Transcript State Energy Planning Board Meeting 1 December 2025
Energy Affordability, Health Analysis, and Employment Presentations

Contents

Household Energy Affordability Analysis

So with that, it's now my pleasure to hand over the mic to James Wilcox, who's our program manager for NYSERDA's policy and analysis team, to discuss affordability. James?

Energy Affordability James Wilcox

Thanks, Carl. And I appreciate the opportunity to update the board on our household energy affordability analysis.

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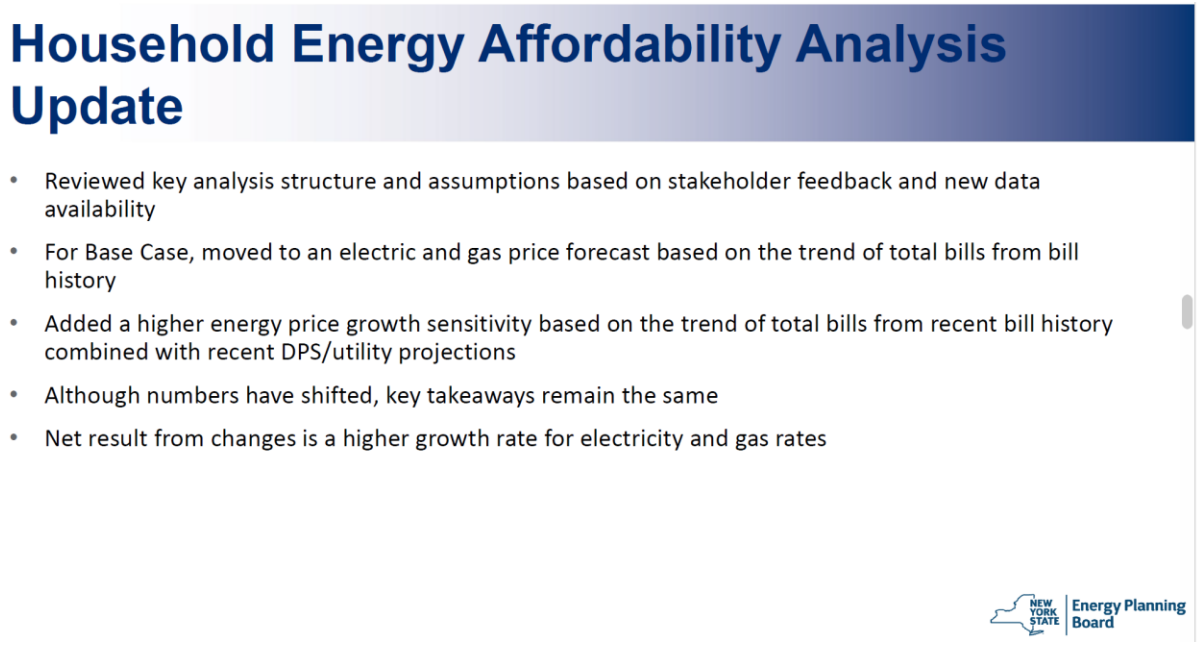

Since we presented the draft analysis in June, we've received and reviewed public comments and updated our analysis to include the latest available data. For our base case, we've moved to an electric and gas price forecast based on the trend of total residential bills from the DPS and utility bill history. We've also added a higher energy price growth sensitivity based on the trend of total residential bills from the past five years, where we've seen higher than average increases, combined with a recent DPS and utility projections.

Although the numbers have shifted, our key takeaways remain the same, and the net result from these updates is a higher growth rate for electricity and gas rates.

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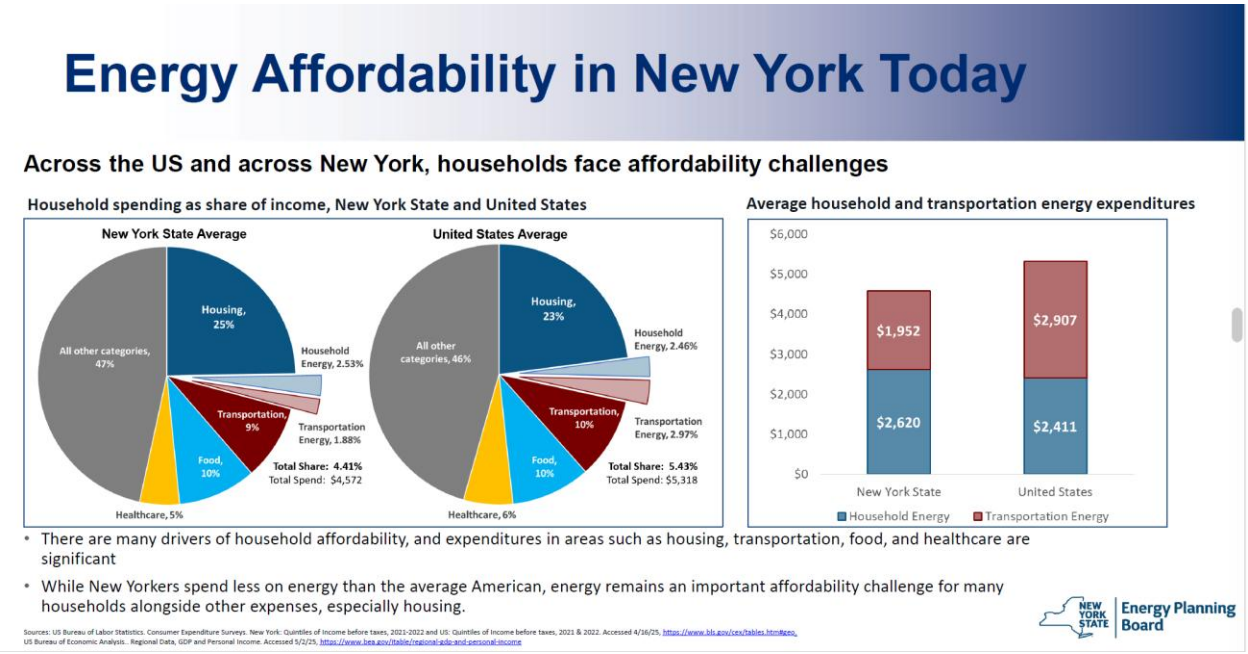

So I'll be revisiting our key analysis findings.

And so to ground our analysis in a broader context, our data updates have reinforced our initial observations. Across the U. S. And across New York State, households face affordability challenges. We see this when we look at the breakdown of household spending by category and see that categories like housing, transportation, food, and health care are key drivers. And energy, as we can see when we look at the pie chart, is a component of household and transportation spending.

When we compare energy spending levels between the U. S. And New York State, we observe that on average prices are higher in New York State than the U. S, but average energy consumption is lower, leading to lower combined energy expenditures than the national average as well as the top out migration states from New York. And that bar chart compares those two spending levels between New York State and the United States. Although New Yorkers spend less on energy than the average American, energy remains an important affordability challenge for many households.

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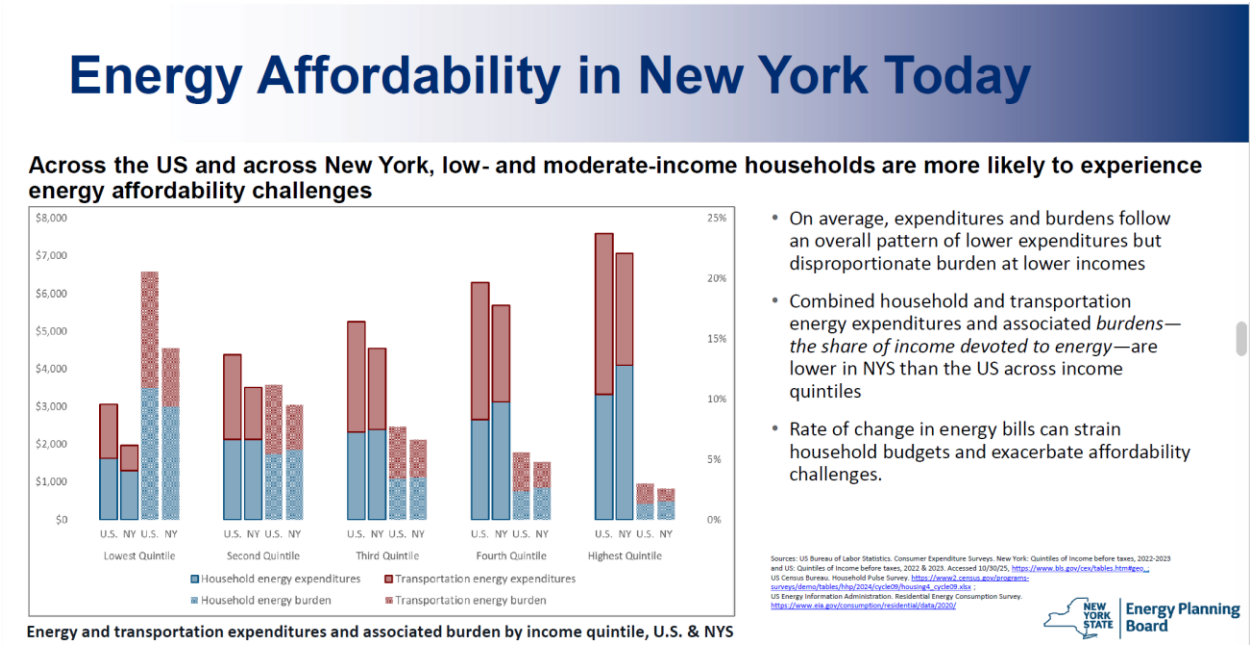

In particular, low and moderate income households are more likely to experience energy affordability challenges. The latest data reaffirms what we found in the draft, that on average expenditures and burdens, or share of income, follow an overall pattern of lower expenditures but disproportionate burdens at lower incomes, a pattern we see illustrated here on this graph which compares U. S. And New York State Energy expenditures, the bold outlined bars, and burdens, the pattern bars, across income quintiles from left to right.

We also note that on average, energy spending and burdens are lower in New York State than in the US across income quintiles. In addition to energy burden, we find that across the US and New York State, lower income and more vulnerable households experience energy insecurity. For example, foregoing other expenses to pay for energy, keeping one's home at an unsafe temperature, or getting behind on an energy bill at above average rates.

And finally, we highlight a theme that we heard in the public comments that the rate of change in energy bills driven by factors like recent price trends, fossil fuel price volatility, seasonality, and the rollout of new rates, constrain household budgets and exacerbate affordability challenges.

