NYSERDA's 114th Program Planning Committee Meeting
October 5, 2021
Clean Copy of Transcript

Sara LeCain:
Shere, if you'd like to start the meeting.

Shere Abbott:
Okay, good afternoon and welcome. I call this meeting to order a notice and agenda for the meeting was provided to the committee members on September 24, 2021, and the press on September 27, 2021. This meeting is being conducted by video conference. The authority will post a video and a transcript of this meeting on the web to confirm that we have a quorum. I would like to ask Sara LeCain, secretary to the committee to conduct a roll call of each of the committee members in attendance.

Sara LeCain:
Thank you, Chair Abbott. I will first note your attendance and now take the remainder of the roll call. When I call your name, please indicate present Arturo Garcia-Costas.

Arturo Garcia-Costas:
Present.

Sara LeCain:
Sadie McKeown,

Sadie McKeown:
Present.

Sara LeCain:
Francis Resheske.

Frances Resheske:
Present.

Sara LeCain:
We currently have four members in attendance.

Shere Abbott:
Thank you, Sara. The next, the first two items on the agenda concern the development of the strategic outlook. Senior Vice President for Strategy and Market Development, Janet Joseph will present these items and we'll be joined by other authority staff. Janet.

Janet Joseph:
Thank you, Chair Abbott, and good afternoon to the committee members. So today we'll be presenting an update on our strategic outlook, and we're going to start with the basics of how we are doing on our primary mission outcomes and policy goals. And Jenn Meissner will be

presenting that part of the presentation. Then we will launch into a discussion of the strategic focus areas that we have outlined in our current strategic outlook. And we'll share with you where we have made progress and where we have work ahead. As we look to update our strategic outlook for the 2022 through 2025-time frame, and that updated strategic outlook will be presented to the committee and the board in draft form for your consideration in January. Next slide please. So, this chart shows our primary mission outcomes and our strategic focus areas. And this slide should be familiar to most of you starting first with the mission outcomes, greenhouse gas emission reductions remain as the north star of our work.

And if anything grows more and more important over time, now we deliver this emission reduction by advancing renewable energy by accelerating energy efficiency, by building a clean energy economy. And by working to ensure that we have a resilient and a distributed energy system. So, as we look to the 2022 through 2025 planning period, our mission outcomes remain unchanged. Although our tactics will certainly continue to evolve. And we'll speak to that. If anything, we are more about scale today and urgency of action than any point I can recall in NYSERDA's history. And it is no longer a question of whether it is a market-based strategy or a policy mandate. It is both. And, and that appears to be the world that we are operating in. And as we advance on our mission outcomes, what we care about is building an inclusive, clean energy economy that works for all New Yorkers.

We care about supporting green jobs and helping your estate accelerate its economic recovery. We care about building and fostering healthy communities and resilient communities, and also advancing the long game, which is the acceleration of the transition from fossil fuel based system to a low carbon future. And these remain our strategic focus areas again with evolution and refinement, which we will share with you today for discussion. So that's how we're going to approach the conversation today. I think we have about 90 minutes or a little under that for the combined conversation. So, I'm going to pass it to Jen Meisner, who is our Director of Performance Management who will present progress on our primary mission outcomes. And we'll tee this up within the broader policy context of New York State. So, we can move on to the next slide and Jen, the microphone is yours. Okay.

Jennifer Meissner:
Thank you, Janet and members, I'm glad to be here today and giving us this overview, on this slide, really, we show these overarching policy goals that you're familiar with as a quick reference. This is the set of goals that have been codified through the climate act, including renewable energy, energy storage, efficiency, greenhouse gas, reductions, and benefits to disadvantaged communities. I'm going to be walking through each of these goals as they're tied directly to our NYSERDA mission outcomes, and we'll highlight progress to date on each. And so, this is a broad overview, but I do believe we plan to pause after this part of the agenda to have a bit of discussion and to cover any questions that might arise. So next slide please. Okay. We're going to first start with renewable energy which includes a couple of overarching policy goals 70% of electricity coming from renewables by 2030 and 100% zero emission electricity by 2040. The two other important pieces of achieving this are getting 6,000 megawatts, from distributed solar by 2025 and 9,000 megawatts from offshore wind by 2035. So, let's proceed to the next slide.

And so, I think that this horizontal bar chart and the associated donut charts are familiar to some at this point, it represents, both our, our operating renewables and what we have essentially in the pipeline and how much more we need to get to reach our goals. So we can see from the bar chart on the left-hand side, that our operating renewables currently make up 27% of the forecasted load by 2030, and significant progress has been made as shown sort of in the middle part of the bar and with the next doughnut chart, in procurements over the past several years, such that the contracted and pipeline renewables bring the total renewable energy to 50% of the 2030 forecasted load this procurement activity has consisted of a series of four Tier 1 REC solicitations that resulted in NYSERDA developing nearly 90 projects.

And these projects are expected to be generating annually 13,700 gigawatt hours of renewable energy and, this procurement activity actually, is notable in that, through the success of rounds, we saw also declining rec prices, through the solicitations, which have, reduced those REC prices, about 50% over, over time. Offshore wind, you'll see in that, in chaetodont chart for contracted in pipeline is a big piece of this, about half of the contracted and pipeline renewables. We'll talk about that in a little more detail on the next slide, but not to be missed actually is the recently announced Tier 4 contribution which brings renewable energy into demand centers, New York City, nice ozone load, load zone and the Tier 4 expectations are not yet shown in this bar, but they will effectively bring our progress up to more than 60%, renewable energy in the State.

Now these large-scale projects can take years to build and actually generate electricity. And so, the additional industry supports by NYSERDA are critical to success in building out what we have in the pipeline and getting to the end goal. So, we have many important support activities, including the build ready program, port infrastructure development, workforce training, just to name a few. And if we proceed the next slide, a little bit more of a drill down on our offshore wind progress, the goal of 9,000 megawatts of offshore wind by 2035 is what we're looking at here and again, over 50% of the contracted in, pipeline renewables is coming from successful offshore wind solicitations. There have been two thus far, run by nice startup procuring over 4,100 megawatts of capacity. And, actually in those solicitations, both of them achieved roughly double what was originally expected, so quite successful.

And the third offshore wind solicitation will prioritize an additional 1500 megawatts of capacity toward that first 70 by 30 renewable energy goal. Including a LIPA project that's under development. We have actually a state portfolio of five active projects, over 4,200 megawatts of total capacity. As you can see in the little thermometer chart on the upper, right, that gets us nearly 50% to this 9,000 megawatt goal. And so, you know, good progress has been made there and, needing to build out, these facilities and continue to make progress toward the long-term goal. If we move to the next slide, please.

So, we have a little drill down here on the 6,000 megawatt of distributed solar goal. New York Sun actually is one of the most mature and long-standing current portfolios, with a current goal to install 6,000 megawatts by 2025, but soon to be updated to 10,000 megawatts by 2030 as proposed by Governor Hogan during climate week recently. And so, we have surpassed, the original of installing 3000 megawatts. We've got, 146,000 projects approximately that have been installed and that 3000 megawatts was surpassed earlier this year. And, with the additional

distributed solar that's in the pipeline currently, we are poised to meet that 6,000 megawatt goal, as you can see in the thermometer chart on the right. Also 2019 and 2020 were extremely strong years for distributed solar in the State beating prior years in terms of capacity installed, but also putting New York, on the charts in terms of top in the nation.

So, New York was number one in the nation in 2020 for community solar deployment and number two in the nation in 2020 for distributed solar deployment, overall, really this progress is meaningfully, helped and supported and driven by, really some steep declines that we've seen in solar costs. Over the past ten years, you can see in the little line chart on the bottom, right, the red line shows the cost per watt declining nearly 70% over the ten-year period as the capacity of solar installed has ramped up and you know, not to be left out also is the very strong support from NY Green Bank to finance, $2.4 billion of overall project value in the State. And about 23 megawatts, 2300 megawatts, excuse me, a progress all in, has been really supported by near green bank. So, you know, next up or important, you know, current activity is ensuring that we are focusing on delivering benefits to disadvantaged communities through the new solar equity framework and working with our DPS colleagues also to look at design options for the next iteration, of distributed solar.

