Just Transition Working Group

Meeting #1

September 17, 2020
3:00-5:00pm

NEW YORK STATE OF OPPORTUNITY. Department of Labor

NEW YORK STATE OF OPPORTUNITY. NYSERDA

NEW YORK STATE OF OPPORTUNITY. Climate Action Council

Just Transition Working Group (JTWG)

Meeting #1 Agenda

1. Introductions
2. Statutory requirements
3. E3 Pathways summary presentation
4. Workforce programs
5. Power Plant inventory/Jobs study scope
6. Review JTWG draft timeline/Next Steps

Just Transition Working Group

Roberta Reardon, Co-Chair
Commissioner: Department of Labor

Doreen Harris, Co-Chair
Acting President & CEO: NYSERDA

RuthAnne Visnauskas
Commissioner: Homes & Community Renewal

John Rhodes
Chair: Public Service Commission

Gary LaBarbera
President: Building and Construction Trades Council of Greater New York

Vincent Albanese
Director of Policy and Public Affairs: LIUNA

Omar Freilla
Founder & Coordinator: Green Worker Cooperatives

Henry Garrido
Executive Director: DC 37

Patrick Jackson
Director of Global Energy Management: Corning, Inc.

Michael Padgett
Vice President of Energy: Alcoa

Brian Raley
Principal Staff Engineer: Global Foundries

James Shillitto
President: Utilities Workers Union of America Local 1-2

Maritza Silva-Farrell
Executive Director: ALIGN

Ted Skerpon
Chair: IBEW Local 97 & Utility Labor Council

Lara Skinner
Executive Director: The Worker Institute at Cornell University

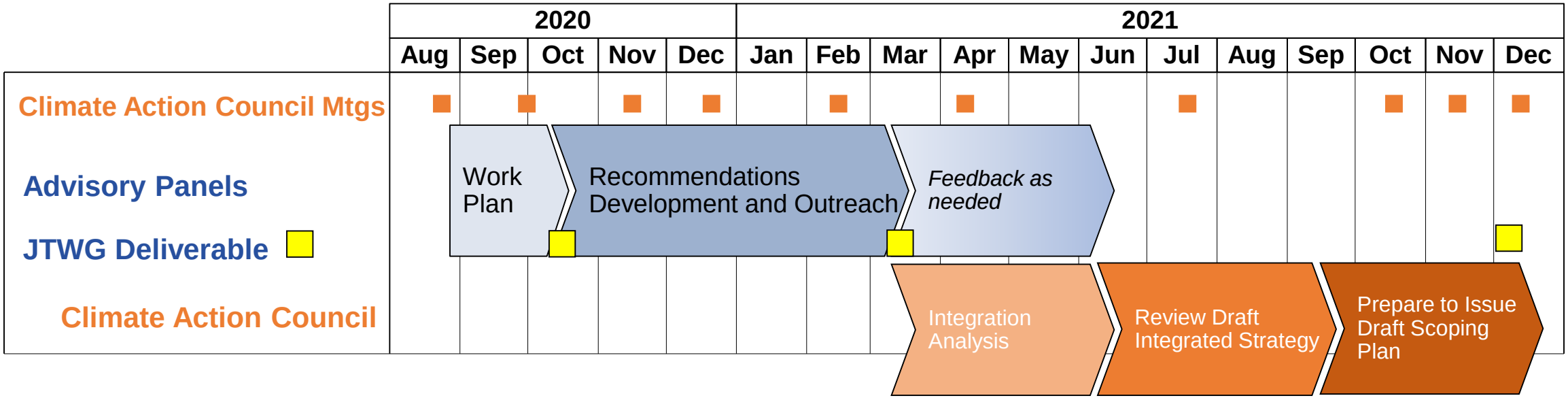
Candis Tolliver
Political Director: 32BJ SEIU

Randy Wolken
President: MACNY & Manufacturers Alliance

JTWG Statutory Requirements

	Task Name	Description
8-A	**Advise on workforce**	Advise the council on issues and opportunities for workforce development and training related to energy efficiency measures, renewable energy and other clean energy technologies, with specific focus on training and workforce opportunities for disadvantaged communities, and segments of the population that may be underrepresented in the clean energy workforce such as veterans, women and formerly incarcerated persons
8-B	**Energy-intensive industry impacts**	Identify energy-intensive industries and related trades and identify sector specific impacts of the state's current workforce and avenues to maximize the skills and expertise of New York state workers in the new energy economy;
8-C	**Power plant closure and reuse**	Identify sites of electric generating facilities that may be closed as a result of a transition to a clean energy sector and the issues and opportunities presented by reuse of those sites;
8-D	**Carbon leakage and competitiveness**	With respect to potential for GHG emission limits developed by DEC pursuant to this article, advise the council on the potential impacts of carbon leakage risk on NY state industries and local host communities, including the impact of any potential carbon reduction measures on the competitiveness of NY state business and industry;
8-E	**Workforce advice and outreach**	Advise the council and conduct stakeholder outreach on any other workforce matters directed by the council;
8-F	**Recommendations to CAC on Issues and Opportunities**	At a time frame determined by the council, prepare and publish recommendations to the council on how to address: issues and opportunities related to the energy-intensive and trade-exposed entities; workforce development for trade-exposed entities, disadvantaged communities and underrepresented segments of the population; measures to minimize the carbon leakage risk and minimize anti-competitiveness impacts of any potential carbon policies and energy sector mandates.
8-G	**Study on jobs and workforce needs / disruptions**	The just transition working group is hereby authorized and directed to conduct a study of and report on: i. The number of jobs created to counter climate change, which shall include but not be limited to the energy sector, building sector, transportation sector, and working lands sector; ii. The projection of the inventory of jobs needed and the skills and training required to meet the demand of jobs to counter climate change; and iii. Workforce disruption due to community transitions from a low carbon economy.