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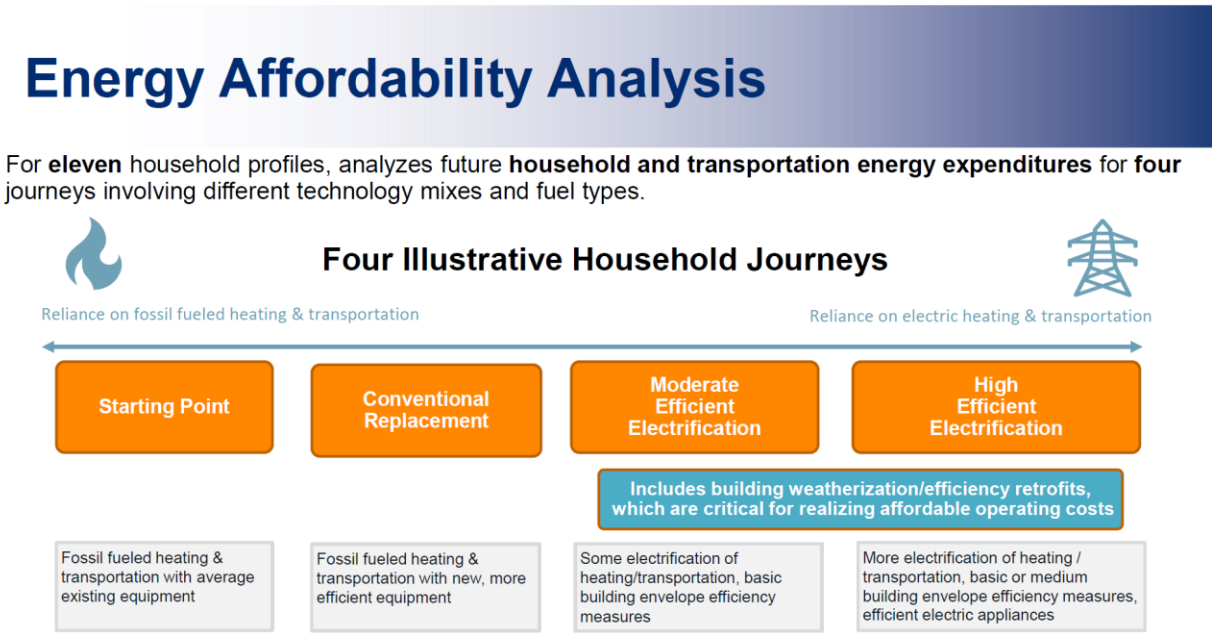

With that grounding context reinforced by our data updates, I'll shift to our forward looking analysis.

To recap our approach, we developed eleven household profiles differentiated by region, income level, and primary heating fuel type, and analyzed total energy expenditures for four distinct technology adoption journeys that are consistent with the range of technology mixes and fuel types we see in the pathway scenarios.

These journeys range from a starting point, which looks at continued use of existing fossil fuel equipment, two, conventional replacement, where a household replaces their existing equipment with new, more efficient versions that use the same fuel and two, efficient electrification journeys, both grounded in building efficiency upgrades and featuring different levels of appliance and transportation electrification.

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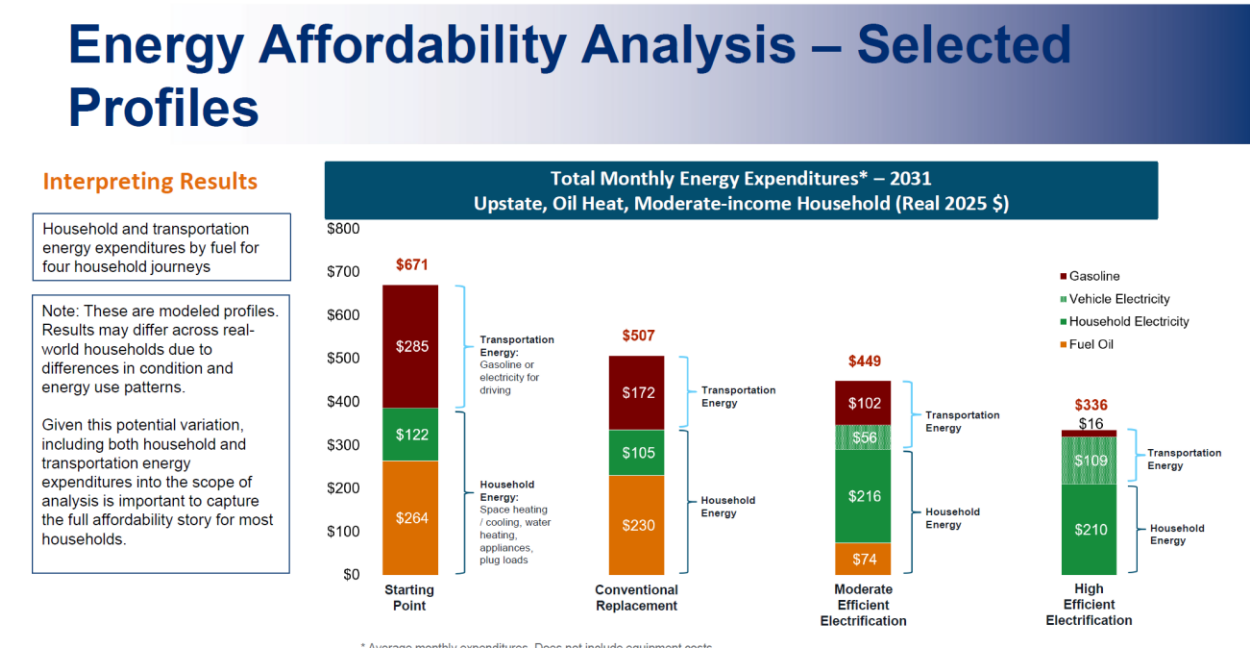

When we revisit the three selected profiles we shared in draft form with the Board back in June, we see that the patterns and trends are the same even as the numbers have changed a bit.

For this upstate moderate income household using heating oil, we can see that the that relative to the starting point, all of the replacement journeys result in lower household energy spending and transportation energy spending, with the savings improving with efficient electrification.

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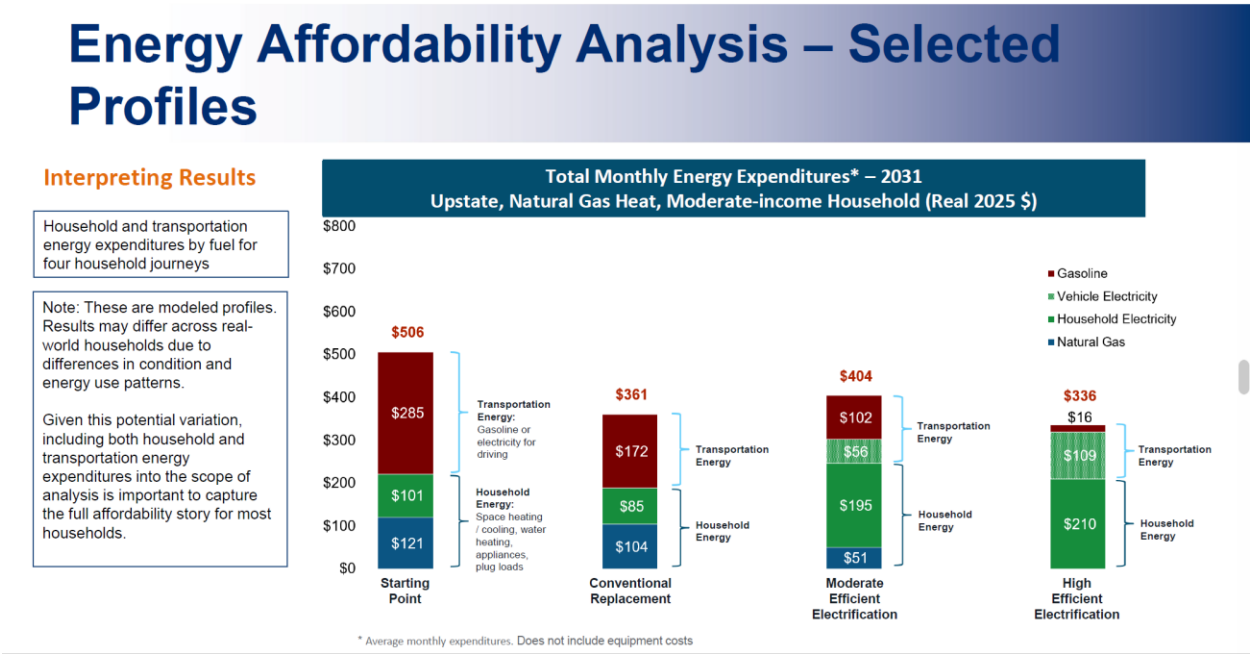

However, for the same household using natural gas, recall that these patterns are a bit more complex.

As in the previous profile, all replacement journeys result in lower spending relative to the starting point, but heat pump adoption can lead to higher heating costs due to the relative price difference between electricity and natural gas.

However, this increase is offset by savings from vehicle electrification.

And to unpack the colors a little bit, our gasoline, we see in kind of brownish red our electricity, we see in green and we also have a shade of lighter pattern green for vehicle electricity. And in the previous slide, we had orange representing heating oil, and in this slide, we have blue representing natural gas.

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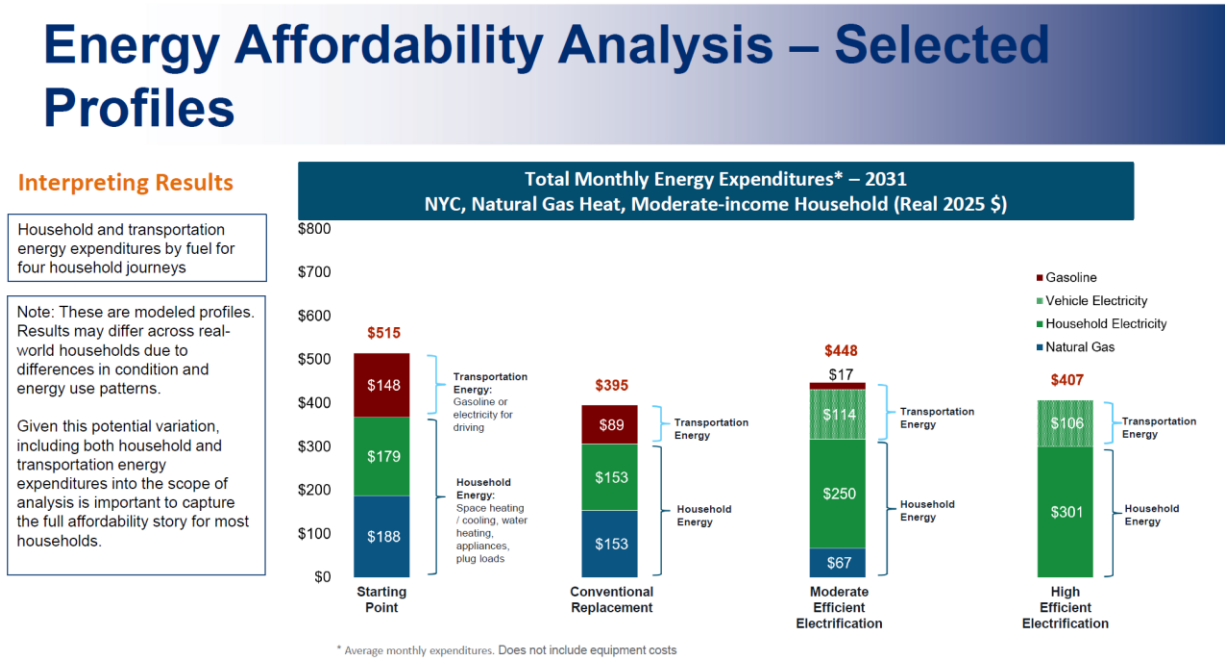

And looking at New York City, we continue to see that equipment replacement journeys result in lower spending. In this particular scenario, we see that despite New York City's higher electricity prices, end use electrification can still save money due to the high efficiencies of battery electric vehicles and heat pumps, even when in this case, a new efficient gasoline vehicle comes in a little bit lower and the savings from efficiency and heat pumps is comparable to conventional replacement. It's worth reiterating here that although these modeled scenarios are indeed representative, real world results may differ, and these results are sensitive to factors like the efficiency of a household's existing vehicle and selected new vehicle, as well as overall demand for driving. For example, we could see a different fuel spend dynamic depending on the efficiency of the specific vehicle a household selects.