You can move on now. So, looking at the, the mission outcome and policy goals related to resilient and distributed energy system, really main policy goal here that I'll touch on is the distributed, the installed storage goal, 1500 megawatts by 2025 and double that by 2030, so we can advance to the next slide. So, energy storage progress really does reflect successful procurement, a robust pipeline over 80% of, the bridge incentive or three over 300 million has been awarded to date. Most of the megawatts procured have been in bulk storage. We included the map on the bottom, right to indicate however that both the bulk and retail storage are seeing a relatively good distribution across the State and geographic diversity is a really good thing for helping to reduce challenges like permitting. The more municipalities that gain experience the better.

And, in total we have 1,280 megawatts of storage, or about 85% of the 2025 goal, that is either installed or in progress, as you can see in the little thermometer here you know, this is not without risk though, because the vast majority is yet to be installed and these projects take multiple years there could be attrition so again, those market supports, are extremely important in this case. And we did show here just some of the primary use cases that we have been seeing in terms of storage, with residential solar plus storage you know, having been quite popular in certain areas and ripe for expansion. But I think in the interest of time, we'll maybe save that for, discussion later as needed. If we could advance one more slide, please.

So also, very important mission outcome, resilient and distributed grid, and really incorporating resilience into NYSERDA's investments. So, this is, you know, frankly, a work in progress still, you know, something that we are very much focusing on. We've advanced in certain key areas over the past year, including some foundational work that's been undertaken to understand our baseline of resilience considerations across sort of programs to increase capacity, to address resilience and embed resilience into programs, to value and measure resilience. And then we have many examples of current initiatives and solicitations that are bringing resilience into the offerings in a meaningful way. One that I think is a very good example is in the buildings of

excellence offering round one, offering included resilience as a co-benefit that bitters could reference.

And there was an awful lot of learning and advancement between round one and round two, in which round two had a much more well-defined strategy for resilience that saw competitive projects successfully addressing many resilience aspects from equipment place placement to passive survivability, backup power and the like, but this is still, you know, a work in progress across NYSERDA. If we could move on, please. The next slide. So, switching, switching gears a little bit here, going into the, the mission outcome and goals related to energy efficiency, the State goal really, emanates from new efficiency, New York, and is codified in the climate act 185 TBTs of use savings by the year 2025. And it does represent a stepping point, a good start at accelerating our investment in energy efficiency, heat pumps, electrification, but we recognize it as only just to start. The goal represents, something on the order of magnitude of a 10% savings and what we need to really get to economy-wide to address climate ankles appears to be more like 50%, energy savings.

And, you know, to put it into perspective in terms of sort of year by year, what do we do? What does that mean? You know, if we're touching roughly 20,000 buildings a year, now we need to get that number to 200,000 per year, every year until mid-century to, to get to the scale up that's needed. And so, the next slide just gets to, well, how are we doing on the current goal of 185 TBTs. This is a shared goal. So, it is a bit of an eye chart. I think we've shared the stack up the colorful bar chart that's on the left-hand side from time to time. And it just represents all the parts and pieces of getting to this goal. The red circle items are NYSERDA’s pieces, and those are translated in a more readable format in the table on the slide for you.

NYSERDA’s responsible for about 38% or 70 TBTs of the goal. The utilities bring in a very meaningful amount, 42% of the goal, and then the other parts are LIPA, NYPA and other contributions. And so, for NYSERDA’s piece, the actions that we have in the works are shown in the table and, all in what we have achieved today in terms of installed activity and pipeline activity represents about 54% of our ten-year contribution. We'll talk about this a little bit on the next slide, but we really expect the CEF indirect savings from market transformation and some of these other pieces like codes and standards legislation to be coming in the second half of the CF. But, you know, we need to see those things occur. We need standards, legislation enacted, for example, you know, but overall, we are tracking well toward achieving the goal.

You can see we've summed up NYSERDA and utility progress in the thermometer. We're nearing, you know, 45%, you know, of the way there with what's been installed and what's in the pipeline. And the goal is to be achieved by 2025. So next slide, please. This is a little bit of a drill down here on the clean energy fund trajectory because the clean energy fund is the majority of NYSERDA’s contribution. We expect 53 TBTs of savings to come from CEF we've installed about 14 to date. We've got approximately that amount in the pipeline yet to be installed. The graph here really just shows the ramp up that is forecasted and is necessary to achieve our goals. Our plans have to come to fruition and if we see any areas where they aren't, we need to adjust quickly, and that is all part of how we manage our performance in the clean energy fund.

So, you know, these plans will be continually refined and adjusted based on current market conditions. And we are really, getting to the point where we expect to see and expect to be able to measure that market transformation that is coming in, you know, significantly in the form of the indirect savings that are the yellowish portion of our progress shown in the graph. You know, there is some uncertainty involved in having a forecast and predict this. It's not an easy thing to do, but we're beginning to evaluate market adoption and see this come to fruition.

Next slide please. So, moving onto greenhouse gas reductions, we have policy goals of achieving 40% reduction in emissions from 1990 levels by 2030 and 85% by 2050, we can jump to the next slide. New York continues to remain a leader in terms of carbon efficiency on both the per capita and GDP basis, but we have a long way to go to meet 85 by 50, and we need to build from this leadership. We are awaiting Climate Action Council scoping plan and final emissions inventory to be published at the end of the year. And we will reference that final inventory for any methodology adjustments, here, however, the new climate act, accounting of carbon that we expect, really places, even greater emphasis on the need for leadership. And, we are assessing the impact of that accounting on our portfolios currently, major initiatives that are contributing to the goal and will continue to be looked to, to contribute are shown on this slide, and you know, including policy leadership and the Climate Action Council, and many program interventions.

And we can go deeper into these. I think if there are questions go to the next slide, please. So, NYSERDA's mission outcome of supporting the clean energy economy is next, we wanted to touch on this from the standpoint of jobs growing, the clean energy economy and the State and mobilizing clean energy investments. And we can turn to the very next slide, please. The information that we have right now on jobs is in the process of being updated, really, as we speak. So, on the right-hand side of the slide, you can see, the latest stats from the last study that we did the clean energy industry report, where we saw excellent growth in clean energy jobs before the pandemic. And then we saw, you know, a temporary reversal of that trend, unfortunately, but the early results that we are seeing right now in the latest study are showing that there's a bit of a rebound occurring picking back up jobs in 2021, and this will be completed and published soon.

We're also adding, in this study effort and in our tracking, demographic information so that we can assess our progress toward achieving an inclusive, clean energy economy going forward, our really our innovation investments, through the clean energy fund. And historically prior to that have very much supported these outcomes. And just to touch on some of those only in the clean energy fund time frame, really this is that we've supported 460 companies, 176 commercialized products. And the innovation program actually has one of our big delivery mechanisms of leveraged funds and investments in clean energy with a five X leverage ratio. So just in the clean energy fund timeframe, we've reached a billion dollars of leveraged funds. Green Bank, obviously you know, bears mentioned from a mobilization standpoint and has made over 1.6 billion of cumulative commitments leading to nearly 4 billion of mobilized capital in the economy.