CAC - Timeline to Draft Scoping Plan



Advisory Panels and Working Groups

- Transportation
- Energy Intensive and Trade Exposed Industries
- Land Use and Local Government
- *Just Transition Working Group*
- Energy Efficiency and Housing
- Power Generation
- Agriculture and Forestry
- *Climate Justice Working Group*

Energy+Environmental Economics

New York State Decarbonization Pathways Analysis

Just Transition Working Group (JTWG) Discussion

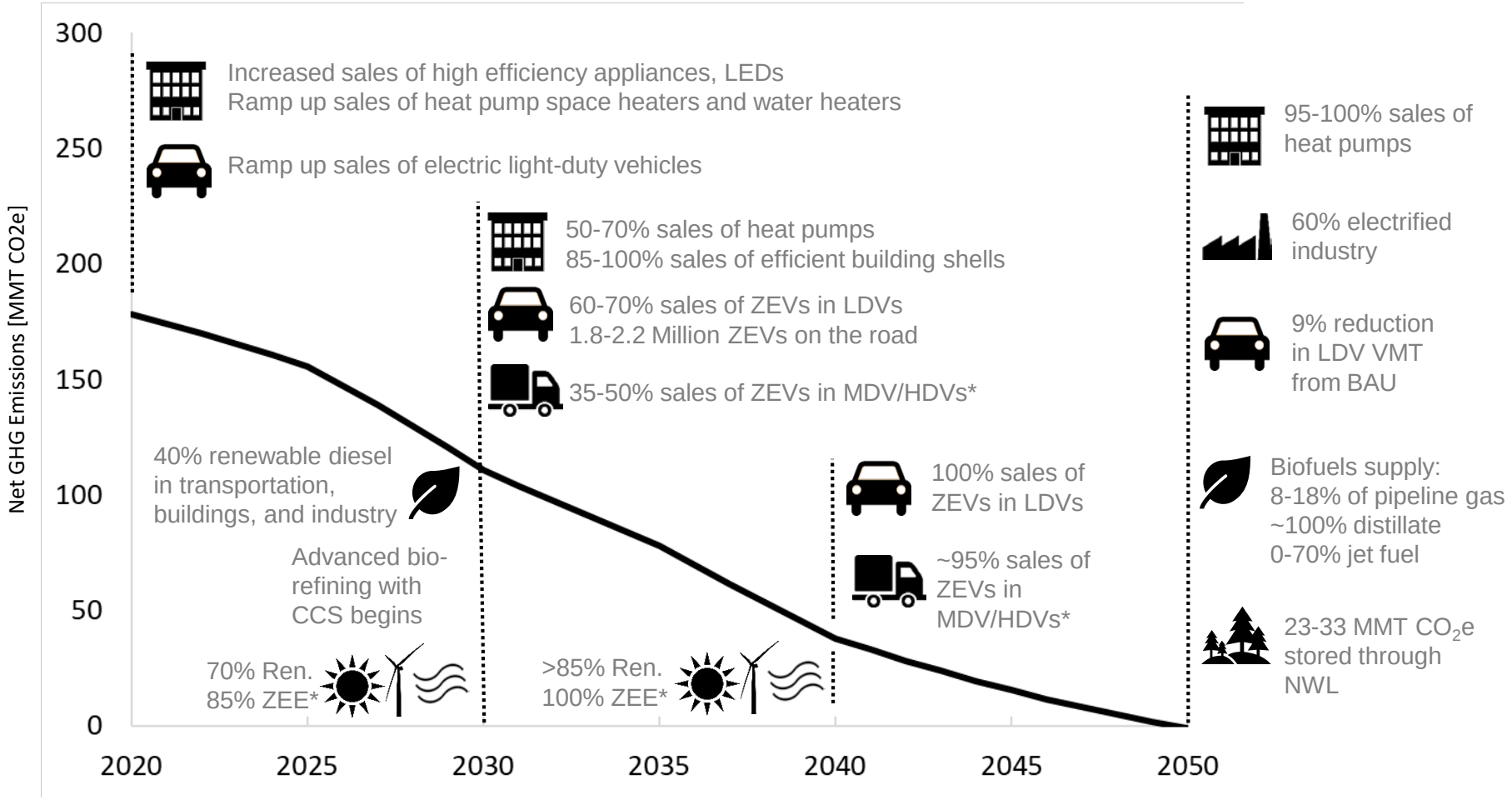
September 17, 2020

Key Takeaways

- **This analysis reinforces the conclusion of the reviewed studies: Deep decarbonization is feasible using existing technologies**
- **Some studies rely on technologies that have only been demonstrated in a limited number of applications and require progress before commercial readiness**
- **Although there is no single pathway to a decarbonized economy, all scenarios that achieve carbon neutrality share significant progress in the following four pillars**
  - Energy efficiency, conservation and end-use electrification
  - Switching to low-carbon fuels
  - Decarbonizing the electricity supply
  - Negative emissions measures and carbon capture technologies
- **Review of the literature illustrates that choices exist in the extent and role of each. However, in all studies the scale of the transformation is unprecedented, requiring major investments in new infrastructure across all sectors.**
- **Consumer decision-making plays a large role in the transition, such as in passenger vehicles and household energy use.**
- **Continued research, development, and demonstration will be necessary to advance the full portfolio of options.**

Key Takeaways

+ **Achievement of emissions reductions to meet state law requires action in all sectors**
+ **A 30-year transition demands that action begin now**



*Zero-Emissions Electricity (ZEE) includes wind, solar, large hydro, nuclear, CCS, and bioenergy; MDV includes buses