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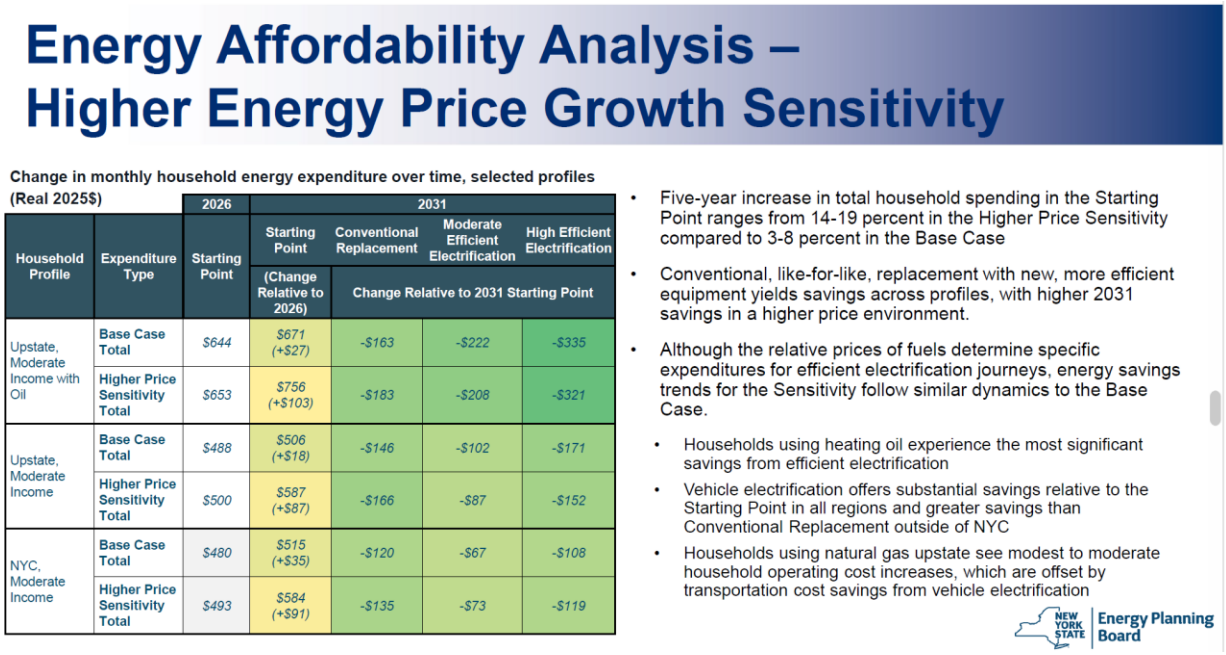

Now here we see the profiles we just walked through compared to our higher energy price growth sensitivity. There are a few key takeaways to unpack. First, when we look at the starting point, which is a household with no equipment replacement, we see that the increase in total energy spending over five years ranges from fourteen percent to nineteen percent in the higher price sensitivity across the full range of profiles compared to three percent to eight percent in the base case. And both the base case and the sensitivity illustrate the range of potential impacts from increasing energy prices on a real dollar basis.

We also observed that conventional like for like replacement with new, more efficient equipment yields savings across profiles with higher two thousand and thirty one savings in the higher price environment of the sensitivity.

And finally, we see that although the relative prices of fuels determine specific expenditures for efficient electrification journeys, energy savings trends for the sensitivity follow similar dynamics to the base case, that households using heating oil experience the most significant savings from efficient electrification, that vehicle electrification offers substantial savings relative to the starting point in all regions and greater savings than conventional replacement outside of New York City, and households using natural gas upstate can see modest to moderate household operating cost increases, which are offset by transportation cost savings from vehicle electrification.

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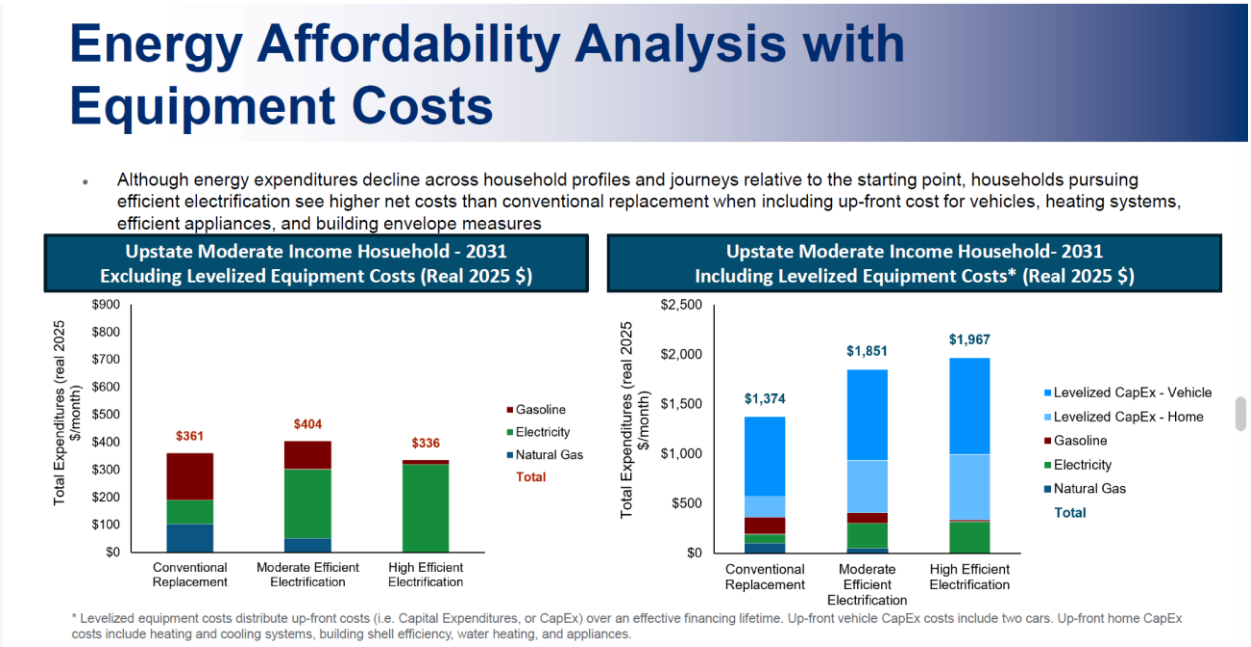

And finally, our updated equipment cost sensitivity reinforced our initial draft findings as well. On the left here, we can see the same operating costs we've been looking at previously for the replacement journeys, And on the right, we see total spending with equip equipment costs layered on top in blue, and these are levelized over time.

What we can take away is that the net costs for efficient electrification journeys could be thirty five to forty percent higher than conventional replacement when accounting for equipment, reinforcing the importance of action to address upfront equipment costs so that households are able to access the benefits of these systems.

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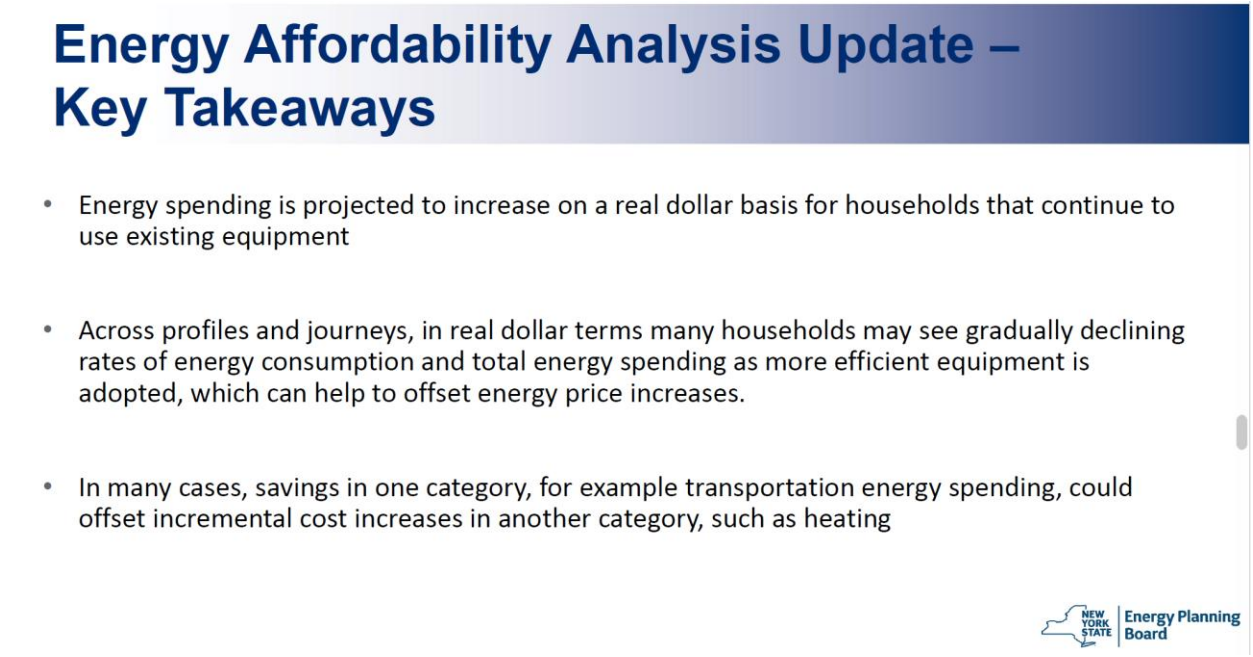

So to recap key takeaways from our update.

First, energy spending is projected to increase on a real dollar basis for households that continue to use existing equipment.

Second, across profiles and journeys in real dollar terms, many households may see gradually declining rates of energy consumption and total energy spending as more efficient equipment is adopted, which can help to offset energy price increases.

And in many cases, savings in one category like transportation could offset incremental cost increases in another category, like heating.

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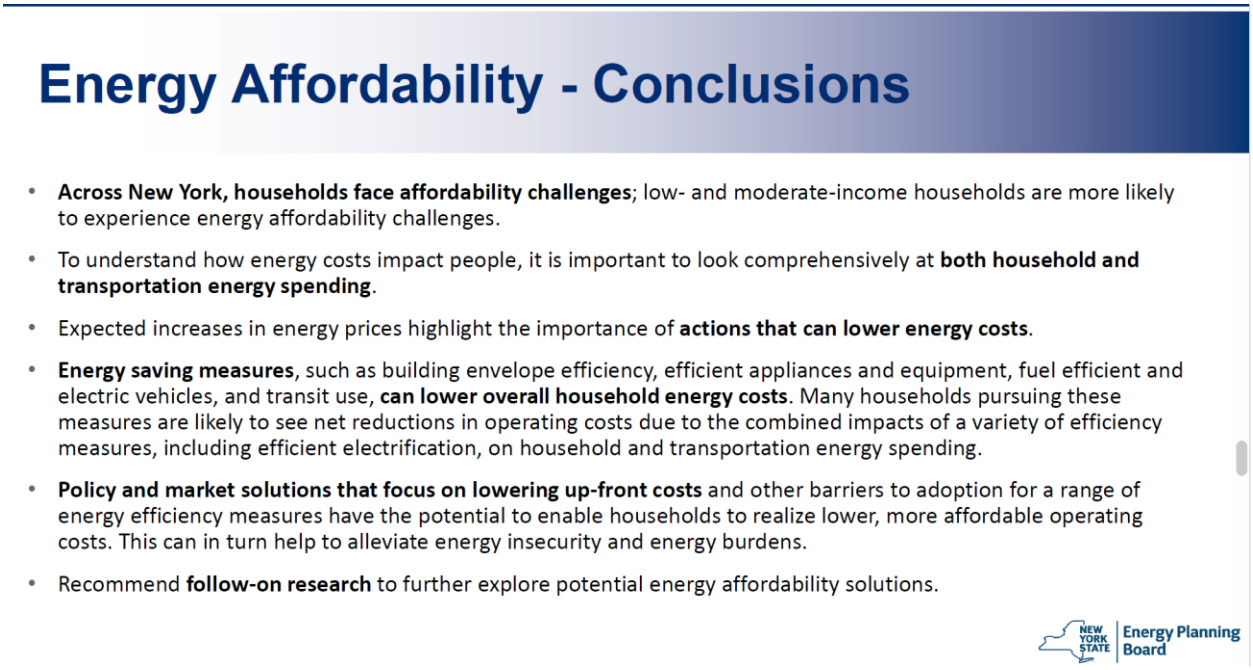

And our update reinforces the overall conclusions from our draft analysis. Across New York, households face affordability challenges, and low and moderate income households are more likely to experience energy affordability challenges. To understand how energy costs impact people, it's important to look comprehensively at all energy spending, which includes, for most households, both household and transportation energy spending.

