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 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 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
00:05:16 --> 00:05:20:	much as possible and then work also with building automation,
00:05:21 --> 00:05:25:	for example, smart metering, try to influence tenant behaviour for
00:05:26 --> 00:05:27:	example by green leases.
00:05:28 --> 00:05:31:	And then in the very last step, if we have
00:05:31 --> 00:05:35:	have done our homework and we see that there is
00:05:35 --> 00:05:39:	still a gap between our performance we can achieve and
00:05:39 --> 00:05:44:	net 0 emissions, we can work with market based solutions
00:05:44 --> 00:05:47:	to get the OR to close the gap to to
00:05:47 --> 00:05:48:	net 0 emissions.
00:05:48 --> 00:05:52:	But what we are currently seeing that in the industry
00:05:52 --> 00:05:56:	or in the market there are more green energy contracts
00:05:56 --> 00:05:59:	out there than green energy actually produced.
00:06:00 --> 00:06:04:	So the key message from the slide is efficiency first
00:06:04 --> 00:06:08:	and and in the end as the very last step
00:06:08 --> 00:06:10:	consider market based solutions.
00:06:12 --> 00:06:15:	And the next slide we can see how Creme can
00:06:15 --> 00:06:18:	be used for for risk management.
00:06:18 --> 00:06:23:	As mentioned in the first slide, Gram derives pathways from
00:06:23 --> 00:06:27:	2020 to 2050 on square metre or square metre basis.
00:06:27 --> 00:06:31:	And then I have in the end an intersection point
00:06:31 --> 00:06:34:	either at the asset level or at the whole portfolio
00:06:34 --> 00:06:37:	level and then I can derive a relative risk.
00:06:39 --> 00:06:42:	The key message on this slide is because or as
00:06:42 --> 00:06:45:	I have also included the bell shaped curve on the
00:06:45 --> 00:06:49:	slide is CRAM pathways really reflect the market average.
00:06:49 --> 00:06:52:	So it's not about black and white or CRAM shouldn't
00:06:53 --> 00:06:55:	be considered as a binary benchmark.
00:06:55 --> 00:06:58:	It should be considered as per definition as the market
00:06:58 --> 00:06:58:	average.
00:06:58 --> 00:07:01:	So in the end there will always some properties which
00:07:02 --> 00:07:05:	are above the curve and some properties which are below
00:07:05 --> 00:07:06:	the curve.
00:07:06 --> 00:07:09:	And then I, I take a potential intersection point with
00:07:09 --> 00:07:13:	the cram pathways and put it into my risk management
00:07:13 --> 00:07:17:	or into my potential investment considerations or retrofit plans.
00:07:18 --> 00:07:21:	So, yeah, it is really important here not to say
00:07:21 --> 00:07:25:	it's black or white or we often hear the term
00:07:25 --> 00:07:29:	stranded assets or considered the asset to be worthless.
00:07:29 --> 00:07:32:	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 pathways
00:08:07 --> 00:08:11:	or targets with timelines associated with them to get a
00:08:11 --> 00:08:14:	sense of are you on track or what is your
00:08:14 --> 00:08:18:	relative transition risk on an energy and EUI basis.
00:08:18 --> 00:08:22:	And so some of the sort of guiding principles for
00:08:22 --> 00:08:26:	this project was we want to be able to understand
00:08:26 --> 00:08:31:	carbon performance against a 1.5?? target and we want to
00:08:31 --> 00:08:36:	separately be able to understand building energy use performance versus
00:08:36 --> 00:08:38:	grid related risk.
00:08:38 --> 00:08:42:	And that sort of interplay allows you to use green
00:08:42 --> 00:08:47:	power, understand the gap of what's needed with additional technology
00:08:47 --> 00:08:49:	or green power solutions.
00:08:50 --> 00:08:53:	And that really is meant as a risk assessment tool.
00:08:53 --> 00:08:57:	As we've been talking about, your relative performance against those
00:08:57 --> 00:09:00:	benchmarks would give you a sense of a property's ability
00:09:00 --> 00:09:03:	to meet evolving regulations and market demand.
00:09:05 --> 00:09:06:	Next slide, please.
00:09:08 --> 00:09:12:	So our goals for this working group were, first of
00:09:12 --> 00:09:15:	all, to make sure we had the best available data
00:09:15 --> 00:09:18:	for the United States and Canada for the inputs to
00:09:18 --> 00:09:23:	this analysis, to really increase the granularity and make sure
00:09:23 --> 00:09:26:	that it covers all of the geographies of the US
00:09:26 --> 00:09:31:	and Canada, reflecting the variations in climate zone, the different
00:09:31 --> 00:09:32:	grids and things like that.