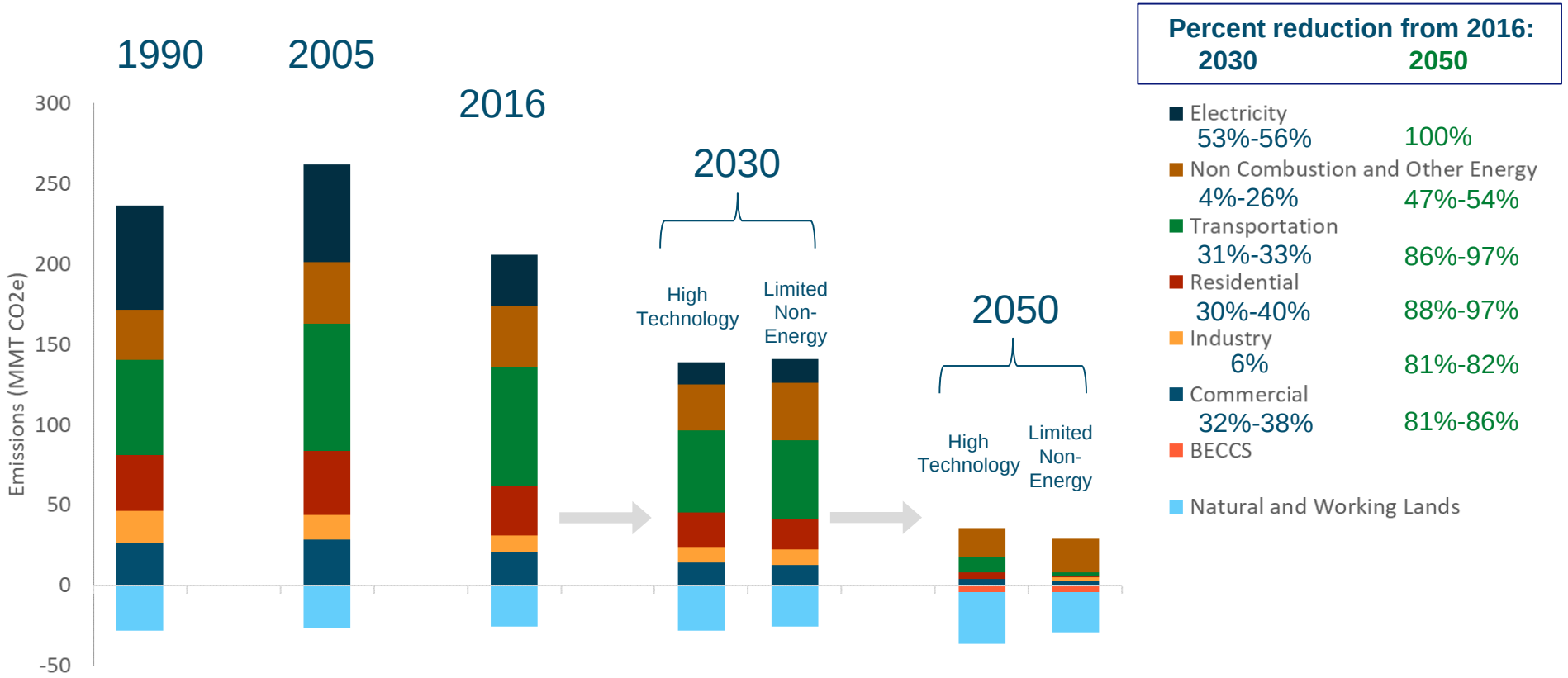
Energy+Environmental Economics

Sectoral Findings

Greenhouse Gas Emissions

New York Net Greenhouse Gas Emissions for Selected Years by Scenario

Note: CO2e calculations do not fully reflect methodology required by CLCPA



Transportation, Buildings, and Industry

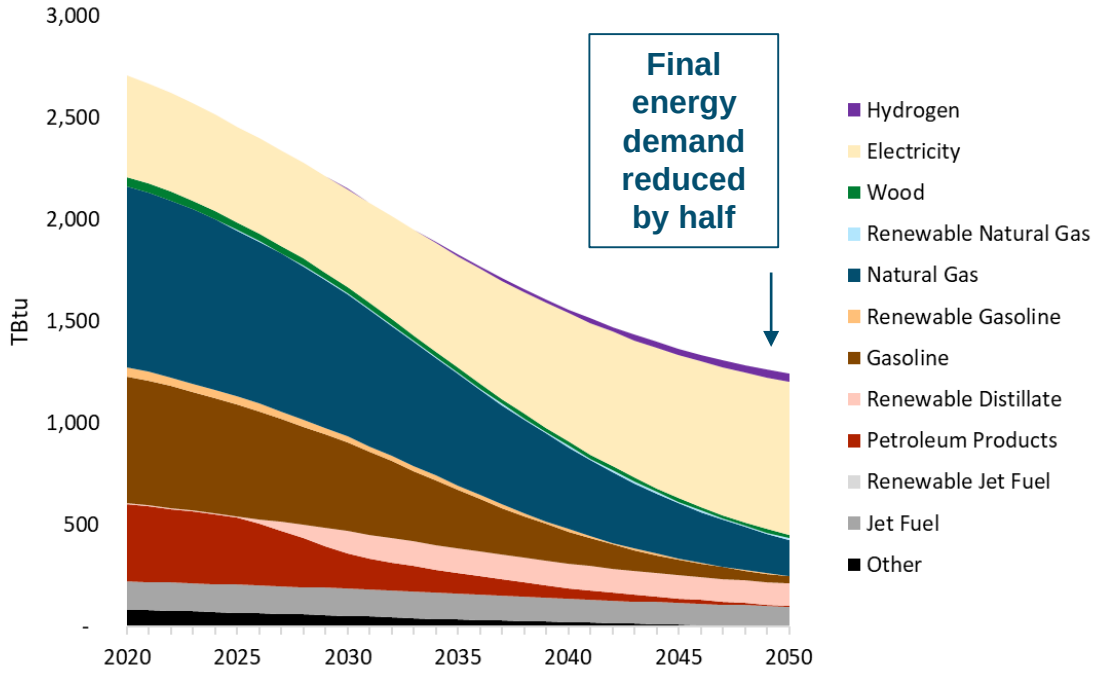
TRANSPORTATION

- Increased vehicle efficiency and major shift **to zero-emission vehicles** (battery electric, plug-in hybrid, and hydrogen fuel cell) across all vehicle classes
- Substantial reductions in vehicle miles of travel through **smart growth, transit**, and other transportation demand management measures

BUILDINGS & INDUSTRY

- Efficiency across all building end-uses and building shell scales dramatically
- Major shift to **end-use electrification** in buildings**,** particularly in space and water heating
- In industry, continued investment in **energy efficiency** with innovation over time in areas like electrification and carbon, capture, utilization, and storage