Expected increases in energy prices highlight the importance of actions that can lower energy costs, and these actions include a variety of energy efficiency and efficient electrification measures.

And all of this underscores the need for policy and market solutions to lower upfront costs and other barriers to adoption for a range of energy efficiency measures, which have the potential to enable households to realize lower, more affordable operating costs and, in turn, help to alleviate energy insecurity and energy burdens.

And finally, because of the importance and cross cutting nature of energy affordability, we recommend follow on research to further advance our understanding of energy affordability for households and potential solutions.

Thank you, and I'm happy to take questions as time allows.

Energy Affordability Questions

Great. Thank you, James, for that. So any extra comments or questions from the board, Chair Harris, or others, please go ahead.

Chair Harris

Video at 1:07:03

Thank you, James.

I'm going to try to summarize just two points. One, just maybe just describe for us in general what the key differences are for an upstate, typical upstate versus downstate household? Let's start there, make sure we're understanding our geographic realities.

Wilcox

Yeah, absolutely. So our model incorporates a number of factors that differentiate, right? One is climate, so we factor in the colder climate upstate and the more milder climate downstate. We also differentiate by dwelling size. We have a little bit of a larger dwelling size upstate and downstate, so energy use patterns are different. Transportation demand patterns are also different.

Our profiles start with a driving household. So you saw in those graphs that, you know, we had transportation fuel costs for our different household profiles, and those transportation demands, underlying transportation demands, driving demands are higher upstate than they are downstate for driving households. We also acknowledge that for many households, particularly in New York City, they're primarily transit users. And so we made sure to unpack our analysis so a reader can look at the different components of the energy spend and look at, you know, what would this mean if this household were not a driving household and just a transit using household.

We also acknowledge that that's the same upstate. Many households rely on transit upstate as well. So we show our results modularly, so a reader can see their household reflected in those profiles. So I think that probably gets at the many differentiating Yes.

Harris

Thank you. I think that's important because that's one of the reasons why we had to produce so many variations, right? Like, it reflects the diversity of our state in a way that means that the answer isn't the same for everyone, depending on their own experience and the way they live. The other question I have, which I think you explore in the new sensitivity, has to do with the we'll call it, the inaction. So what happens if a household does not purchase new equipment? What happens if a household, doesn't increase their energy efficiency? Like, what does business as usual look like for a standard household?

Wilcox

Right. So in that case, the key driver of change over those five years is, is the change in energy price. Right? And so that's how, you know, we produced our base case and our sensitivity to explore that range. And just as a recap, the increase in household spending was three to eight percent in the base case, depending on the profile, and fourteen to nineteen percent in the higher price sensitivity, if a household is using the, you know, the same equipment that they're using after that five year time step.

Harris

And then, James, maybe to kind of take those percentages in context, was it in that higher price sensitivity, a household that did nothing could see as much as one hundred dollars a month increased costs. Is that about right?

Wilcox

Yeah. That's correct.

Harris

So there's a substantial increase with these energy prices for folks who don't take any action.

Thank you. That's what I was trying to elicit was what does doing nothing get you?

Assembly Member Barrett

Video at 1:11:06

Thank you for addressing that upstate downstate issue. I have a, you know, just sort of a follow-up on that.

Anticipating snowstorms tomorrow, which I'm not sure exactly where it's gonna hit, but I'm hoping that my generator will kick in. How are we addressing the the upstate and anywhere else generator, where you're also have drop in fuels even as you're electrifying more and more. How are we how are we factoring that and and showing that dynamic in and the cost involved in paying for a generator, you know, the additional fuel involved, all of that in these metrics.

Wilcox

Yeah. Thank you for that question. You know, generator usage, because it wasn't a differentiating factor across the different journeys, that sort of baked into our assumption set for an upstate household because we didn't look at differences in the need for a generator between, you know, a starting point household or an efficient electrification household.

So we recognize it's a very important issue for upstate households that I believe we address in some of the other chapters of the plan just as a feature of using energy upstate. Carl, did you want to jump in?

Karl Mas

Yeah, no, I can just build from it too. So I think as part of what to tie together our two presentations, so Nick did highlight different scenarios looking at more hybridized homes where we can have multiple fuels still in place versus the pure electric and some of those benefits and risks that come from that. I think one of the things we don't tap into yet, but we have a two year update, so we can explore that more, is we're going to begin to see the electrification providing whole new services we didn't expect. So vehicles are actually moving batteries.

And we have an ability right now. There are models for sale in the US. They've been in sale for Europe for years where your car can become that backup energy source. So there's very little additional cost.

You have a bidirectional charger. And if you have a hybrid system where you have a heat pump but maybe also your furnace, you could run that furnace off the car and don't even need a generator. So there's some of those synergies that we need to explore in terms of systems thinking to say, how do we get multiple benefits during this transition out of these new systems? And they will become also tools for for the grid, but there's gonna be opportunities even for the individual household that we need to explore.

Rory Christian, PSC

Video at 1:13:25

On that final point, well said. And the commission is working with that goal in mind through a number of different proceedings. I do wanna ask one question, and I'm not sure if I missed this or if it's baked in. And I imagine it's not given the diversity of housing throughout the state and the variation, but the subject of weatherization. The more efficient you make the entirety of the household, the less of an upfront cost on much of these investments you need to make.

But I imagine there's so much diversity in housing from age, condition, and other things that that wasn't a part of this analysis.

Is that a safe assumption to make?

Wilcox

So actually, we do include weatherization measures in our both of our efficient electrification journeys. We've got costs for weatherization, different levels of weatherization reflected in those different those two variants for different building profiles.

So we did bake it in or incorporate it into those into those profiles, and we do see that it makes a huge difference. Right? It makes a huge difference on overall electricity consumption for households that adopt a heat pump. So we kind of designed those two electrification journeys with weatherization and if and building shell retrofits embedded in the the profile?

Mas

No. That yeah. No. It's a great question. I think Nick mentioned how efficiency is still the bedrock, and I think our affordability lens has caused us maybe to remember our old friend who sometimes, has been in the background.

But having energy efficiency as our core, as we analyze systems and we looked at that kind of middle scenario of a hybrid system, if you didn't have efficiency, in some cases you wouldn't even be able to be cheaper than the current BAU. So efficiency is kind of an inextricable part of any of these pathways. Great. Thank you for that clarification.

Richard Dewey, NYISO

Thank you. Thank you, James. Following up on the chairman's question, I did see in the charts that the efficiency was baked into the, the pathway journey, but you also highlighted in one of your later charts the importance and the impact that the upfront capital costs have on people's ability to to make this journey.

Are the electrify or the, efficiency or weatherization costs included in those numbers, or is that just looking at equipment?

Wilcox

Yes. So the weatherization, building shell upgrades are included in that upfront cost sensitivity. So include, you know, all of all of the, the building shell costs, equipment costs for, you know, a heat pump, for transportation measures, other appliances as well.

Dewey

Great. Thank you. And and for the record, I have to say that I hope assembly member Barrett's generator doesn't need to work tomorrow.

Thank you. Any other questions?

Kevin Malone, Department of Health

Just James, excellent analysis all around as as we come to expect. It's great. Thank you for doing that. Did I hear you right on the affordable analysis that even for downstate, you assumed a car household, and that leads to that's a point of clarification. I guess the, question I have, and maybe it's a two year

update question, is did you look at the potential in either study or model shifts to either help households with affordability or and or to reduce, transportation emissions?

Wilcox

Yeah. Great question. So, you know, we we did include driving in all of our household profiles. In the chapter, you know, we certainly recognize and kind of call out, the findings for a household, that primarily uses transit as well. So we kind of structure our analysis where we have a default, but we also have other ways of looking at at the numbers. And so one of our core messages is for New Yorkers that use transit, they are already pursuing an affordability strategy to keep those total energy costs manageable. And if more households used to transit, that would be a strategy for affordability as well.

Okay. Well, thank you, James, for that presentation, and to the members for your questions. We're becoming affordability experts, as we should, right?

And I agree on the efficiency points. That was actually the subject of a number of comments that we received and very reflective of the final that you're seeing today.

Two more relatively brief topics we want to cover: First, an update on the health analysis, and the second, the update on the employment analysis. Over to you, Carl.

Health Analysis and Employment Analysis

Great. So I'll just do a quick intro. We did hear about health and employment during our July meeting. We've asked our experts to come in so we could have the kind of fully rounded discussion. Nick spoke to the health benefits in the total benefit cost analysis, so we'll be able to unpack a little bit of those numbers. And then we'll also speak to some of the job opportunities.

So I'll hand the mic over to Rachel Silbern and Amy Valpast, our two project managers from NYSERDA's Policy and Analysis team. Rachel will discuss the health analysis, followed by Amy, who will present on jobs. So Rachel first.

Health Analysis – Rachel Silven

Thanks, Carl. Hi, everyone. I'm Rachel Silvern, and I'm going to provide a brief overview of the public health impacts of the plan.