Next slide please. Okay. And so, this is the last section, last but not least of course, focusing on disadvantaged community impact and the policy goal in the climate act to ensure that at least

35% of the benefits of spending go to disadvantaged communities, and other, through energy efficiency, through workforce, low income, energy assistance, transportation, and other related investments. And so, we'll just move to the next slide here. We are awaiting, again, Climate Action Council scoping plan as was mentioned, and final definitions of disadvantaged communities, from the climate justice working group. But NYSERDA is using the interim definition of disadvantaged communities and our LMI investments to take early action to meeting this climate act goal. And this has meant really a strategic look and a strategic reset across all portfolios, early actions and commitments consist of nearly 1 billion of investments to provide benefits to low, to moderate income and disadvantaged communities, through the clean energy fund with NYSERDA committing to meet 40% of the benefits of overall spending in disadvantaged communities through the clean energy fund portfolios collectively.

So, there's several bullets on this slide that speak to some of what that is we also have, invested 85 million, through the clean transport prizes focused on disadvantaged communities and in the latest RGGI operating plan, made a commitment that 39% of the investments are going to be going to disadvantaged communities through that portfolio. So, there's an awful lot of early action here that, that adds up significantly. And we're also working with climate justice working group, State agencies and others to get to further refinement of that benefits and metrics framing for our work in disadvantaged communities, so that we can begin reporting out on the benefits and the outcomes of these investments. And so, this is the last policy goal and mission outcome. And I think before we go to the next bit of discussion about the strategic focus areas, we will pause and see what comments or questions or discussion there may be.

Shere Abbott:
Okay, thanks, Jen. That was a really comprehensive and formidable report so probably a lot of questions, but I just wanted to ask one quick one, going back to the initial slides about wind because I think it is, similar to questions that could be asked of the rest of the policy goals. So, if you look at, so we've got, we're halfway towards the goal of 9,000 megawatts. And then if this is a two-part question, one is for the State and the other is reflective of the role that the State is playing in the national goals. Because I think we've talked about this in the past about the having some discussion about, you know, the relate, our dependence on, on the feds and the feds kind of dependence on us in this case.

And so, it's a, it's a formidable, goal, right? So, with a short timeframe. So, what are in your view, from based on your analysis so far? I mean, from the range of impediments, what are the things that, NYSERDA could be investing in more directly? Is it permitting you're talking about port infrastructure and workforce planning, and you know, how much of it is Jones act vessels and all this sort of related of the range of impediments are there are things that require, an early focus that could be Instrumental in trying to achieve that goal by 2035, but also to help the feds achieve, which is an impossible goal of 60 gigawatts by 2030? I mean, it looks like 21 is more the norm, right? So, how, and we're a third of the total or half of the expected. So how, I'm not saying this very clearly, I'm very tired, but what are some of the impediments that you see that we, that NYSERDA could really be focused on?

Janet Joseph:
So Shere your question seems to be focused on offshore wind. So maybe we can steer that to our LSR team, certainly during, as well to hit what you're doing.

Shere Abbott:
My question is broader in the sense that all of our goals are, are similar in that they're hard to reach. There are, you know, there are no, there's no longer, you know, the sort of low hanging fruit right. Option. Right. So, you know, what's, this is strategy tactics, meets strategy, I guess is the.

Doreen Harris:
Yeah, certainly. If I could just jump in, it's a great question, Shere. I mean, offshore wind is in some ways a microcosm, if I could even call it that of what needs to happen more broadly to achieve the goals of the climate act. In many ways, the State is in lockstep with the federal government in not only the scale of the objectives that we seek to achieve, but also, I'd say the comprehensive nature in which we intend to intend to hit them. So, in a lot of ways there's alignment in a way that's quite self-reinforcing. But it is true that we are advancing what we need to do, but that it needs to be happening on that global stage to happen, at the pace and the scale that we need it to. Fundamentally this isn't a New York issue alone, offshore winds a great example of it we very much need other States to join in, but frankly we need this global movement that we've seen that has driven costs down to the point where we can commit to nine gigawatts of offshore wind. But in this, in that instance, federal action is absolutely needed. I think, most notably with respect to the identification of areas for offshore wind development and the leasing thereof, Janet, would you add anything?

Janet Joseph:
Yeah.

You know, to the point of offshore, wind being kind of a microcosm of what we are grappling with as we are really trying to bend the curve, I can point to, the work that Jen teed up around energy efficiency and building efficiency, we will hit a wall in New York State if the feds do not act on certain efficiency standards for which they have domain in purview. And we are not afforded the legislative option of preempting the feds. So, as we look at these very aggressive standards across the board to achieve our climate goals, we are going to need to see federal action to achieve New York's goals. And I think that's clear across the board, whether it's offshore wind, whether it's building energy efficiency, as you said, cherry, we have harvested the low hanging fruit. What is before us requires local State national action. And in some cases global.

Shere Abbott:
So is the answer to the impediment problem, the feds, that's it that I just throw that out there. You don't have to answer that question. I, but, but I, but at the, it's a structural, you know, regulatory permit, all of the above problem.

Janet Joseph:
I think it depends on what we are specifically trying to solve for. And in many cases, we do need federal action. You know, there are some goals where maybe we can get closer as a State. So, I think we sort of systemically need to go through each of these goals and look at, okay, where will we hit a wall? If there is not let's say federal or global action, and that is how we are trying to approach our work.

Shere Abbott:
Or, the reverse, which is how do we work on the things while we don't hit the wall.

Janet Joseph:
Great point.

Shere Abbott:
Okay. Sorry. I will shut up now. So.

Arturo Garcia-Costas:
Please don't.

Janet Joseph:
Great point.

Arturo Garcia-Costas:
Can I just jump in?

Shere Abbott:
Arturo, you're up.

Arturo Garcia-Costas:
Thanks, Shere. I want to jump in and build on this competition just a little bit. Because I think that there's some interesting feedbacks between NYSERDA's focus on the clean energy economy and this really rapid ramp up of offshore wind, because it's, there's a little bit of a tension because, the most rapid way to ramp up offshore wind is dependent on basically the, the fact that Europeans are quite an advance of us in a variety of ways, and basically turn to the Europeans to supply a lot of the equipment and other things for our offshore wind industry. But there's a countervailing interest in really building a homegrown, clean energy economy here. So, I'm just interested to know how you guys are thinking about that sort of dynamic tension.

Doreen Harris:
Oh, goodness, Arturo. I could go on for days, because it's an opportunity to literally take that model and what we call localize it isn't a rational actually economically to utilize the supply chain from Europe at the magnitude of the commitments that now exist here in the U.S. So, what we've done in New York has created the preconditions for those investments to happen. Not only in the U.S. but frankly, directly here in our State.

Janet Joseph:
I think that underscores a really important point as we look to the future, to end up with a I'll call it a politically and socially durable solution. We need to maximize the co-benefits of everything we do in New York State, whether that's local economic development, whether that's better places to live and work or healthier air, less fine particle pollution, just as an example. So, I think that looms large in all of our work, how do we drive those local co-benefits because we will need that to have a durable solution.

Shere Abbott:
All great points.

Right. Any other questions?

Frances Resheske:
It says, I'm just thinking about the conversation about with the federal government could be an impediment. I think it might be useful to, to know some more specifically where we have to wait for the federal government to act, and possibly we could be helpful in advocating for those positions earlier than later. And my other question is in that space, is there any opportunity if the infrastructure bill gets passed, in that context, that that will help us?

Janet Joseph:
I can touch on part of that. And then, colleagues can jump in on the second question between the infrastructure bill and the reconciliation bill. There are numerous opportunities to accelerate progress across the goals that we articulated here. So we are, very anxious to see how those, where those negotiations land from affordable housing, to buildings, to electric vehicle infrastructure, and the list goes on. So I would say on the optimistic side for the first time, in several years, we have the potential to have a robust partnership with the federal government. So, I don't want to communicate that it's all impediments. I think they're the current administration is really trying to drive hard in a way that's very aligned with New York State, both on climate progress and in terms of addressing economically distressed and underserved communities. So, we do see a tremendous upside. And I guess in terms of where are there specific barriers that's again, I think the best way to think that through is sort of sector by sector and prioritize. And we are trying to engage with our Washington delegation and with our colleagues at DOE and Department of Interior to make sure, our colleagues are at least aware of the action that, that we, we need. So, a work in progress as we sort of rebuild our relations with the federal government.