00:09:34 --> 00:09:38:	I think also the US and Canadian real estate community
00:09:38 --> 00:09:42:	really wanted to understand more of the methodology and how
00:09:42 --> 00:09:43:	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 work
00:10:02 --> 00:10:06:	to compare these pathways with building performance standards and other
00:10:07 --> 00:10:11:	commonly used tools such as Energy Star portfolio manager 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 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 from those working group
00:12:17 --> 00:12:20:	sessions to propose draft curves for the US and Canada.
00:12:21 --> 00:12:24:	We then held a 45 day public comment period for
00:12:24 --> 00:12:28:	folks to review the methodology memo, to review the draft
00:12:28 --> 00:12:31:	curves and the inputs we had used for those curves
00:12:31 --> 00:12:34:	and give us feedback on the ways that we could
00:12:34 --> 00:12:37:	further improve the granularity and the accuracy.
00:12:38 --> 00:12:42:	We got 22 submissions from individuals, but also from companies
00:12:42 --> 00:12:45:	and then also from industry groups like me, Reed and
00:12:45 --> 00:12:49:	the Real Estate Roundtable representing their collective membership voices.
00:12:50 --> 00:12:51:	We really appreciate that feedback.
00:12:53 --> 00:12:55:	Around that time, I also want to note that the
00:12:55 --> 00:12:57:	Real Estate Roundtable sent a letter to U.S.
00:12:57 --> 00:12:59:	Treasury and nay, Reid sent a letter to Crim outlining
00:12:59 --> 00:13:02:	some sort of similar concerns and challenges that they saw
00:13:02 --> 00:13:03:	with the framework.
00:13:04 --> 00:13:07:	And then finally, yesterday, we we posted the final project
00:13:07 --> 00:13:10:	deliverables that have incorporated all of that stakeholder feedback.
00:13:11 --> 00:13:13:	And we're hosting this webinar today to update you all
00:13:13 --> 00:13:14:	on our progress.
00:13:15 --> 00:13:16:	Next slide, please.
00:13:18 --> 00:13:21:	So I won't read all of these, but this gives
00:13:21 --> 00:13:23:	you a sense of the major things this project focused
00:13:23 --> 00:13:26:	on, driven by that working group feedback that I mentioned.
00:13:27 --> 00:13:30:	So we looked at things like assumptions around future grid
00:13:31 --> 00:13:34:	carbon intensity, the way that markets were divided up within
00:13:34 --> 00:13:37:	the US and Canada, the number of asset classes included
00:13:37 --> 00:13:38:	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 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 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 make
00:21:57 --> 00:22:00:	sense for us to split things by state for a
00:22:00 --> 00:22:02:	number of reasons.
00:22:02 --> 00:22:06:	One being that you have states that are covering multiple
00:22:06 --> 00:22:09:	climate zones and then you have E grid regions or
00:22:09 --> 00:22:14:	electric grid regions that are overlapping different different States and
00:22:14 --> 00:22:16:	and states in a partial way.
00:22:16 --> 00:22:19:	So we found that the best approach both in terms
00:22:19 --> 00:22:24:	of materiality of the geographic divisions to the pathways themselves
00:22:24 --> 00:22:27:	and in terms of data availability was to subdivide the
00:22:27 --> 00:22:30:	US into both climate zones and E grid regions.
00:22:30 --> 00:22:33:	So if you were to overlay a map of we
00:22:33 --> 00:22:37:	used C BEX climate zones, which are slightly less granular
00:22:37 --> 00:22:39:	than ASHRAE climate zones.
00:22:40 --> 00:22:43:	If you were to overlay that with the grid regions
00:22:43 --> 00:22:48:	across the US and then divide that into different geographic
00:22:48 --> 00:22:52:	subdivisions, you'd end up with 57 different regions across the
00:22:52 --> 00:22:56:	US that are using the most appropriate value for both
00:22:56 --> 00:23:00:	the climate zone of that region and the and the
00:23:00 --> 00:23:02:	electric grid operating region.
00:23:02 --> 00:23:06:	And so this, as I noted, led to 57 different
00:23:06 --> 00:23:07:	delineations.