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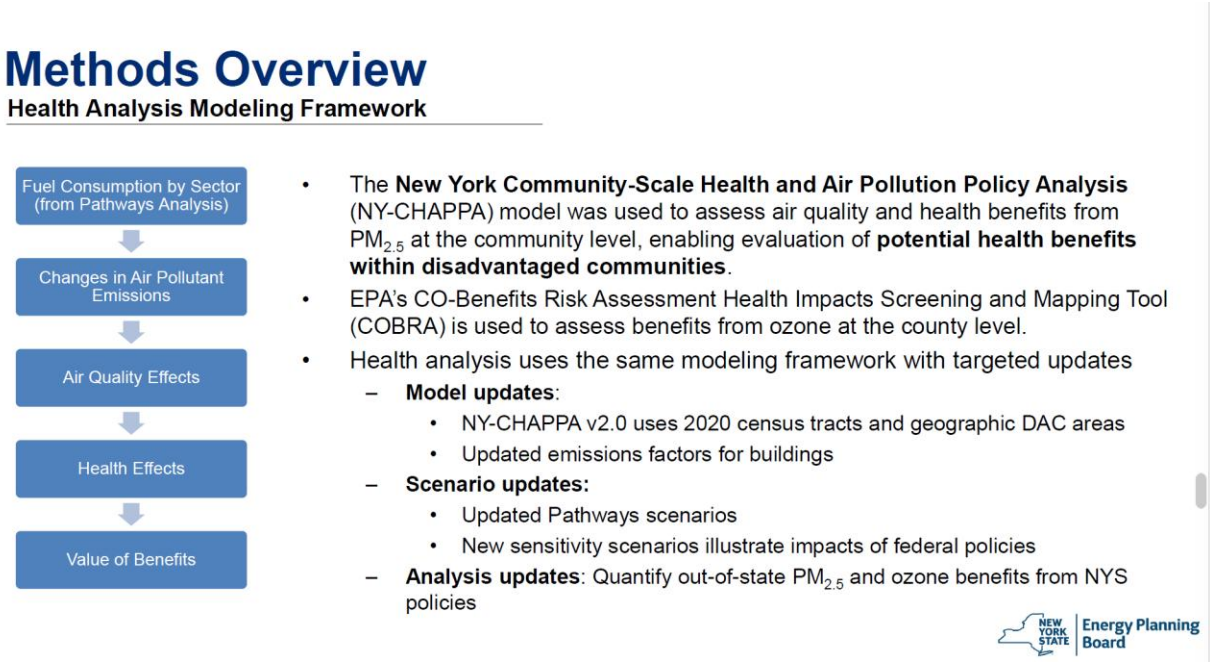

The health analysis of the plan evaluates the impacts of economy wide energy policies from the pathways analysis on air quality and public health in New York State, shown in the schematic on the left.

The models used in the health analysis estimate the impacts on air quality and public health from changes in fine particulate matter, or PM two point five, at the community scale and ozone at the county scale.

The modeling framework that was used is the same as was used in the draft plan, so I won't get into the details of the methodology that was presented previously. I've just noted on this slide a handful of technical updates that were made.

I'll also note that the public health benefits quantified in this analysis should be considered conservatively low, because we don't account for additional health benefits that would come from additional reductions in other air pollutants, improvements to indoor air quality, and other health benefits not related to reductions, in fuel consumption.

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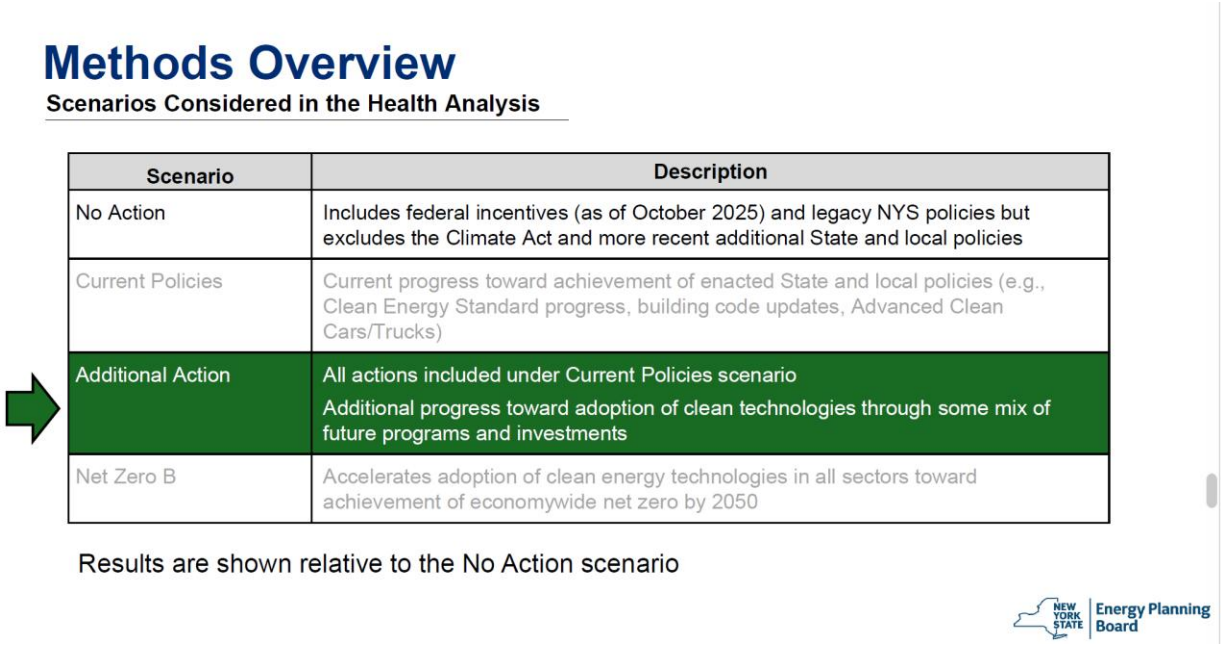

The health analysis considered the updated scenarios that we just heard about in the pathways presentation.

The next few slides will be focused on results of the additional action scenario, and all results will be shown relative to the no action scenario absent local and state policies.

I will note that the health analysis chapter of the plan does include analysis of all of the policy scenarios.

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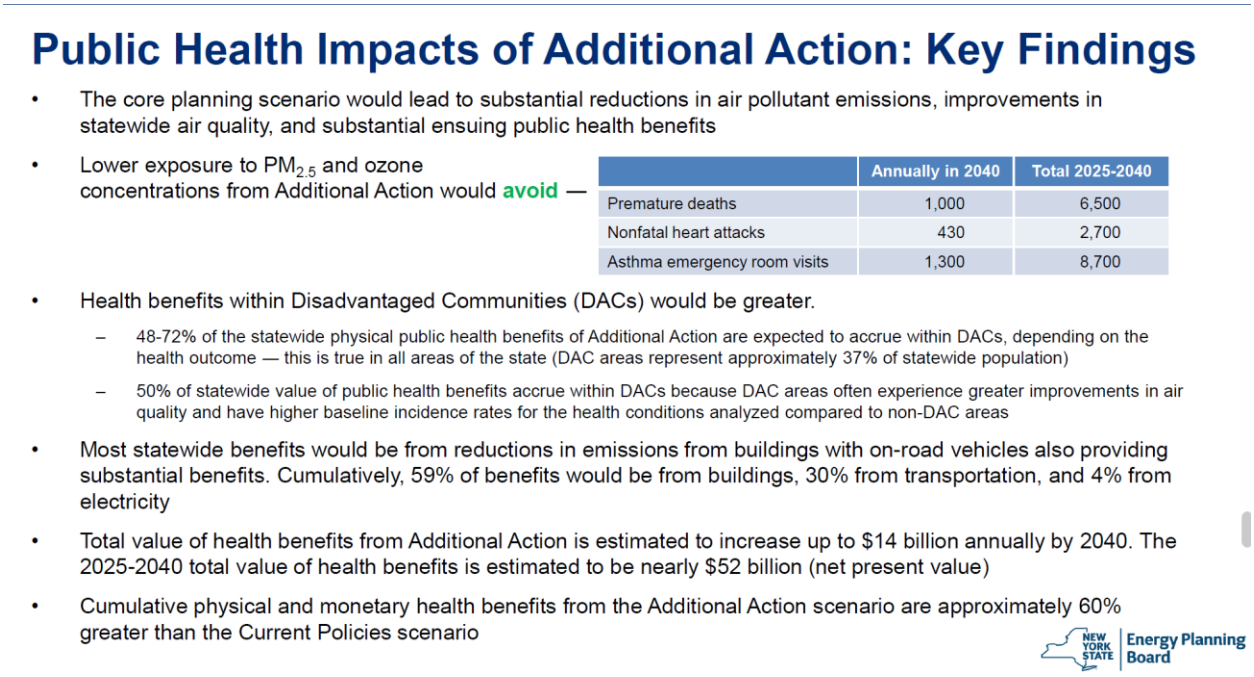

I'll start with key findings.

We find that the additional action scenario would lead to improvements in statewide air quality and substantial public health benefits.

Cumulatively from twenty twenty five to two thousand and forty, these amount to approximately six thousand five hundred cases of avoided premature death, two thousand seven hundred cases of avoided cases of non fatal heart attacks, and eight thousand seven hundred avoided emergency room visits for asthma.

The health benefits in disadvantaged community areas would be greater than their share of the population.

Disadvantaged community areas represent about thirty seven percent of the statewide population, but about fifty percent of the health benefits would accrue in DAC areas.

Most statewide benefits would be from lower emissions from residential buildings and on road vehicles.

Health benefits and their value would increase over time to up to fourteen billion dollars annually in two thousand and forty, and these health benefits would continue after two thousand and forty.

And lastly, the cumulative health benefits from the additional action scenario are about sixty percent higher than the current policy scenario.

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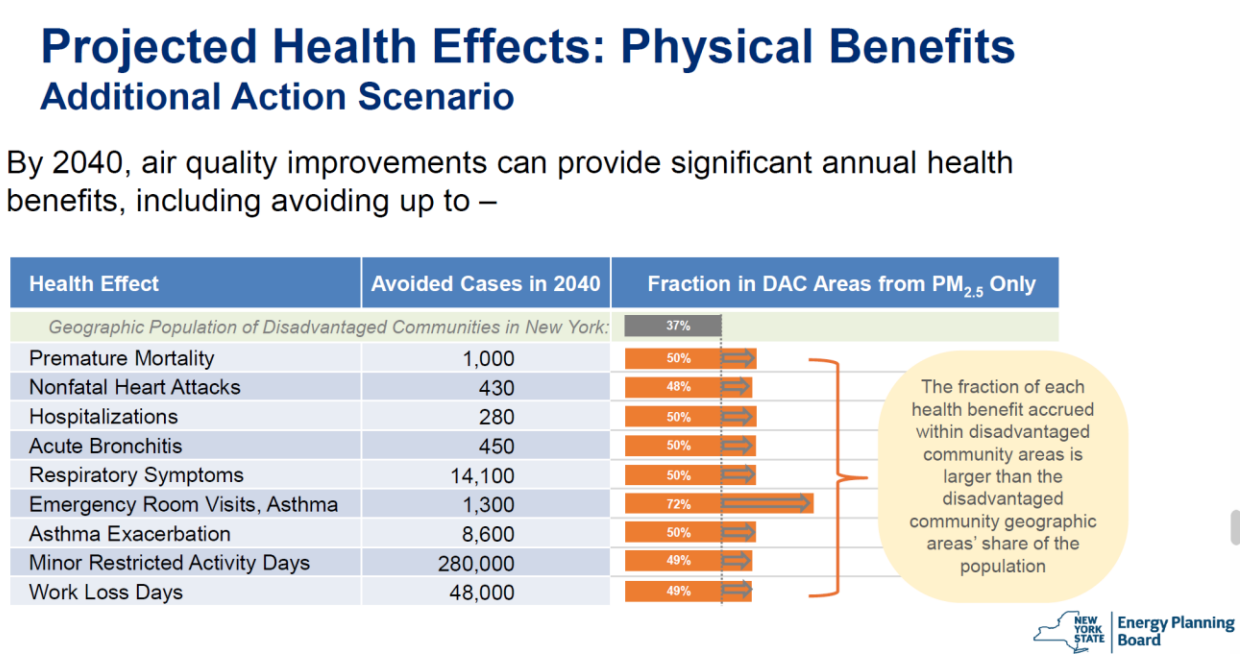

Diving into some of the physical health benefits, this table is showing the full range of health endpoints included in the health analysis, and the annual avoided cases in two thousand and forty for each endpoint.