High Technology Availability Pathway

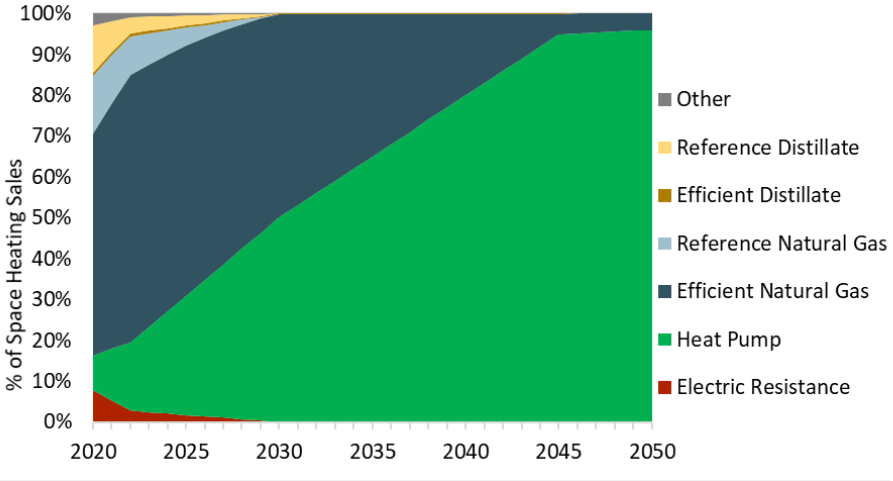


LOW-CARBON RENEWABLE FUELS

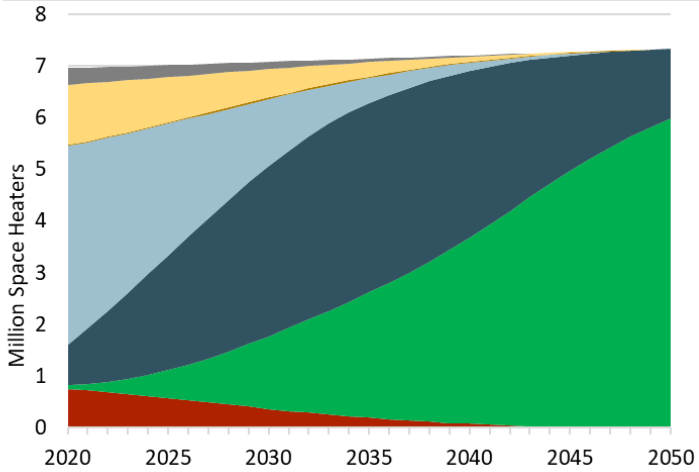
- Share of remaining combustible fuel use in medium- and heavy-duty vehicle fleets, non-road transportation, buildings, and industry met by **low-carbon renewable fuels** (*e.g.,* advanced biofuels or synthesized fuels)

Timing of Building Electrification

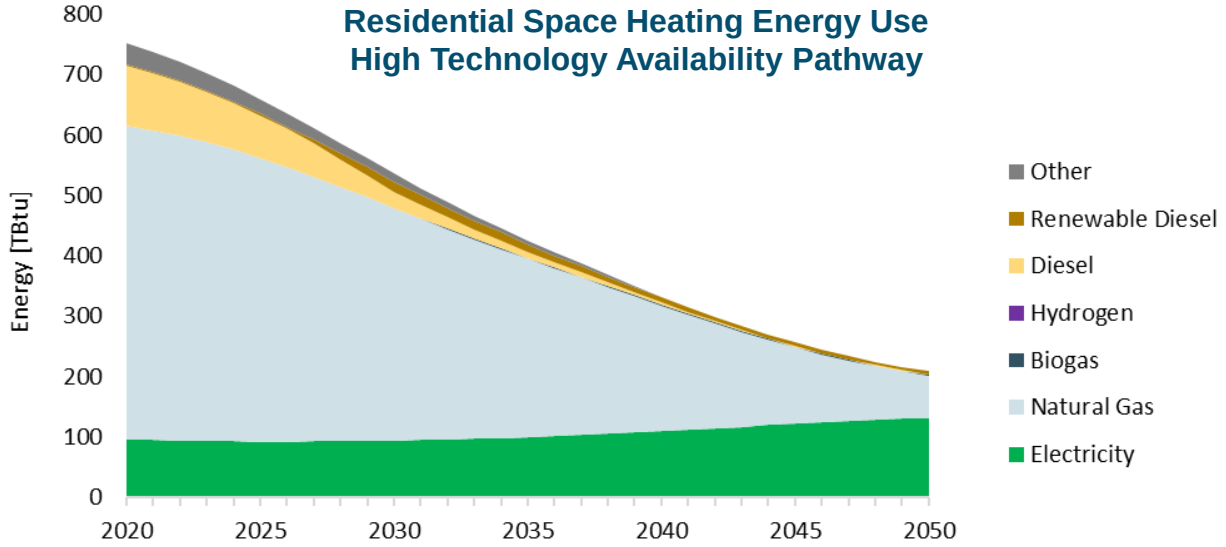
Residential Space Heating Sales
High Technology Availability Pathway