Doreen Harris:
Yeah, and, Francis, if your question had been specific to offshore wind, it's a great actually example of that work in action, where, where essentially we created a body of work originally in our offshore wind master plan that was utilized by the federal government to kick off what is now, we hope, the pending leasing of new offshore wind areas and the New York bite it is the case that essentially our work expedited, the work of the federal government in that regard.

Frances Resheske:
That's great.

Shere Abbott:
Any other questions?

Arturo Garcia-Costas:
I have my hand up electronically. I don't know if you guys refer us to hold up our hands on the screen or are, I'm kind of relatively new, so, just school me on what you guys prefer. But I do have a question.

Shere Abbott:
Go ahead.

Arturo Garcia-Costas:
Yeah. So, you heard building on, Janet just sort of mentioned for example, electric vehicle infrastructure. I was kind of interested in, the presentation on bulk storage, bulk energy storage, and to what extent and or how is NYSERDA working with, various other agencies, State agencies, and even federal agencies on the issue of transportation electrification, public fleets, conversion of public fleets and using them as a resources per bolt storage. Cause I think you guys have mentioned that before. But I didn't see that sort of highlighted in the bulk storage section.

Janet Joseph:
Okay. David Sandbank, are you on the line, David or Jason can perhaps best address that.

Jason Doling:
Janet, do you want me to start on that? I don't see David. He might be muted. Okay. Hi Arturo. So, I can't stop talking about storage because it was my life until about nine months ago. So, it's a hard habit to break. It's a great point. And I'll confess when we developed the storage roadmap, it was really easy to think of it from a stationary standpoint. So, we really focused largely on how we can make sure that storage that's going into buildings or houses has grid flexibility that can benefit the utility and rate payers. And, frankly, after working for years on trying to get storage permitted in the city where it's so challenging, you hit the nail on the head. We have all this amazing storage that's sitting in vehicles, many of which are not used large portions of the year.

I know my colleague, Adam Ruder, who leads up the transportation work has been working closely with the MTA and with NYPA on, not only electrified buses that could then be available school buses as well, which is really a great use case. You think about all the time during the peak months when they're not being used. And also, mobile storage that's able to go in as Fran knows and be able to help provide a bit of resiliency when portions of the grid go down. It's definitely a huge opportunity. When we developed this three-gigawatt target for 2030, that was based on a 50% renewable portfolio standard, which now has become 70%. And we know the reality is that we need 10, 12, 15 gigawatts of storage. By the time we get to a zero-carbon grid. And I think all those things absolutely need to be on the table. We'd be happy to follow up with you with some specific examples and some of the big opportunities that we see, particularly with the infrastructure bill.

Arturo Garcia-Costas:
Thanks, Jason. That was excellent. And I really want to echo your intuition about electric school buses, because right now the ownership structure for electric school buses isn't does not incentivize a changing of that fleet to electric, but if perhaps utilities were engaged and providing incentives because they represent a bulk storage resource that might change economics.

Jason Doling:
Great point. Thank you.

Sadie McKeown:
This is Sadie. I have a question. I wondered if, you know, in trying to get an energy efficiency, it continues to overwhelm me the idea that every building is going to become more efficient with some exterior application and you know, and that we're all going to be able to drive down our, our demand building physical application. And I wondered if NYSERDA is looking into any of the sort of, technological innovation around demand based programs where you're trying to control through the use of certain types of appliances that are connected to a system which might increase, you know, the temperature in a room on a hot day when they know no one's there or it's an off time or things like that. It's something I recently came across that sounded like a very benign way, if you will, from a consumer perspective to level off or even out where demand is being distributed. So, I just wondered about that.

Janet Joseph:
Sadie, I can give you a high-level response to that. And then I know John Lochner will be joining in the next presentation and he could jump in short answer. Yes, we are absolutely looking at that. And the notion that buildings become a more flexible controllable asset is absolutely something we will need to be able to operationalize. As we look to this carbon free grid of the future. The technology seems to be out there. What is not yet in place are the communication protocols, the market signals. So, there's sort of a lot of market infrastructure that needs to be advanced. But it absolutely is a critical area of work. And we've even discussed the need to advance sort of a targeted planning, road mapping activity around that very topic.

Sadie McKeown:
I think it's another thing that connects to the code. It

Janet Joseph:
It does.

Sadie McKeown:
Yeah, there's just so many changes needed in the code. And I, to that point, I wondered if we're waiting for the federal government at all to advance an energy and national energy code or anything like that. Or do we still in New York State control changes to our energy building code?

Janet Joseph:
I think we would say at this point, yes, we have to advance in the, at the State level to the maximum extent possible. And then we got to look for ways where the feds can leverage it and look for ways where we don't identify those barriers where we don't have the legal authority. But

then I would also note in our work around a carbon neutral building roadmap that feature that you just spoke to of the controllable building asset is one of the 6 features that we've highlighted for carbon neutral buildings as we look to the future. So, it is an important area with lots of work to do. I would say.

John Lochner:
Janet this is John. I can jump in as well with some, put some thoughts here. I think the way we think about this is that we need to simultaneously invest in those hard tech, R and D assets that I think to your point, how many hundreds of thousands of those can really be deployed in any one year. Right. And what are the paybacks look like? And, and what does uptake look like? Even if there is a cost-effective payback simultaneously, the DOE is very excited about what they're, I believe, terming intelligent buildings, and we are exploring opportunities in the same and it's to exactly what Janet was saying. It's, we need the right, markets, and pricing structure, to be able to unlock the opportunity that's there in front of us. And so, one of the things we're looking at on the innovation side in particular, there is technologies that we think could enable buildings to provide, or create revenue streams, I should say for specific buildings in a more sophisticated interaction with the grid. So, certainly at the top of our list and, and we think very important to actually achieving the goals.

Janet Joseph:
Thanks, John. So maybe a given the time we should move on to the next part of the conversation, looking at the four strategic focus areas that we identified last year. So, if we could move to the next slide. So, what we would like to do here is highlight those focus areas and identify where we've made progress and where we feel we need to lean more into the future, or adjust, adapt our approaches. And we'll go through this relatively quickly, but hopefully we'll have time for some questions. So, with that, I would like to hand it off to Jason Doling, who's our Vice President for Communities and Partnerships, and he will lead the discussion around building an inclusive, clean energy economy around green jobs and healthy communities. And I would also like to note that Jason is one of our newest Vice Presidents who was recently promoted to lead this very important body of work at NYSERDA that is really centered around communities, centered around economic development and centered around equity. So, with that, we can move on to the next slide and I will pass it over to Jason.

Jason Doling:
Great. Thanks Janet. Hi everyone. So, I've already confessed that, this is about, I think my 70th day working in this area, so definitely a lot to take in. And it's really interesting to reflect on the progress that was made during the large transition to teleworking and the year of COVID and everybody adapting to that. And I think largely it's safe to sum up the work that's been done is really foundational 2022 has got to be our year that this becomes not only actionable and tangible, but really seen by everybody and really leaning in hard. So, what I had planned to do is hit a few of the highlights on each of the next three slides of areas, really where the team in the organization has made meaningful progress in the past year, but then also lay the stage for what have we got to get right in the next 12 months.