The bars on the right show that for each endpoint, the fraction of benefits accruing within disadvantaged communities is greater than their share of the population because DAC areas generally experience greater improvements in air quality and have higher baseline incidence rates for the health conditions that were analyzed here compared to non DAC areas.

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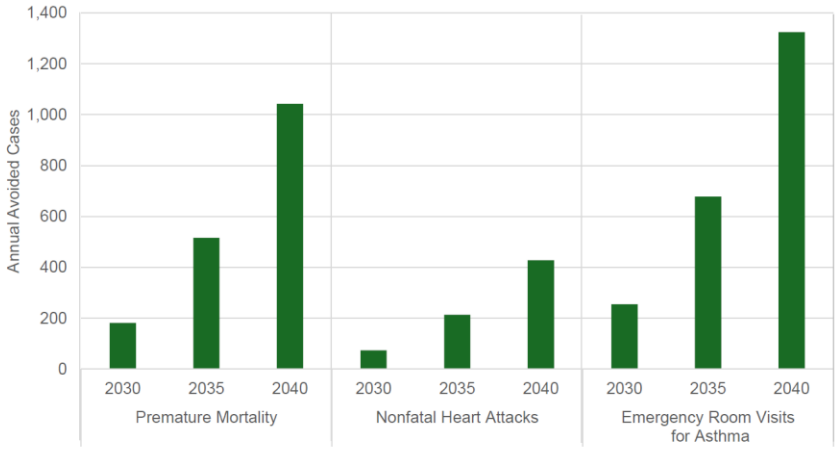
Annual Physical Health Benefits Would Increase Over Time

Annual Avoided Cases from $PM_{2.5}$ and Ozone, Additional Action

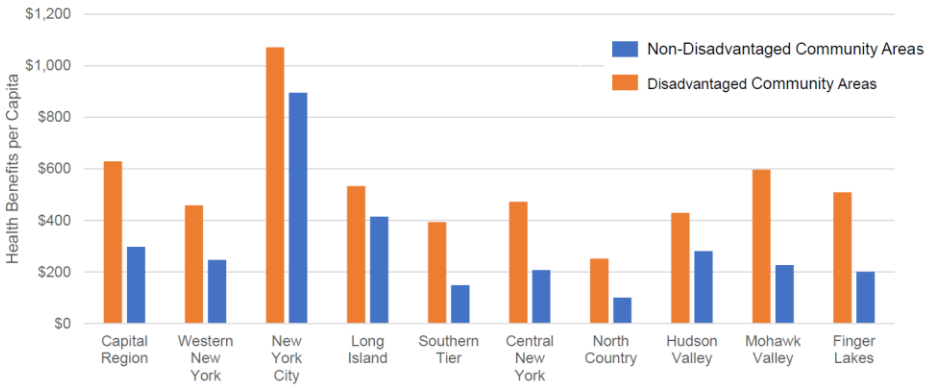


Looking at a few illustrative health outcomes, we can see that annual health benefits are projected to increase over time, shown here from two thousand and thirty to two thousand and forty. And these health benefits would continue to grow beyond two thousand and forty, and this is the case for all of the health endpoints included in this analysis.

Next slide, please. Video at **1:23:01**

All Regions and Communities Experience Public Health Benefits

Annual Per Capita Benefits from $PM_{2.5}$ by Region and Community Type, Additional Action, 2040



All regions of the state and all communities would experience public health benefits.

The figure here is showing estimated per capita health benefits in two thousand and forty by region and community type.

In all regions, disadvantaged communities shown in orange, would experience higher per capita benefits than non DEC areas shown in blue.

Adding up benefits statewide and accounting for differences in population, we find that DEC areas would experience approximately seventy percent higher benefits compared to non DEC areas.

Next slide, please. **Video at 1:23:42**

Sensitivity Scenarios Illustrate Impacts of Federal Policies on Health Benefits

Scenario	Description
Current Policies **Pre-Federal Rollback**	Federal policies such as the Inflation Reduction Act are re-instated to illustrate what a Current Policies world would look like if federal policies were consistent with those in January 2025.
Current Policies	Current progress toward achievement of enacted State and local policies (e.g., Clean Energy Standard progress, building code updates, Advanced Clean Cars/Trucks)
Current Policies with **Further Federal Rollback**	Explores the potential for future federal policy rollbacks that could negatively impact State energy and climate objectives.

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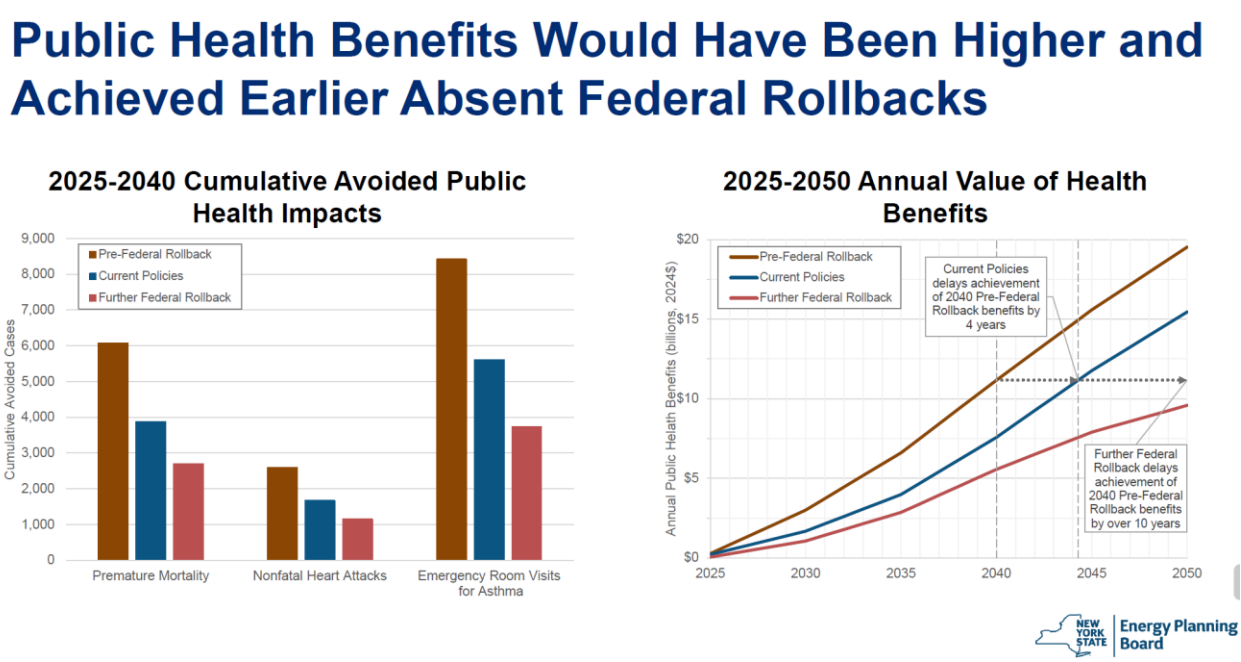
In addition to the core scenarios, the health analysis also considered two sensitivities of the current policy scenario that were introduced in the pathways presentation to examine the impact of federal energy policies on statewide health benefits.

I'll note that in general, there are fewer statewide backstops included in the current policy scenario compared to the other policy scenarios.

So current policies is expected to be relatively more sensitive to changes in federal policies than the other policy scenarios.

Next slide, please. **Video at 1:24:21**



I'll dive into the public health benefits of federal energy policies in two ways. Starting with the figure on the left, I'm showing the impacts of federal policies on physical health outcomes as cumulative avoided cases for several health endpoints.

The federal rollbacks currently enacted under current policies shown in the blue bars are estimated to have lowered health benefits that would have been achieved under the pre federal rollback scenario, shown in the brown bars.

For example, under current policies, there are an estimated two thousand fewer avoided premature deaths, one thousand fewer avoided nonfetal heart attacks, and three thousand fewer avoided emergency room visits for asthma compared to the pre rollback scenario.

The further federal rollback scenario in pink would result in even fewer benefits relative to current policies. For example, there could be a thousand fewer avoided premature deaths, five hundred fewer avoided non fatal heart attacks, and two thousand fewer avoided emergency room visits for asthma compared to current policies.

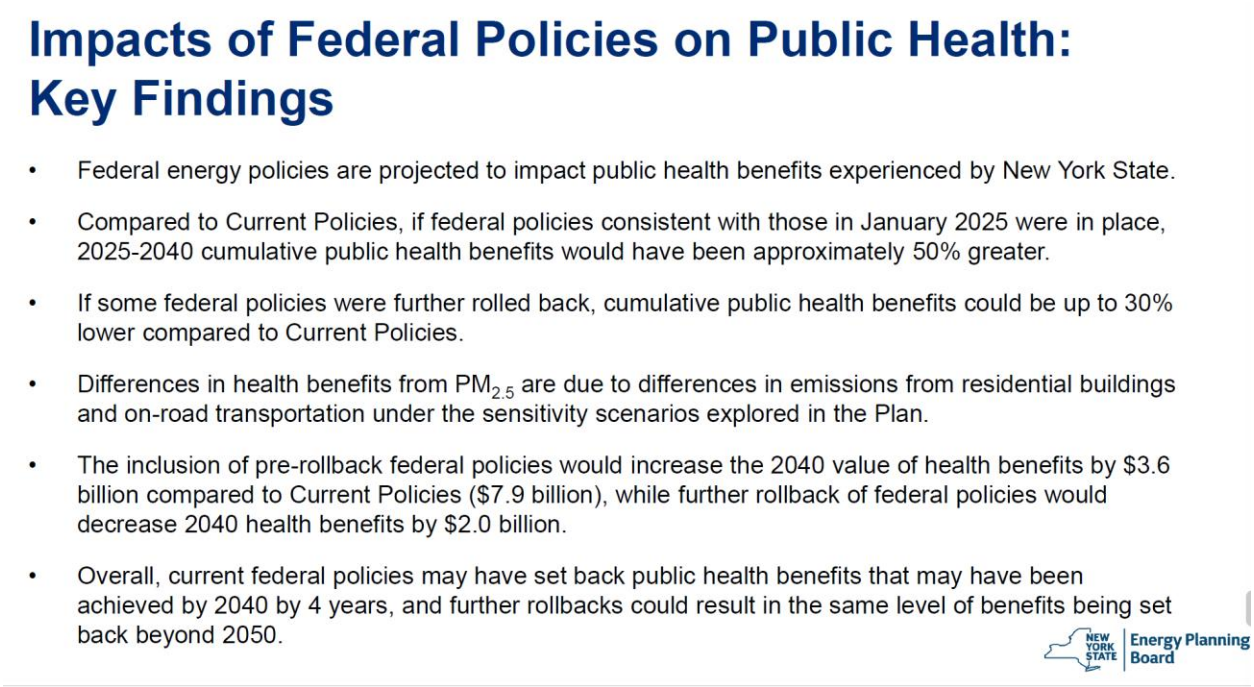
The figure on the right shows the annual value of health benefits from twenty twenty five to two thousand and fifty.

Compared to the health benefits that would have been achieved under the pre federal rollback scenario in two thousand and forty, where that brown line intersects the dotted line in two thousand and forty.

The federal rollbacks currently enacted under current policies delay the achievement of the same level of benefits by four years.

The further federal rollback scenario would delay achievement of that same level of benefits by over ten years beyond two thousand and fifty.

Next slide, please. **Video at 1:26:12**



I'll conclude with a few key findings.

Federal energy policies are projected to impact the public health benefits experienced by New York State.