Residential Space Heating Stock
High Technology Availability Pathway

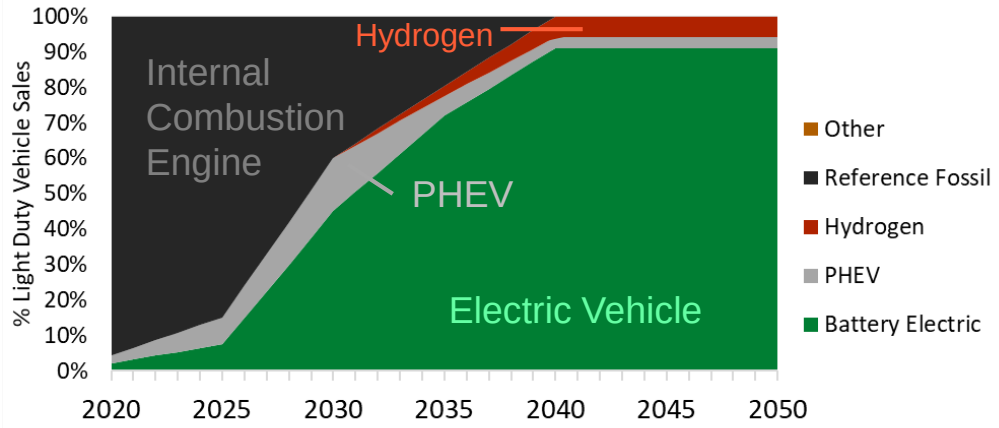


Residential Space Heating Energy Use
High Technology Availability Pathway

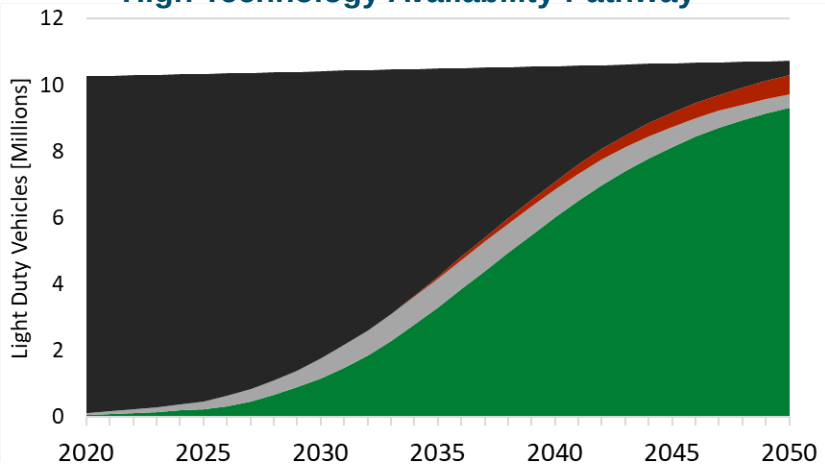


Timing of Vehicle Electrification

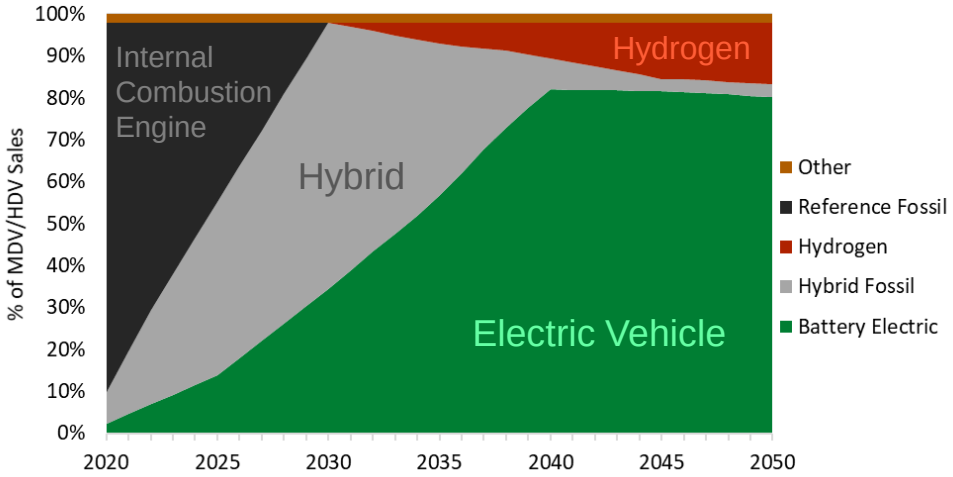
Light Duty Vehicle Sales
High Technology Availability Pathway



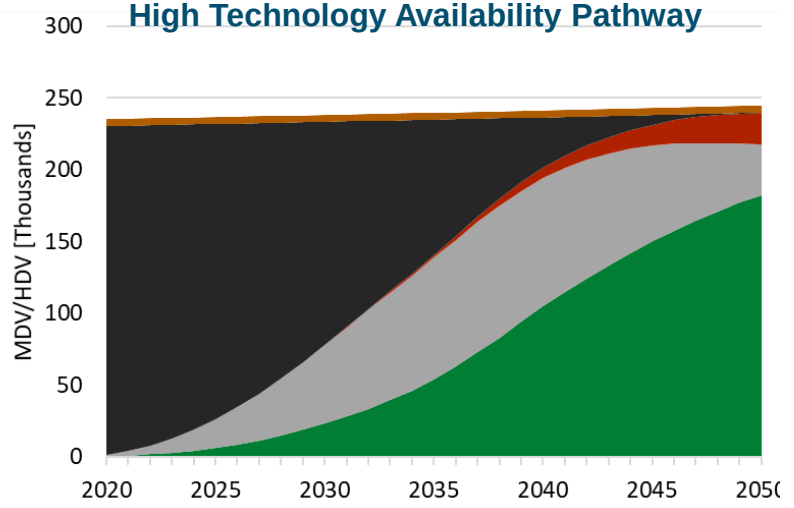
Light Duty Vehicle Stock
High Technology Availability Pathway