And that's an area that I've been really working closely with the team on. First off was really starting to pivot the conversation within NYSERDA to understand what does it mean when we

talk about working with underserved communities and priority populations and really pivoting our programs to target and act differently. And historically, that has, generally taken one of two flavors. It had looked at either a higher level of incentive when we were in the world of providing incentives largely, and secondly, evaluating projects that would come in and giving a bit more consideration to projects that had additional benefits that would accrue to local communities. And so we've really asked our teams through an internal network that's been, also benefited from environmental justice fellows who have come into working with NYSERDA to think differently about what are the true needs of the local communities and how can we make sure that we're going beyond one-off projects to really having a broader suite that's looking at job creation, economic development, company creation and real in housing, and really doing that more cohesively.

So, a few of the areas that I would highlight where we've made good progress in the past, we have launched a couple of resources beyond the internal capacity building. That's looked to expand our capabilities at working with local communities more robustly and working with local companies. One of those is the environmental the climate justice fellowships that was launched earlier this year, that will actually fund 150 individuals to work with companies or community-based organizations directly to help make sure that folks that really have boots on the ground there, their perspectives are brought to bear, and we're building the internal capacity within those organizations. The second one that we've launched actually during climate week, the Lieutenant Governor announced it, which I'm particularly excited about is the clean energy hubs. So, this is an initiative that I think truly can, can demonstrate how we can do business differently.

It was developed from the ground up over a period of about 18 months working with local communities and will establish a clean energy hub within each of the 10 economic development regions of the State. And the purpose of that health hub is really to help forge a network within the community. That includes training providers, local community-based organizations, community colleges, training providers, again, to really provide better information to residents within the community about programs that are available through their NYSERDA the utilities that can help them with energy efficiency and de-carbonization and lowering their electric and energy bills to being much more active in making sure that the local community, has representation and is part of the discussion around how renewable energy projects are appropriately cited within the community to maximize benefits to the folks that live there. And then also to making sure that we are able to leverage more significantly the workforce training programs that we've put on the street to really turn these into job creation organizations and opportunities.

And I'm going to touch more on that on the next slide. A final area that I will touch upon, on the prior slide quickly is on the solar energy side. There's quite a bit of work that was done and building out a solar energy, what we call an equity framework, but this is everything from ensuring that more residents have access to community solar and the savings that come from that to pre-development grants that can provide a local community and really a small seed community with pre-development funding to help identify the opportunities that they would have for community solar and storage within their community, how they can maximize ownership of that and how they can have resiliency benefits that could also come from both of those assets being located within their community.

So, let's move to the second one. I'll confess. This is one that gets me the most excited because I really want to see our organization pivot from being one that's about training people to one that's about training and helping to make sure people get good family sustaining wages. And so if we could advance to the next slide, we have, I think, a good track record of providing training and career pathways through things like on the job training, which will actually pay part of an individual's wages for up to six months and up to 90% of the 75% of the wages for a small company hiring from a priority population, what we would like to really lean into in the next year and the hubs, I think will be a good venue for helping to do this is partnering with the local trades, the companies that we are funding through our incentive programs and through our reps, and really ensuring that every opportunity we have for local people to be hired by these firms for renewable efficiency and storage projects and the electric vehicle, opportunities is maximized.

So, this is an area where the team within NYSERDA really is going to be looking to leverage our local partnerships and really focus on not only how many people are trained, but how many people are employed long-term within this sector. I'll confess that nothing frustrates me more than when we're going out of State to bring in people, to do jobs that New Yorkers can be doing. And so, this is an area in particular that we'll be leaning on. The second one is around supply chain growth, and that's something that was mentioned earlier with offshore wind, but in particular, I've been asked to work with the team to really stand up, what can NYSERDA to do in particular around economic development and community-based development. That's something that we've done, kind of sporadically based on the opportunity, but it's something that we want to really lean into.

And so in particular, when we think about big community based economic development projects, things like the I81 corridor or the south Brooklyn Marine terminal, where it's comprehensively looking at housing, local businesses, jobs, and decarbonizing, that's an area where we need to be, I think more nimble and making sure that any funding opportunities within NYSERDA are brought to bear that we're leveraging what the utilities and what our State and local partners like empire State development or the ideas can help with. And in particular, making sure that we are really focused on the supply chains where New York has core critical strengths. We're still admittedly in the earlier stages of identifying what those are, but certainly energy storage, offshore wind, and electric vehicles I think are very much on the top of that list, as well as the clean heating and cooling. And heat pump work that we can be doing in the State.

And I'll round this out on the third slide and then would love to have some discussion and conversation when we round this out with ensuring that we are fostering healthy and resilient communities. And if we could advance to that next slide, please. Few of the areas during the past year where I think we've really been successful, one is on site that the work that our team has done working with local communities and local governments entirely pivoted to remote working with department of State to ensure that training for code officials and those in the local communities was available entirely online. We did a great series around citing energy storage and everything from safety to land use, to first responder training, to pilot and, and tax treatment. And in the future, we are in the process of working with our community's team to provide a higher level of technical assistance, both through NYSERDA and then through third parties.

So that communities that are really at the pre-development stage before a large renewable project is put forth between their planning or zoning board to provide that community with the technical support that they need to help answer questions around land use, and making sure that the community has questions addressed related to disposal end of life, and any, fire safety concerns that they might have with things like storage and really ensuring that the local benefits from those projects are maximized to the extent they possibly can be. That is also an area that we are going to continue to lean into. More heavily in the future, the clean energy communities, leadership round was released during the past year. And that's an area that we'll also continue to help support local communities with making high-impact actions as it relates to de-carbonizing. And then the final one that I will touch on is the clean green schools, and it should have, which was also launched during climate week, I think is another really exciting opportunity that can leverage not only federal funding that hopefully can come through the infrastructure bill, but also K through 12 education and expanding beyond stem activities to ensure that we have vocational training that's available for folks that are interested in entering that space and really leveraging what schools are currently working on to help people see what these clean green jobs can be all about.

The final area that I will mention, related to resiliency, which obviously every year becomes more and more critical. I think we've made some good progress. Again, it's hard to lose the storage hat as it related to properly citing storage, to make sure that it was above things like the flood plain, and that was reinforced to the extent possible. But also, then Long Island, we have austere-upped an incentive program that we did with LIPA to provide, incentives for energy storage, being cited with solar, for residential homeowners. So that there's a level of resiliency that those homeowners would have when the grid is disrupted, but also set the utility is able to operate that as a virtual power plant during peak electric days, there's additional incentives for that as it relates to, low and moderate income consumers. And I think that is a good area where we could be well-served by expanding that offering beyond Long Island, elsewhere in the State and the future, and trying to make sure that all of the work we're doing is providing as much resiliency as it possibly can for local communities.

Janet, do you want to move into John or take questions?

Janet Joseph:
Why don't we move to the next slide? We can cover this and then we can open it up for the balance of time for, for discussion. So, thank you, Jason. So, John Lochner, who's our VP of Innovation and I will tag team on this, on this last focus area. And this focus area is about accelerating the transition from fossil fuels, natural gas to, to a low carbon future. And it's very focused on identifying low carbon solution to our thermal demands in New York State. So, to start, the way we approached this focus area was to identify a set of strategies that would drive progress in the near and midterm, and then a longer term set of strategies to drive deeper decarbonization. So, I'll start with the near and the midterm. So, we did complete a draft carbon neutral building roadmap this past year, which is now available.

And on our webpage, you may recall Greg Hale had previously briefed the board about this activity was well over an 18-month long process. And it included engagement literally with thousands of stakeholders and numerous technical experts drawing nationally. And I do think it

has produced what will be a must read for anyone who cares about building decarbonization. But importantly, this work in New York State was extremely timely to the policy deliberations of the buildings advisory panel for the Climate Action Council and the insights and the learnings from NYSERDA's work, focused on carbon neutral buildings and moving us off of fossil fuels to carbon free sources really formed the basis upon which the buildings advisory panel was able to sort of launch into, their work to develop a very comprehensive set of policy recommendations that were presented to the Climate Action Council. So, the draft carbon neutral building roadmap will be finalized by the end of this year.