Cumulative health benefits would have been approximately fifty percent higher relative to the current policies scenario if federal energy policy rollbacks as of October twenty twenty five had not occurred.

If some federal policies were further rolled back, cumulative health benefits could further decrease by up to thirty percent compared to current policies.

Changes in emissions from residential buildings and on road vehicles and the sensitivities explored here account for these differences in health benefits.

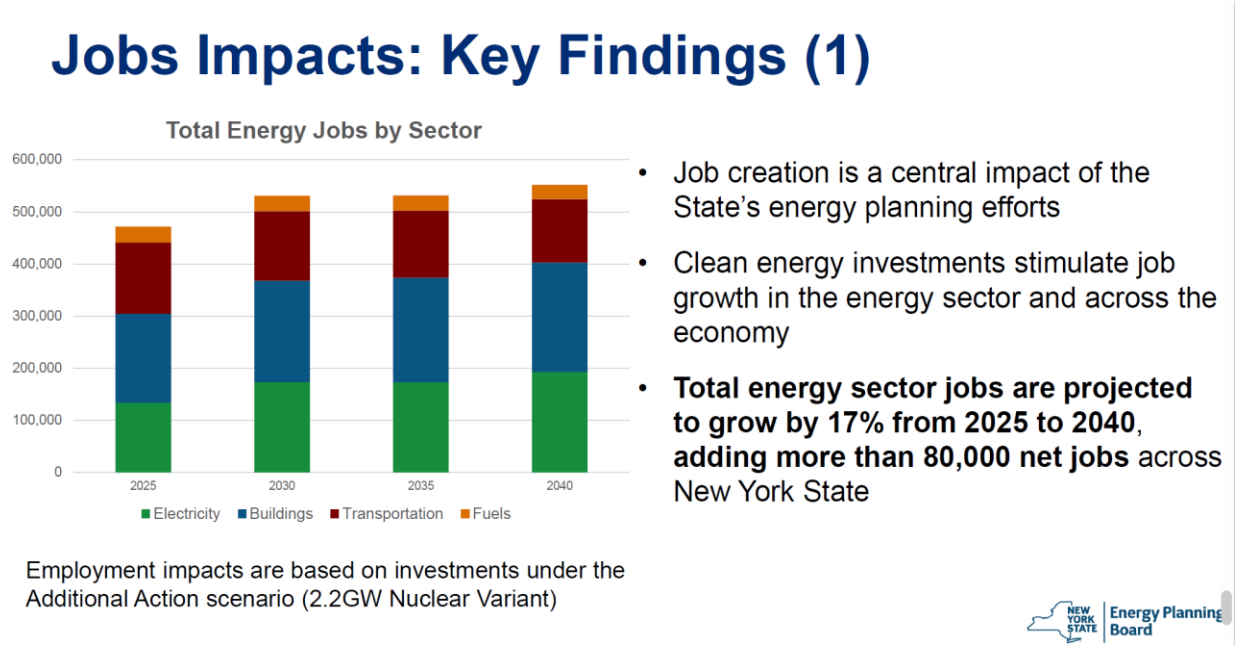
And overall, federal policies may have set back public health benefits that may have been achieved by two thousand and forty, by four years, and further rollbacks could result in the same level of benefits being set back beyond two thousand and fifty.

And with that, I'll thank you for your attention and hand things over to Amy.

Thank you, Rachel.

Employment Analysis - Amy Valpast

Video at 1:27:21



So today, I'll walk us through some of the high level job impacts from the updated pathways analysis. So following on the updates that Nick talked about, we impact we assess the impacts in the employment sector.

For the purposes of this analysis, we look solely at the additional action scenario, the two point two gigawatt nuclear variant version of it. But in the chapter, we also analyze the net zero b impacts.

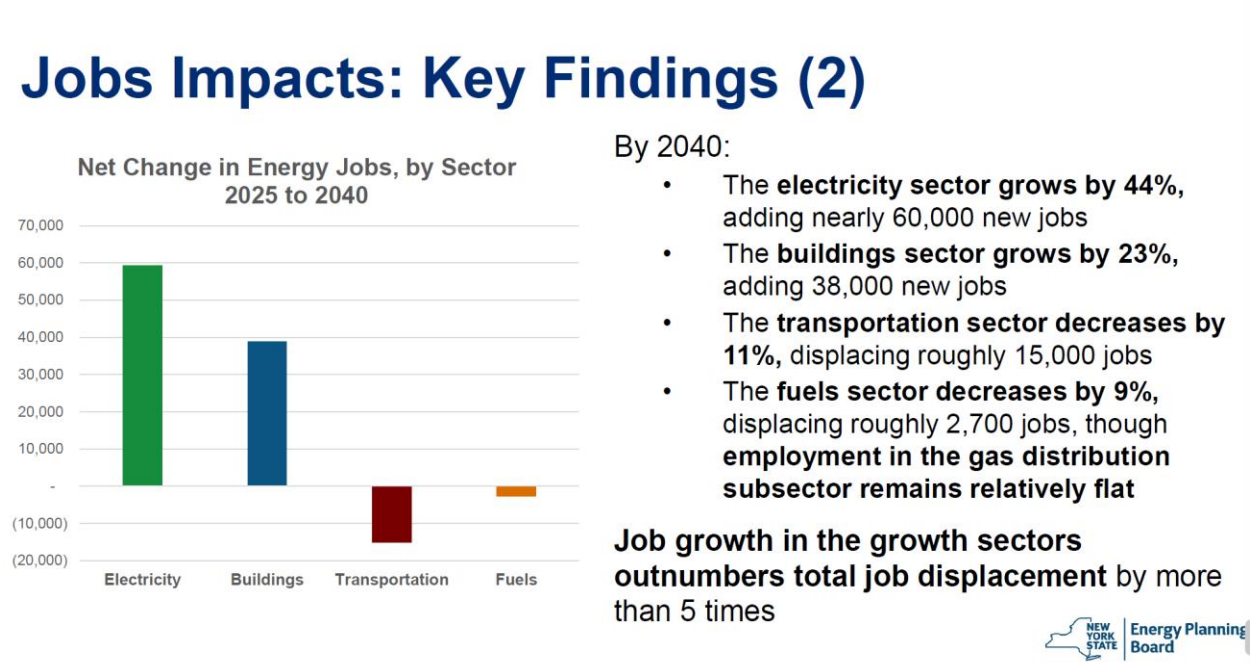
So starting first with the big picture, the graph on the slide captures the total number of jobs in each year.

By twenty forty, on the, the end of the the plan horizon, we project to add roughly eighty thousand new jobs, which represents an increase of about seventeen percent.

The building sector and the electricity sector in blue and green make up the lion's share of New York's energy workforce and are the two sectors where we project growth.

Just under thirty percent of these jobs are in transportation, and less than ten percent are in fuels, the red and orange on the graph. In the following slides, we'll break this down in additional detail.

Video at 1:28:31

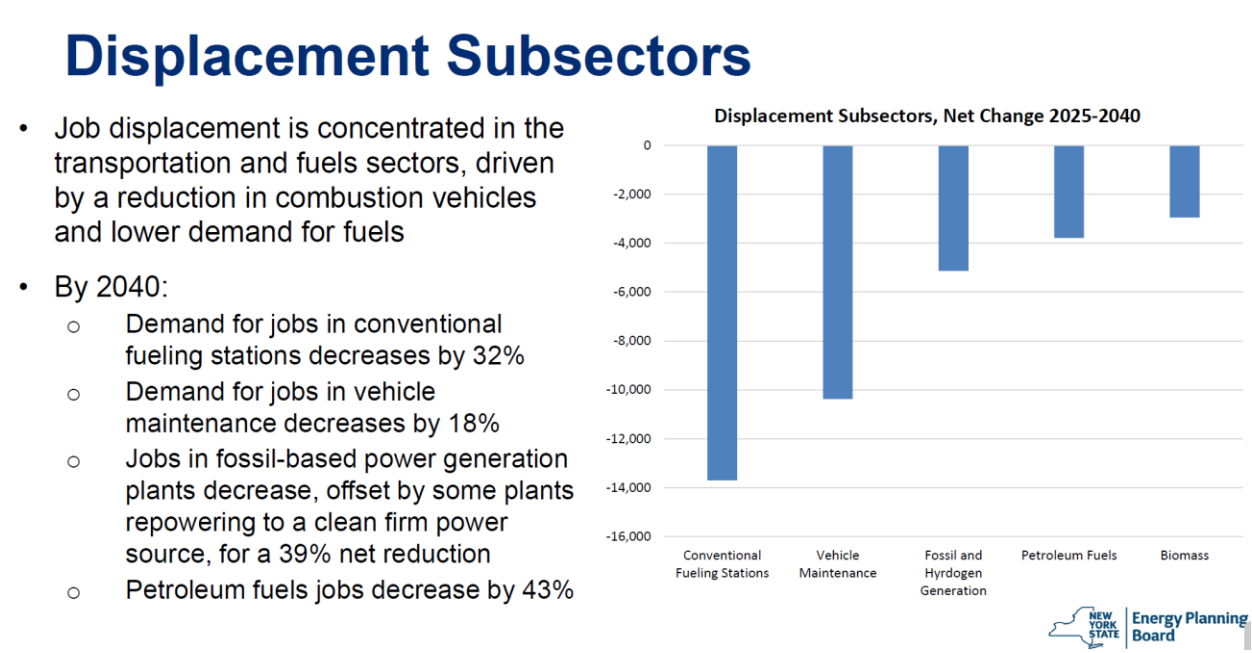


So looking here at the net change by each sector over the course of the plan, we see that the electricity sector grows by forty four percent, adding over sixty thousand new jobs.

Building sector grows by twenty three percent, adding thirty eight thousand jobs, followed by transportation sector and fuel sector, which jointly we project displacement of about seventeen thousand jobs, which represents a decline of about ten percent in each sector.

I'll note that the net growth from our two sectors on the left outpaced the displacement by about five times, which is why we see such meaningful growth in the overall core planning scenario.

Video at 1:29:13



So zooming in a little bit onto subsectors where these changes occur, I'll first start us off with the displacement subsectors.