Medium and Heavy Duty Truck Sales
High Technology Availability Pathway



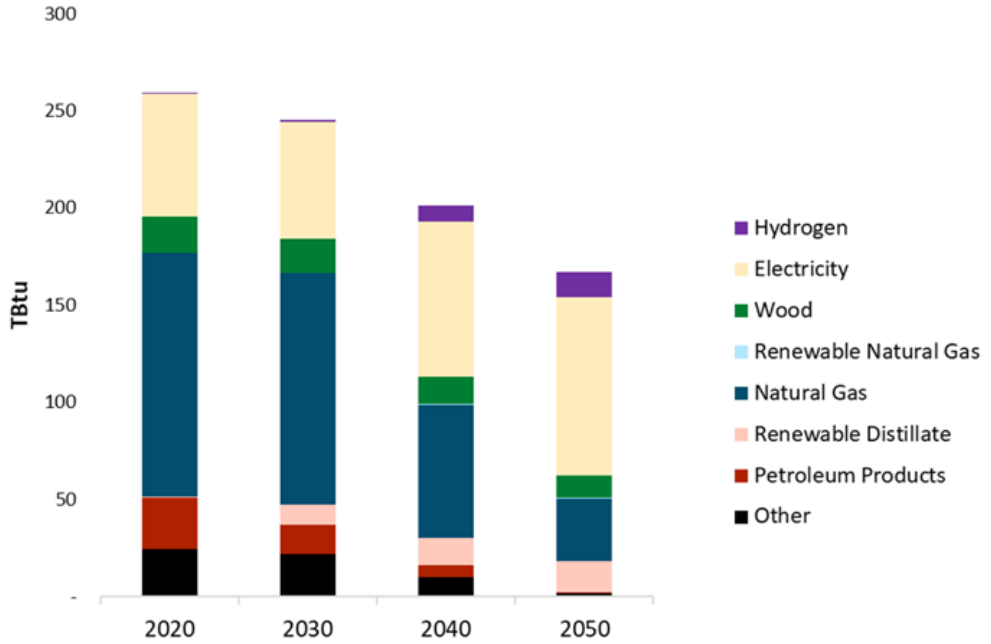
Medium and Heavy Duty Truck Stock
High Technology Availability Pathway



Opportunities to Decarbonize the Industrial Sector

+ **Industrial energy consumption decarbonization requires significant energy efficiency, fuel switching**
  - NYSERDA EE Potential Study suggests a large pool of economic and achievable energy efficiency potential available in industrial sector
  - Literature suggests a variety of industrial demands can be electrified, such as space heating, low-temperature process heat (suitable for manufacturing sectors like electronics & equipment, machinery & transportation, food processing and pulp & paper, some chemicals)

High Technology Availability Pathway

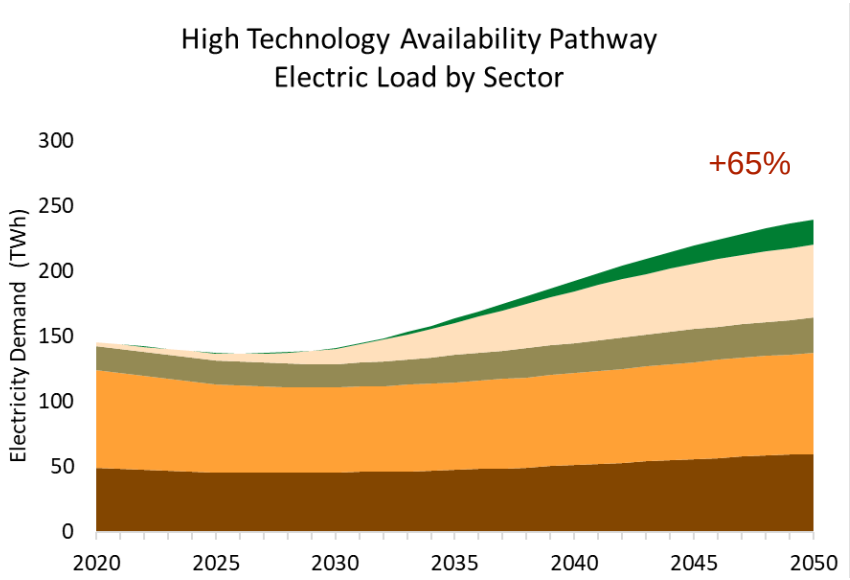


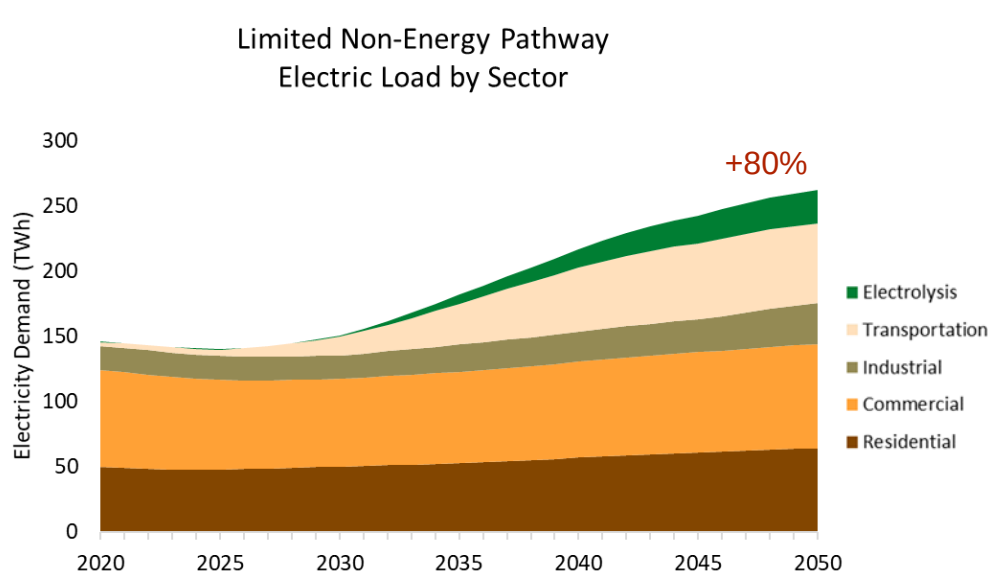
- For demands which are not good candidates for electrification, low-carbon fuel substitution (e.g., hydrogen/renewable natural gas displacing fossil natural gas) or carbon capture and storage (CCS) are decarbonization options
  - Natural gas combustion, aluminum smelting, and steel mill process emissions are candidates for Industry CCS in New York

+ 2030 goals are met primarily by continued investment in energy efficiency and some replacement of fossil fuels with low-carbon, renewable fuels, allowing more time for innovation to meet the 2050 goals.