And we are working now to operationalize that thinking into our NYSERDA program work across the board. Now we are well into a sister roadmap focused on building electrification, which is driving more deeply into what is a cornerstone of our building decarbonization strategy. So, we expect that greater than 85% of our buildings will need to be electrified. So, they're going to need to shift from fossil fuel based sources to heat, and move to clean efficient electricity, to achieve our carbon neutral goals. And there are many issues to work through in this transition, which we expect will take us several decades. I would say this is one of the points that came out loud and clear in the Integration Analysis presentation to the Climate Action Council last week, that under all scenarios that we can see even scenarios where we are maximally using low carbon alternative fuels, we expect to need to electrify more than 85% of our building stock by mid-century.

And that is a bit of a sobering statistic, you know, back to the point that Jen mentioned earlier, we're electrifying tens of thousands of buildings a year today. And we need to be shifting that up by an order of magnitude. So, we're very focused on completing that building electrification roadmap in the months ahead now, in terms of market expansion and cost reduction of the energy efficient and heat pump solutions that will facilitate this transition from natural gas to a low carbon future, we have made progress over the past year, but we still have much to do in terms of points of progress. We did this past year launch and initiative focused on community scale heat pumps, and they are, we are looking at several dozen feasibility studies in addition to one construction project that is underway. And we believe through this pathway, we have the potential to move from a building by building electrification strategy, to more of a block by block a community by community strategy whereby we could be looking at these investments as infrastructure investments.

The one thing I would like to note on this one, we are partnering with ASHRAE in this, endeavor looking really at to their capabilities in terms of helping to develop performance specs and guidelines. And we just convened a forum two weeks ago, we had over a thousand people participate in this seminar. I've never seen so many people so interested in a topic like this before we did also launch several HVAC challenges in the heat pump area to develop better products, better performing products, lower cost products. And one of these products has the potential to work their way into dozens of New York City housing authority buildings, and potentially participate in an aggregated procurement model. So again, we're looking at how do we scale what we are trying to do around, alternatives to natural gas you heard earlier from Jen about some progress in the empire building challenge and, and we are indeed making some good progress.

There we have about 40 partner teams who are building this as new construction, carbon neutral buildings for affordable housing, for market rate housing. And they're showing that they can actually produce these buildings at costs that are competitive with fossil fuel alternatives. And that's a major proof point that we are building around, but ultimately, we will need policy action to set the stage for the full transition from natural gas and other fossil fuels. So, we'll need the policies, the mandates and the market development work. We will also need innovation to drive progress toward this low carbon future from our current fossil fuel basis. And we know specifically just looking at buildings we will have, and we do have hard to electrify buildings and certainly hard to electrify industrial process use as well as applications in transportation that do not appear to be well aligned with electric uses. So, for that, we're looking to progress from our innovation team to help work with partners, collaborate and accelerate these, these deep decarbonization solutions. And I'll pass to John Lochner, our VP for Innovation who can share some of the progress there and the future focus of our work.

John Lochner:
Thank you very much, Janet. And just to echo as Janet mentioned, you know, over the long-term, as we look at total de-carbonization, there are specific, areas of the economy that currently do not lend themselves to electrification solutions nor solutions that we believe will present themselves over the timeline required for our sales CPA with this in mind, we are looking at a number of different technologies or solution sets notable among these are hydrogen and carbon capture hydrogen is perhaps notable for its use across a variety of these difficult to decarbonize areas, including high heat industrial applications, medium and duty, heavy duty, trucking, aviation, Marine transport, certain grid solutions. And, in Japan currently it's used heavily for combined heat and power. It's also actually at the point of fact, been used in, New York for over a decade, excuse me, over a century, town gas, as it was called over a century ago, supplied New York City with gas 60% by volume of which was hydrogen at the time. In our kind of initial assessment of where hydrogen fits into the future of, of the State's de-carbonization goals.

We have launched a New York State hydrogen strategy with the National Renewable Energy Lab. A study will compile foundational and baseline technical information across applications and assess opportunities for hydrogen to enable to New York to meet its goals. We'll also be assessing the value of hydrogen from an economic development perspective and other perspectives in the State alongside this analysis NYSERDA joined this year the global center for hydrogen safety to ensure New York State that at the forefront of hydrogen safety and best practices from across deployments globally. And we also joined the high blend organization. The collaborative research partnership of six national labs led by Enroute and 15 university and industry partners led by Stony Brook university here in Long Island. The goal of this partnership is to assess the blending of hydrogen into the natural gas delivery systems and the related cost and technical requirements to do so.

Additionally, NYSERDA launched this year, a long duration storage solicitation to support R and D and storage solutions capable of solving multi-day storage needs during peaking events in the winter, in the future, as well as longer term solutions than are currently available with lithium ion solutions. Hydrogen, we believe that hydrogen solutions, including fuel cells may be part of the solution for long duration storage with all of our work in this space. We continue to work closely with, the hydrogen team of the department of energy to our conversation earlier. We are

very much aligned and coordinating with the federal government. This is certainly not a solution set that New York implement at scale on its own. And we are additionally in regular contact through partners and directly with environmental justice and underserved communities to understand concerns around hydrogen applications, as well as other technologies and solutions that currently back broader acceptance in certain instances, and lack the broad knowledge base that solar and wind to built up over the previous decade. With respect to carbon capture, we have continued to make innovation investments in carbon capture notably in carbon to value for programming, including an accelerator and a new program for which we solicited this year that will support the product innovation and commercialization of carbon management and carbon to value solutions.

As the ITCC notes. The current carbon load in the atmosphere will drive continued extreme weather and environmental changes that will require cost management solutions for decades to become carbon devalue technologies seek to attack this problem. Head-on by creating demand for the excess supply of this resource and may offer a scalable cost-effective method to address hard to decarbonize sectors of the economy as well. Additionally, New York has tremendous research capacity in the sector providing opportunities for economic development within the State alongside hydrogen and carbon capture NYSERDA continues to assess additional investment areas to support deep decarbonization, notably natural carbon solutions behind the meter thermal storage. Again, hearkening back to our previous conversation around supporting intelligent buildings, and many others I'll now pass it back to Janet.

Janet Joseph:
Thanks, John, and, and Jason. So, Shere that concludes the presentation. Maybe we can open it up for any comments on the second part here that we're looking at the four strategic focus areas. So, we have about a half hour, available for that. If the members have, observations, comments, questions, be glad to open it up.

Shere Abbott:
Okay. So, I will, I'll for go my Chair opportunity and let others speak. So, any questions?

Comments?

Sadie McKeown:
This is Sadie. I did have a question I'm curious about the clean energy hubs, and I wondered if you could talk more about how they would be staffed and who they would be accountable to and, you know, sort of what their broader goals might be.

Jason Doling:
Sure. Thanks Sadie. So, they will be staffed by a local organization, and each of the regions, obviously they're pretty large rural and most cases outside of New York city, rural and suburban and urban. So, we don't expect that any one organization without partners can adequately serve that entire region. What we've asked for and we have two, informational webinars coming up one this week, one and two weeks for potential applicants is a prime organization who will really serve as the glue and bringing together partners that they will work with. And within that organization there will be individuals who are actually working in the field who are helping

communities with everything that might range from say a community campaign for be it's solar, or be it, air source or ground source, heat pumps, or efficiency programs to working with a community on ensuring that training programs are well coordinated between NYSERDA and the local companies that exist in that region.

Bringing together members of the community as projects are proposed to make sure that the right voices are being heard in terms of what benefits does the community really want to see from renewable projects that are being cited in that region. What type of activities would they like to see from things like a community benefit funds that's going on in that region. And we've intentionally, left it fairly open in terms of additional areas of support that the hub might be able to do. Recognizing that the most important thing they really have to do is ensure that the entire regions covered when it comes to helping to promote efficiency and renewable programs that are available and benefit residents be it from NYSERDA and the utilities working to ensure that community campaigns are well coordinated and reaching everyone. And also making sure that all of the voices have an appropriate venue beyond that we've left it intentionally up to that hub to help identify other services that they think are important.