00:23:08 --> 00:23:13:	C vacs and Rex were used across the climate zones
00:23:13 --> 00:23:17:	and then both E grid and cambium, which I've spoken
00:23:17 --> 00:23:23:	about in previous previous presentations here were used for the
00:23:23 --> 00:23:27:	starting and future electric grid projections.
00:23:28 --> 00:23:31:	From here, we're going to get into each of the
00:23:31 --> 00:23:34:	two regions and and some of the findings.
00:23:34 --> 00:23:36:	And so that'll also get into the property type changes
00:23:36 --> 00:23:37:	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 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 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 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 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 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 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 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 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 days
00:35:16 --> 00:35:20:	are calculated in different ways unfortunately depending on 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 used by
00:35:29 --> 00:35:33:	platforms like Energy Star and convert that wherever we 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 targets
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 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 assessment tool,
00:40:14 --> 00:40:16:	which should be available shortly.
00:40:16 --> 00:40:20:	And and with that, I think I'll be handing it
00:40:20 --> 00:40:21:	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 2 elements
00:40:48 --> 00:40:52:	of transition risk, so it measures greenhouse gas related transition
00:40:52 --> 00:40:55:	risk and energy use risk, an asset that is off
00:40:55 --> 00:40:59:	track relative to its CRIM curve shouldn't be considered stranded.
00:41:00 --> 00:41:03:	So there are other factors that contribute to transition risk
00:41:03 --> 00:41:05:	like tenant preferences and local policy.
00:41:06 --> 00:41:09:	Sebastian mentioned this up top earlier in today's presentation.
00:41:09 --> 00:41:11:	And this really is sort of a a stakeholder and
00:41:12 --> 00:41:15:	investor education piece around terminology and, and understanding what the
00:41:15 --> 00:41:17:	curves measure and and what they don't measure.
00:41:19 --> 00:41:23:	Second, stakeholders noted that friends EUI targets are set by
00:41:23 --> 00:41:28:	downscaling the global greenhouse gas budget to the 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 to think as 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 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 fines as a
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 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 use
00:53:11 --> 00:53:12:	transition risk.
00:53:13 --> 00:53:18:	And then stakeholders also expressed an interest in 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 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 through this
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 data source
00:57:13 --> 00:57:17:	inputs within the Creme process manifest themselves in the 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
00:57:37 --> 00:57:38:	of the curve itself.
00:57:38 --> 00:57:42:	So how aggressive the the the downscaling is, which is
00:57:42 --> 00:57:46:	driven by the budgeting process and those weighted 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
01:03:55 --> 01:03:59:	each climate zone that exists within that that great region.
01:04:00 --> 01:04:02:	There was no real way to aggregate those in an
01:04:02 --> 01:04:03:	in an average way.
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 IPPC 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 building
01:06:48 --> 01:06:49:	types.
01:06:49 --> 01:06:51:	So do we have any update on a possible single
01:06:51 --> 01:06:53:	family pathway in the future?
01:06:56 --> 01:06:56:	Maybe.
01:06:56 --> 01:06:57:	I'll love that, the crim team.
01:07:00 --> 01:07:03:	I think we brought up that and, and, and this
01:07:03 --> 01:07:07:	project that single family is indeed very important and we
01:07:07 --> 01:07:10:	got a lot of feedback not only North America but
01:07:10 --> 01:07:14:	also in Asia Pacific that a lot of banks especially
01:07:14 --> 01:07:18:	due to their collaterals near the single family pathway.
01:07:19 --> 01:07:21:	So I think we have to see how we could
01:07:21 --> 01:07:26:	work with existing data and what Josh already derived for
01:07:26 --> 01:07:30:	multifamily and the data we used in North America.
01:07:30 --> 01:07:33:	And then going forward we can see how we maybe
01:07:33 --> 01:07:37:	can derive the the pathways also for single family properties.
01:07:39 --> 01:07:40:	Great.
01:07:41 --> 01:07:43:	So with that, I'll go ahead and close out today's
01:07:43 --> 01:07:43:	webinar.
01:07:44 --> 01:07:46:	Thank you everyone for joining and and for supporting our
01:07:46 --> 01:07:47:	project from the start.
01:07:47 --> 01:07:50:	We we really appreciate your support and literally couldn't have
01:07:51 --> 01:07:53:	done it without your your input and feedback.
01:07:53 --> 01:07:54:	So we appreciate that.
01:07:54 --> 01:07:57:	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.