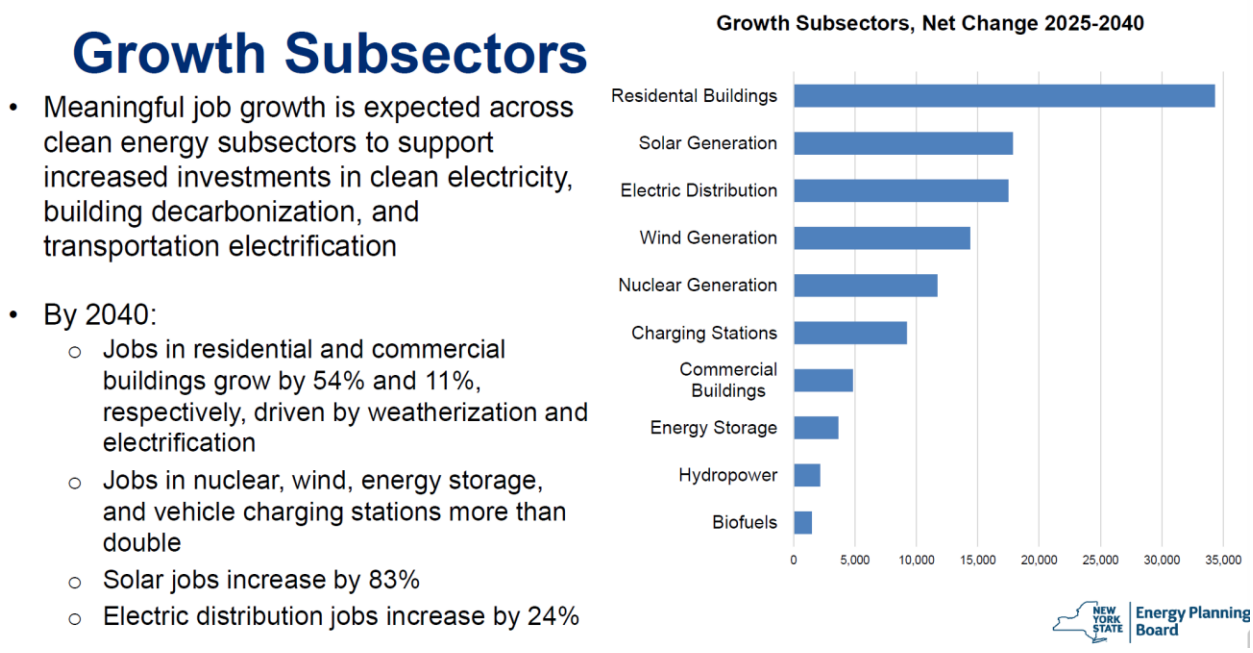
From left to right on the graph, we see the bulk of displacement is in fueling stations and vehicle maintenance as a result of increased adoption of electric vehicles.

We also see displacement in fossil generation as we meet our zero by forty requirements. However, I'll note here that this displacement is offset somewhat by repowering plants to defer. And as Nick mentioned in this model, we assume that's hydrogen, but that is subject to modeling assumptions. So we see some displacement there as those workers work in repowered plants.

We also see displacement in petroleum fuels as demand decreases.

And I'll also take a minute to note here, not pictured on the graph, is the natural gas distribution sector. So whereas on the graph that Nick showed earlier, we see somewhat of a decrease in consumption over the course of the plan in this additional action scenario, we actually project flat demand for employment over the course of this plan. So that's why we don't see it in the displacement sector. But additionally, when we consider turnover as workers retire, we actually see a need to recruit new workers to the tune of about two thousand new gas workers. So that is potentially a growth area, as we dig deeper.

Video at 1:30:42



Looking now at growth subsectors.

Here, we have a longer list to require or to to look at. We have residential buildings with the largest growth where we expect thirty thousand new jobs to support building electrification and energy efficiency.

Solar and wind generation are the second and fourth largest growth areas consistent with the plan's continued commitment to growing these resources.

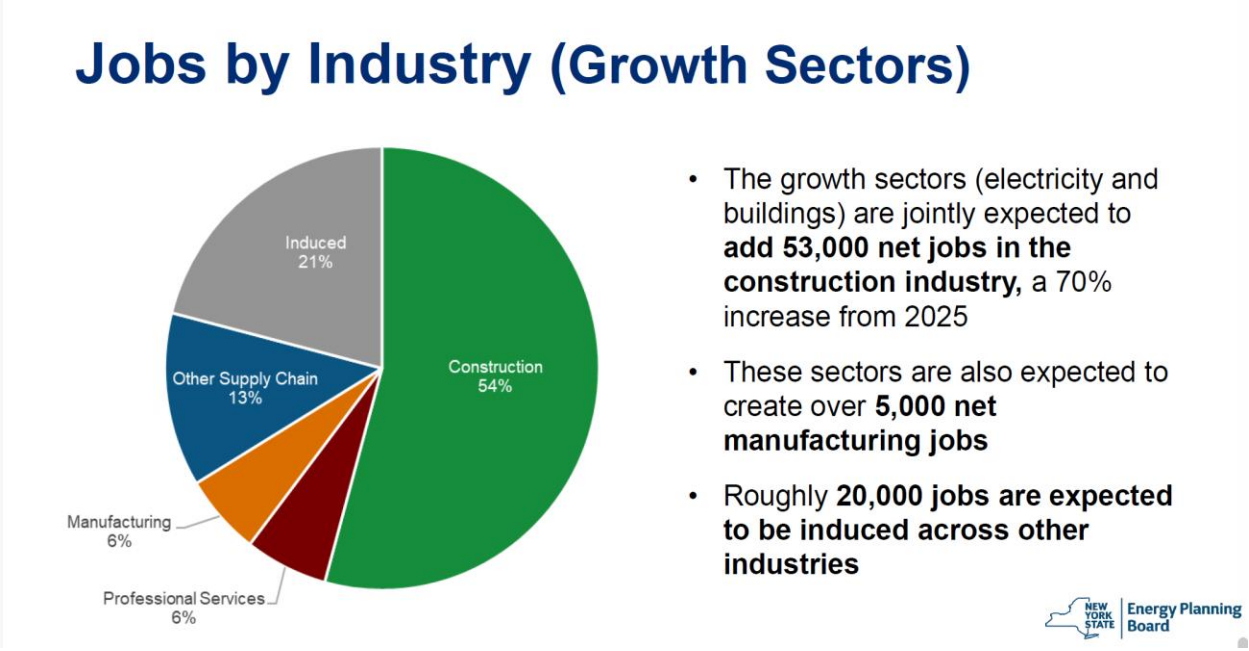
And I'll note that, you know, this growth is less rapid given the updated assumptions since the draft plan, but we still see really meaningful increase with those thirty thousand new jobs jointly between the two subsectors representing about doubling the workforce from our base case.

In the electric distribution subsector, we see also growth twenty five percent, roughly adding fifty thousand new jobs or rather fifteen thousand new jobs, and these will be critical to meeting needs for system upgrades, modernization, as well as support for growth in electric demand.

And finally, I'll pause on nuclear generation, which is a new addition to this graph, where we project over ten thousand new jobs to support the two point two gigawatts of new advanced nuclear capacity. This growth is largely in the construction industry and is projected to occur later in the the plan years.

And then I'll note also, we see growth in charging stations, commercial buildings, energy storage, and some in hydropower and biofuels.

Video at 1:32:12



And finally, I'll walk through a little bit the types of work that this breaks out by. We see about forty percent of this graph spread across other supply chain work, which includes operations, professional services, and work that's induced across other sectors.

However, you can see that about more than half of the new jobs that will be created will be in the construction industry.

We also project about five thousand new jobs in manufacturing.

So as as mentioned in the July meeting, I highlight these last two categories as they tend to be higher paying, have higher union density, and point to the ways in which our our core planning scenario will drive high quality jobs.

So with that, I thank the members of the board, and I'll hand it back to Carl.

Discussion of Health and Employment Analyses

Video at 1:32:26

Karl Mas Comment

Great. Thank you both. Thank you, Rachel and Amy, for those quick walk throughs. I guess a couple of things maybe to emphasize on the health.

It's a fairly similar story we saw in the draft, and it really speaks to the fact we're seeing broad scale health impacts for every community from this work. And we're also seeing that because those disadvantaged communities have historically been exposed to more, they're more predisposed to

benefit as we reduce the combustion in their neighborhoods. So those were consistent findings that I think we were able to amplify here. And then on the jobs, I think we did see some interesting new findings.

Some of it came through the feedback of our comment period. Obviously, there's new technologies like advanced nuclear. But I think that point Amy raised, which is through the planning horizon, we're seeing a continued reliance on some of our existing infrastructure. And so we're going to need to maintain that system over this next fifteen years.

And we have an aging fleet, but also an aging workforce. So conversely, we need to think about how we're making sure that we're training and bringing on those skilled resources across every energy type.

So it's not this linear progression where we're just going to be swapping jobs. We have to maintain some of those skills that we've had for the last few decades into the future. So with that, I'd like to turn it over to the Board for any follow on questions, and I'll again open up with Chair Harris.

Chair Harris Health Analysis Question

Video at 1:34:18

> Yes, I'll add my thanks to the team for these updates. I remember, know, first of all, think a general observation is just really how interconnected our energy system is to the outcomes that you're describing, both with respect to economic growth, job growth, but also the health benefits, which I remember at the time of the Climate Action Council, I of course, your model I guess, Rachel, my question for you is really what we're able to model are only a subset of the health benefits that can actually be realized. So maybe you can speak to some of the other benefits which we haven't quantified, in this analysis.

Silvert Response

> Yeah, absolutely. Thanks for the question. So the health analysis that I showed the results for here focus on outdoor PM two point five and ozone, which are our most important outdoor air pollutants for human health.
>
> But we would expect the energy policies and the pathway scenarios to result in a number of other health benefits that weren't quantified. So for example, we would expect to see improvements in lower concentrations of other air pollutants, for example, NO2, which is another criteria pollutant. We would expect to see from on road vehicle electrification lower NO2 concentrations.
>
> We would also expect to see in the industrial sector reduction in hazardous air pollutants as industry decarbonizes as well.

In the residential building sector, we expect improvements in indoor air quality. That's something else that we haven't quantified here. And then there are a host of other health benefits from other kind of outgrowths of the energy policies. So for example, in the scoping plan, they found additional health benefits from increases in active transportation as modes of transportation changed, as well as additional building efficiency upgrades that further improved health outcomes.

I will just note that the public health benefits from the avoided greenhouse gas emissions, so those climate impacts to health are accounted for in the avoided GHG benefits piece of the cost benefit analysis that Nick showed.

Great, thank you. That was my recollection from our earlier modeling was when Carl informed us that walking was going to help us with our health outcomes.

Chair Harris Employment Question

Video at 1:36:54.

To you, Amy, I think we should talk about the impacts of the federal administration's policies on job creation. Already, I've seen some reports that that even New York has lost, a number of clean energy jobs on the order of I forget it was seven, eight thousand clean energy jobs. So can you speak to the extent and how the job losses were modeled in this, instance?

Any Valpast Response

Yes, so to some extent, changes are captured in this model. You know, by incorporating into our pathways analysis some of the federal headwinds and changes to federal policy, we see those changes. So by looking between the draft plan and the final analysis that we just looked at today, you do see less growth in the renewable sector. So, you know, while we still have that meaningful growth, it is subdued compared to what it would have been prior to those those policy changes. So short answer is in some ways it's incorporated already, but there's still market uncertainty playing out, and a lot of those job losses that you mentioned, Chair Harris, have you know, are a result of market uncertainty. There's sort of knock on effects from those policy changes. So I think we'll still see that and incorporate it into our baseline as we update the analysis going forward.

Wrapup

Video 1:38:19

Okay. Well, I I do want to sincerely thank Carl and the entire team, Nick, James, Rachel, Amy, but the many agency contacts within NYSERDA as well as represented by the members of the board for these updates. They occurred on a quick time horizon, but I think very necessarily reflect the dynamic nature

of the economy we're working with. And I want to thank you as we seek to finalize this plan for your work to make that analysis as up to date as it possibly can be.

So we'll now move to other business. I'll ask if the members have any other business to bring before the Board.

Hearing none, I'll move to our final slide. We are nearing the final stages of the development of the State Energy Plan.

In terms of next steps, as you should all know, I do look forward to meeting with the board again later this month to vote on the issuance of the State Energy Plan.

And so we will be convening in the next couple of weeks to do just that. If for members of the public, if you would like updates on that meeting, please visit the State Energy Plan website to sign up for email updates.

And so with that, I'd like to thank the Board members, their delegates for coming to this Energy Plan meeting and for your participation today. This meeting of the State Energy Planning Board is hereby adjourned. Thank you all.