:07:47: Thank you everyone for joining and and for supporting our  
01:07:47 --> 01:07:50: project from the start.  
01:07:51 --> 01:07:53: We we really appreciate your support and literally couldn't  
01:07:53 --> 01:07:54: have  
01:07:54 --> 01:07:57: done it without your your input and feedback.  
01:07:57 --> 01:08:00: So we appreciate that.  
01:07:57 --> 01:08:00: Like I said, look out for future e-mail updates, monitor  
01:07:57 --> 01:08:00: our web page, and look forward to continue to work

**01:08:00 --> 01:08:01:** with you.  
**01:08:03 --> 01:08:03:** Thanks everyone.  
**01:08:04 --> 01:08:05:** Thanks everyone.  
**01:08:05 --> 01:08:06:** Thank you.

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