I'll give one example, a lot of folks have talked about, let's make sure that we're helping to build local companies and get companies aware of the opportunities that are within the clean tech space, where they can be suppliers perhaps to larger OEMs or a company could become certified as an MWBE or a service veteran disabled owned business for State opportunities. We agree. That's definitely something that should be done, whether that's actually the hub that's doing it, or it's partnering with an organization like the small business development centers is something that's a TBD but the funding within the hubs, which is $36 million is intended to support over five years Sadie. And within that support, not only the operations of the partners that are actually delivering these services, but then have project funding that is also available within each region over that time for community-based initiatives that are identified.

Sadie McKeown:
Very helpful. Thank you.

Shere Abbott:
Yeah. Arturo.

Arturo Garcia-Costas:
Yes, thanks for those presentations.so I have like two questions, one for Jason and one for Janet and John. The question for Jason building a little bit on what you just said, it’s a little bit unclear what's going to happen with federal money related to infrastructure at the moment, hopefully something will come out of Washington DC, but there was $12 billion that was approved in the December 2020, for a community development financing institutions and minority depository institutions. And I'm wondering to what extent you guys have begun thinking about how to leverage those federal dollars to advance some of the goals that you're putting forth, with respect to the inclusive economy. And then my question for Janet and John has to do with, the solar energy equity framework that was discussed in the last presentation. Could you perhaps speak to how that's going to interact with your building electrification roadmap?

Janet Joseph:
Okay. So maybe starting with the first question on the community development financing institutions, I guess, again, I'll try to hit that at a high level. I know through our work around financing solutions, we are looking at engaging more with a CDFIs. And I don't know if Jason or Pam can speak to that, but we are looking at different types of partnerships with CDFIs. I can speak specifically to the 12 billion in funding that came through in December. But, if Pam or Jason don't have any specific comments, now we can follow up on that point, Arturo.

Jason Doling:
Pam, did you have any, input that you wanted to offer?

Pam Poisson:
Sorry, Jason. Thanks. I was just going to say, I know that both our green jobs, green, New York financing solutions team and the, some of the resilience folks are scoping out some potential partnerships with CDFIs. I have to loop back with additional details, but happy to do so.

Jason Doling:
And Janet, I see that we have Andrew on, he may want to touch on the recent announcement that the Green Bank put forward.

Janet Joseph:
Okay. Andrew, are you there?

Shere Abbott:
He looks like he's muted.

Andrew Kessler:
I'm sorry. I was, un-muted the wrong button.

Can you guys hear me now?

Janet Joseph:
Yes, we can.

Andrew Kessler:
Okay. So, thank you, Jason. I was going to suggest maybe a minute on a recent initiative that we've made that are targeting CDFIs and other like-minded institutions whereby NY Green Bank is providing equity equitizing these institutions. So, think of it as underwriting, the underwriter like-minded community focused institutions that are putting that have a good track record of putting dollars to work to the advantage within a disadvantaged community sector for, projects that and uses of proceeds that are consistent with eligibility for NY Green Bank. It is a $25 million school solicitation is not meant to be evergreen, and we do expect it to fill up pretty quickly. We're anticipating awarding approximately 5 around $5 million awards. And the idea here is quite simple. There is a dearth of, and a lack of equity capital for thesis tuitions, but much more access to debt capital. However, these institutions need to maintain a certain debt to equity ratio, or they get capped out of their ability to add more debt to, to their organization by

providing equity. We give them the opportunity to then multiply that those dollars several fold by accessing additional debt capital often quite well won't cost at capital to really enable them to continue to serve their pipeline and meet the demand for their capital. I'll pause there.

Janet Joseph:
Thanks Andrew, for elevating that very recent initiative. And I think our Innovation team, John Lochner is looking into this as well. I don't know John anything else to add?

John Lochner:
Yeah. Arturo, I would say, you know, we're keenly aware of the opportunity we've with CDFIs and particularly from a resilience and climate finance lens are exploring specific initiatives again, which we'd love to talk to you about, as we move forward on those, and then they are, but they're far enough along in process. It it'd be great to connect, sometime soon.

Janet Joseph:
So, I guess there's a fair amount happening on CDFIs. And then Arturo, you had a question about the solar equity framework and how that could work within our building electrification work. And I don't know if David is back on, he was connecting David, who's running our solar, program to maybe speak to the solar equity framework. I will just say we are exploring ways of accelerating electrification for low and moderate income consumers. And David and I, and Max Joel have had a few exploratory conversations about ways to connect consumers who potentially participate in solar for all with electrification services, because they would be potentially credited and it could leave them in a more affordable situation. So we are, I guess what I would say is we are trying to leverage those two policy objectives. I don't think we have quite figured out the mechanism. So, I don't know if there's anything else to add on the solar equity side, David, if you're live.

David Sandbank:
Yeah, I am live thanks, Janet. I mean, I could, I don't know if it helps everybody. I could recap where we are currently with the solar energy equity, and we're moving forward. But I would pause and just see Janet, which parts you think I should hit an overall summary or a particular item within it.

Janet Joseph:
Yeah. And I guess maybe I'll turn the question around to Arturo. So, we are very interested in leveraging these objectives, one which is trying to drive solar energy to low and moderate income consumers, two trying to ensure that low and moderate income consumers can move toward electrification. And we are trying to figure out how we can do that, maybe within the affordability policy of New York State, but I would welcome any insights that you might have on things that we should be considering as we look to kind of leverage those two policy objectives.

Arturo Garcia-Costas:
And this may help, you David sort of in pulling out some stuff. I think there's always a tension between low hanging fruit and the hard nuts to crack, to use to food metaphors. And I'm kind of constitutionally often focused on the hard nut to crack. And one of those with respect to building

electrification is going to be multi-family housing, between 4 and 12 stories in various parts of the State, but there's a high concentration of them in New York City. And I think that is an equity issue when it comes both to building electrification and the deployment of solar energy resources distributed solar energy. So, I'm interested in what you're thinking around that, and how that relates to build a modification.

David Sandbank:
Yeah, building electrification is a hard nut to crack for me and the solar program, because with disadvantaged communities and low income, demographic, because most of our, I would say most of our benefits within the New York Sun program, the, the 6 gigawatt goal, our community solar subscribers. So, it's not necessarily always onsite projects, but it's offering, low income subscribers, you know, good benefits through direct discounts on their bill by being a subscriber to a remote community solar project. I will say that one of the biggest uptakes in the New York City market through the New York sun program is our affordable housing adder that we have. It's an incentive adder to really encourage developers to really look at affordable housing, building stock to build projects on. And that has been wildly successful, I think we've really done, some had real success on, getting people to solely look at affordable housing to put solar on top of those roofs. So that's something that we can point to as a success. I can't really say we've connected the dots as Janet has talked about of solar and increasing building electrification at this point in time.

Janet Joseph:
So, one thing to build on that we have a great partnership with HCR, which that homes and community renewal called raise the green roof. The Governor announced it last year, and it is focusing on that specific building typology, multifamily affordable housing with the goals of integrating electrification efficiency and solar. And we have rolled out the first phase of that, which is focused on the electrification and efficiency, but we are very aligned with HCR on the need to take it to the next level, which is the inclusion of solar. So that's a little bit of a bright spot. And then we also have a similarly promising partnership with HPD in New York City focused on electrification efficiency and solar. So, I think we will make some progress through these partnerships with the affordable housing agencies toward that end, but certainly lots of details to work out, but we have some very strong partners in this area and a few pilots in the market right now.

David Sandbank:
Yeah, Arturo, just to put some numbers on the success we have about 346 projects built already on affordable housing units in New York city. So, it's been a fair share of the projects.