Annual Electricity Demand

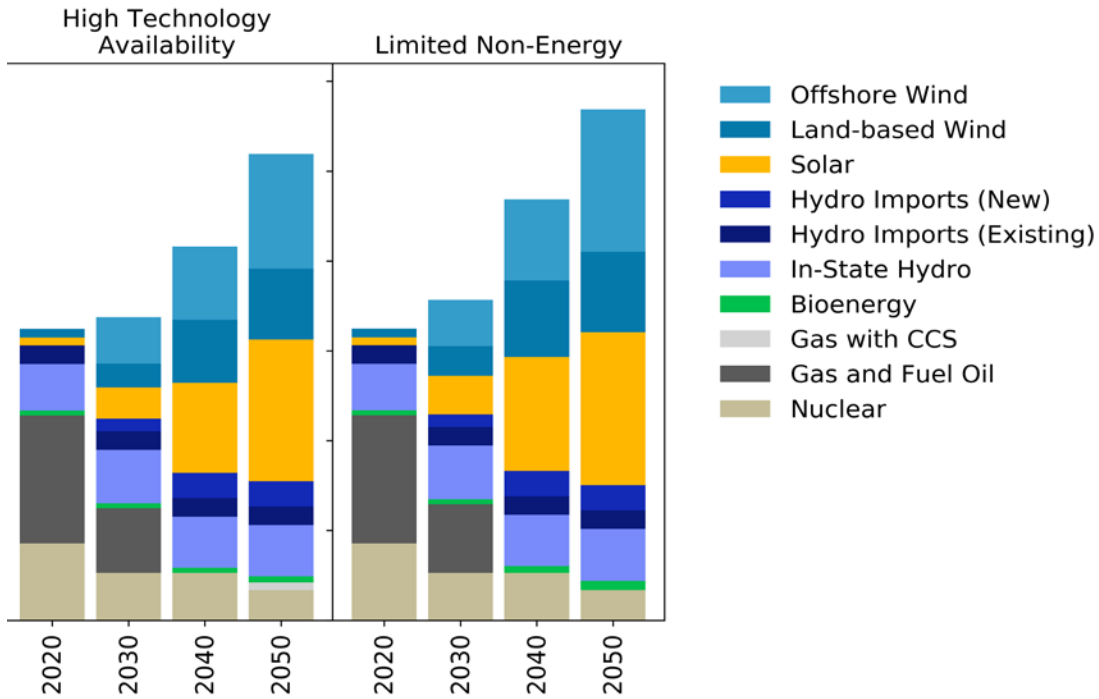
- Further decarbonization of the power sector only gets us a fraction of the way toward the economy-wide goal
- However, end-use electrification to eliminate GHG emissions drives increase in electric load
  - Analysis within range found in the literature, which project annual load increases ranging 20%-100% by midcentury
  - Range primarily reflects extent and timing of end-use electrification, with some studies assuming lower electrification and larger role for renewable gas and/or renewable transportation fuels





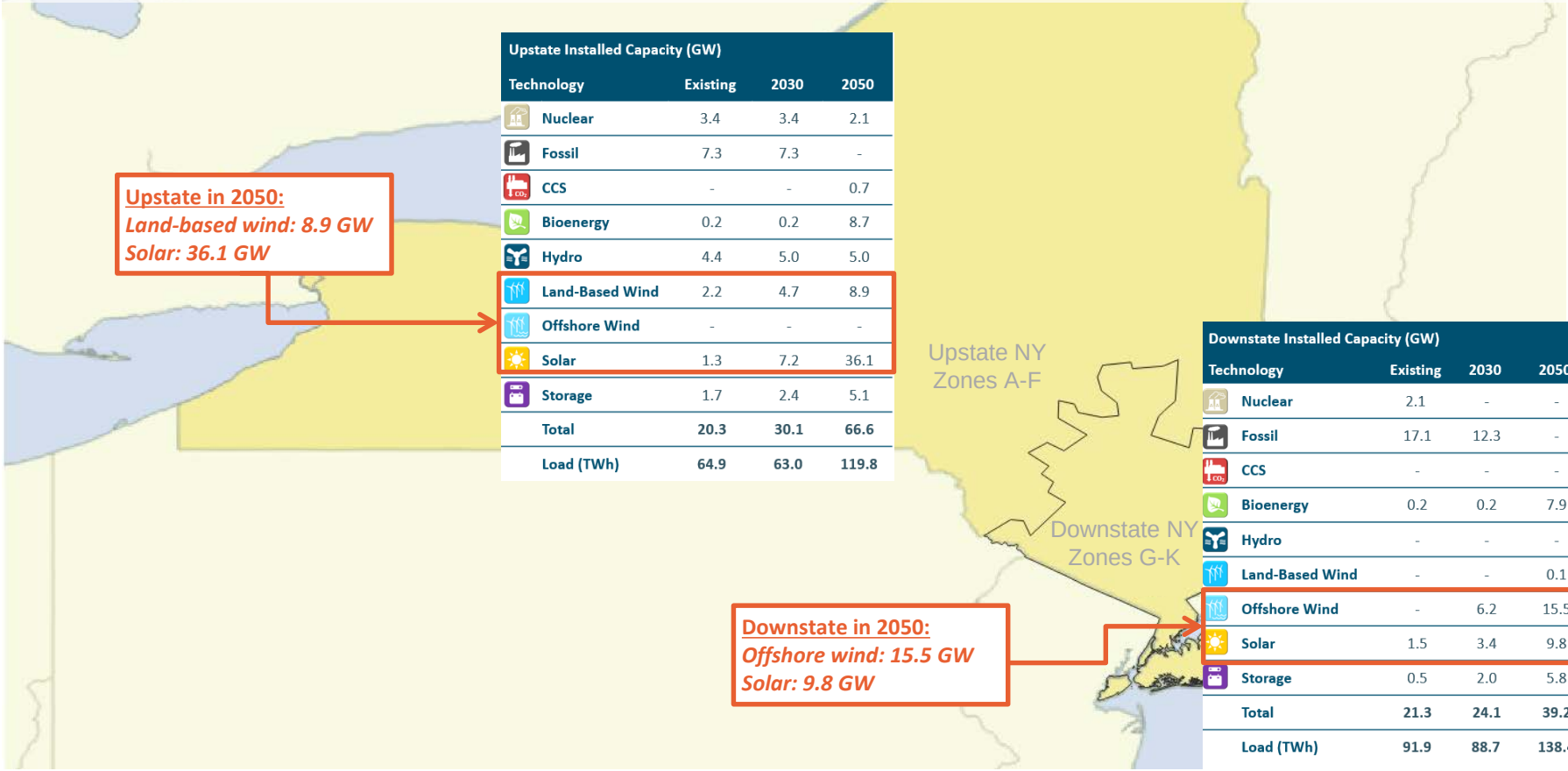
Electricity Generation

+ **Zero-emissions electricity is met with a diverse mix of resources, including onshore and offshore wind, solar, hydro, and existing nuclear**