Arturo Garcia-Costas:
That's amazing. Thank you very much for those responses. I will put a pin for a future conversation on the notion of brown fields to break fields. It’s been a bit of a shame over the decades that some of the State brownfield programs have not been as successful in reaching to the stains a next stage of redeveloping brownfields across the State. And with the new, ability to have community solar, we'll be ramping up. I think there are some opportunities for some of those mounted fields to be repurposed, at least temporarily until other resources to redevelopment or redeveloped them are found as brightfield for, for solar community solar.

David Sandbank:
Yeah, Arturo, we've had, we do have some success there, but I would, you know, we could do better, I think but, we have a fair amount of projects on brownfields, and landfills, around the State.

Sadie McKeown:
If I could just add to your comment, Arturo, I completely agree on brownfields. They're focused on getting existing pollutants out of the out of the ground, but they're not focused contributing pollutants going forward. And so oftentimes they're built with fossil fuel and that's just not acceptable. It should be required in the brownfield program that anything that's built is compliant with the CLC PA. And there are ways to enhance that tool to provide an extra increment in that credit to ensure that those projects get developed complying with the CLC PA going forward. And I think that's part of where NYSERDA can play a key role is looking at existing State tools, the historic tax credit is another one where those are those benefit, the built environment going forward by transitioning something that was something new and that something new given that it's a State supported, a state incentive program should include compliance at the CLC CPA.

So, you know, there's others like that beyond just brownfield and historic tax credits. And those are areas that don't require necessarily new capital, but rather just reorienting existing capital. That's going to be driven into those projects to cause to Janet's point. We are seeing that these can get built compliant to the CLC CPA with a marginal increase in costs, if at all. So, it's just a matter of making them do it in some cases, because it's not on their mind to do, and then it's not in their scope to do, but if we put it in their scope, they'll do it because they want the benefits.

David Sandbank:
Yeah, and the New York Sun program does offer an adder inside of brownfields and landfills with about 34 projects that are being built on landfills or brownfields now.

Shere Abbott:
Any other questions or comments?

Sadie McKeown:
I did have one more question as it relates to the education, the schools program, and I wondered how deep in the curriculum, you know, you will go into, I know obviously with, you know, technical schools and job training, but do you actually get into schools in the, you know, elementary, high schools, middle schools to impact the curriculum there around climate and around the importance of building and educating the next generation, the future generations who are really, you know, this problem is most in the hands-off.

Janet Joseph:
So, Sadie, we. Jason, you want to jump in?

Jason Doling:
Oh, no, please continue. If you want to kick that off.

Janet Joseph:
Go ahead.

Go for it.

Jason Doling:
Okay. All right. Thanks. Yes, Sadie, when I mentioned the clean green school, so that initiative was just kicked off, and this is really at the formative stages of developing what that curriculum is going to look like. There will actually be many opportunities in the coming months, including a large forum to get together with educators and parents and folks in the community. So, I'm sure in your mind, you're thinking similar. Like we have to do it all, but working with the education department, which our team has done in the past. There's definitely time horizons to these things from our standpoint what we, I think in particular want to make sure is done is that we're meeting people where they're at and, not letting perfection be the enemy of good enough and getting going. So, we are hoping to have some light curriculums that can be, shared within schools and within different communities that are kind of the light touch of this is what it means.

If you're in elementary school, middle school of some of these different issues, having things like, energy use challenges within the schools that are kind of pitting people against each other. So, kids are going home excited about it, but then expanding that as we get more into the high school, so it becomes more hands-on in terms of what the careers look like and giving people opportunities to have hands-on training and have internships and then vocational training. But admittedly, all that said, this is very much still at the drawing board internally, and we will be looking to provide guidance to the local communities and schools of what's been done already, but then also make sure that there’s, not like a one size fits all where people feel like they must select from one of different options.

Sadie McKeown:
Yeah. I mean, this is just an editorial comment, but, when you look at who attends college these days, it's mostly women at this point it's almost 60-40 females to males. This is a general statement and I don't mean it to be so general, but if we can create excitement around green vocational schools and more technical education that goes on in Boces we're at that vocational level, which is kind of become like you didn't get into college, so you have to go to vocational school and it shouldn't be that way. It should be here's a real opportunity to contribute to the transition, to the clean energy economy an alternative to a, you know, a history degree at a four-year school, which can be exciting and can really marshal the talent of a lot of people that frankly might not, you know, college might not be the best route for them. And so, I just feel like there's a way to sell it and market it and really draw those people that are particularly men that are not off to college into something that is really, you know, they can really be part of that solution.

Yeah.

Arturo Garcia-Costas:
Really. I really want to sort of underscore what Sadie just said. I think that's so incredibly important. Also, as someone who benefited from being a New York City national urban fellow

and Dinkins administration, I want to applaud the very robust climate justice fellowship program that you're launching. It's really incredible, very welcome, and I look forward to learning more about it. I was just wondering though, is there going to be a cohort component to it? Are you going to try to bring those 150 fellows into contact with each other in any way during the course of the fellowship?

Jason Doling:
Yeah. The short answer is definitely it's an initially designed in three periods where applications would come in in a matter of a few weeks we'll see how successful we were with that first cohort. Definitely interested in bringing them together, having opportunities where we can leverage that cohort beyond the individual company that those people are working at through more of a network and, really staying engaged with people over time. Arturo, admittedly, based on what we see in this first round, there are probably things we can even improve upon that we'll look to do in future rounds. So, we'd love to stay in touch with you on that and make sure that we're leveraging what you experienced and in areas where you think we can really make sure this is maximized.

Frances Resheske:
Jason it's Frances, I would also offer we helped develop the curriculum for the energy tech high school in Long Island City, which is a four-year high school with a guaranteed two year community degree and very high graduation rate. And if that would be helpful to you, we could have somebody go through the curriculum we developed for that and/or visit the school with you.

Jason Doling:
That would be terrific. I will definitely follow up with you. I appreciate it.

Frances Resheske:
Yeah, happy to.

Janet Joseph:
And that's great.

Arturo Garcia-Costas:
I'll visit the school too Francis.

Frances Resheske:
It's an amazing story and it's all centered on energy. And, they have a much higher graduation rate than the New York City average.

Janet Joseph:
That sounds like a model for what we are trying to drive Statewide. That's really exciting.

Shere Abbott:
Okay. Anybody else? Hey, last minute, this is all terrific, I mean, it's an incredible amount of hard work and effort, and it's a really, we're a door change. You know, I was looking, I was

trying to look back and see the, you know, over the years talking about moving towards a clean energy economy, but really seeing the, the word explicitly inclusive, clean energy economy is a real departure from the past. And it, by really hard to really see some clear, you know, to ensure that we have some really clear markers and outcomes that are observable across communities. And there are a lot of good plan. There are a lot of good, examples out there and try, Janet, as you best said, we have to really leverage our State, leadership and opportunities. So, I guess if there are no more questions I, this is a question for Sara, I think in terms of our, without a quorum, can we actually vote on the minutes?

Sara LeCain:
That's our last act of business actually, Shere, what we'd like to do is table the minutes and the January meeting.

Shere Abbott:
Okay. That's fine, that's what I thought. Maybe that was that the outcome, but just to be sure that I wasn't leaving anything out, but I think if that's it, I think that we can, ask for, a motion to, for other business. Is there any other business to come before the committee?

None hearing none. May I, may I have a motion to adjourn the meeting?

Arturo Garcia-Costas:
Move to adjourn the meeting.

Shere Abbott:
Second?

Sadie McKeown:
Second.

Shere Abbott:
All in favor. Aye.

All:
Aye.

Shere Abbott:
Opposed. All right. The meeting is adjourned. We have five minutes till the next. Thank you so much. This is an excellent.