Electricity Supply

- **New York State has significant potential renewable energy resources and zero-carbon technology options, as well as access to adjoining states, provinces, and regional transmission systems, which offer additional options for energy supply.**
- **Significant in-state renewable development will require careful siting considerations**



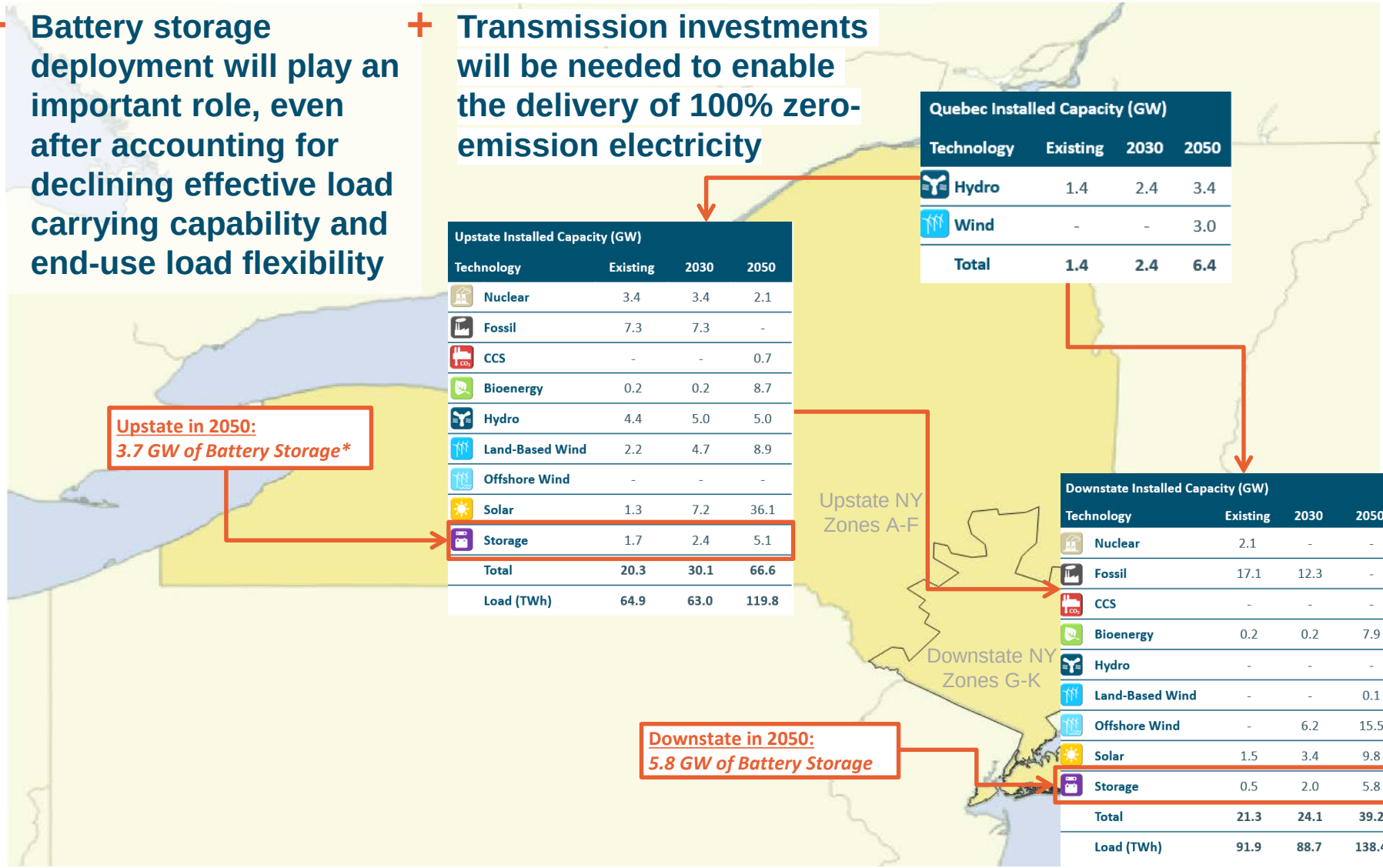
Upstate Installed Capacity (GW)			
Technology	Existing	2030	2050
Nuclear	3.4	3.4	2.1
Fossil	7.3	7.3	-
CCS	-	-	0.7
Bioenergy	0.2	0.2	8.7
Hydro	4.4	5.0	5.0
Land-Based Wind	2.2	4.7	8.9
Offshore Wind	-	-	-
Solar	1.3	7.2	36.1
Storage	1.7	2.4	5.1
Total	20.3	30.1	66.6
Load (TWh)	64.9	63.0	119.8

Downstate Installed Capacity (GW)			
Technology	Existing	2030	2050
Nuclear	2.1	-	-
Fossil	17.1	12.3	-
CCS	-	-	-
Bioenergy	0.2	0.2	7.9
Hydro	-	-	-
Land-Based Wind	-	-	0.1
Offshore Wind	-	6.2	15.5
Solar	1.5	3.4	9.8
Storage	0.5	2.0	5.8
Total	21.3	24.1	39.2
Load (TWh)	91.9	88.7	138.4

Electricity Supply

+ **Battery storage deployment will play an important role, even after accounting for declining effective load carrying capability and end-use load flexibility**

+ **Transmission investments will be needed to enable the delivery of 100% zero-emission electricity**



Quebec Installed Capacity (GW)

Technology	Existing	2030	2050
Hydro	1.4	2.4	3.4
Wind	-	-	3.0
Total	**1.4**	**2.4**	**6.4**

Upstate Installed Capacity (GW)

Technology	Existing	2030	2050
Nuclear	3.4	3.4	2.1
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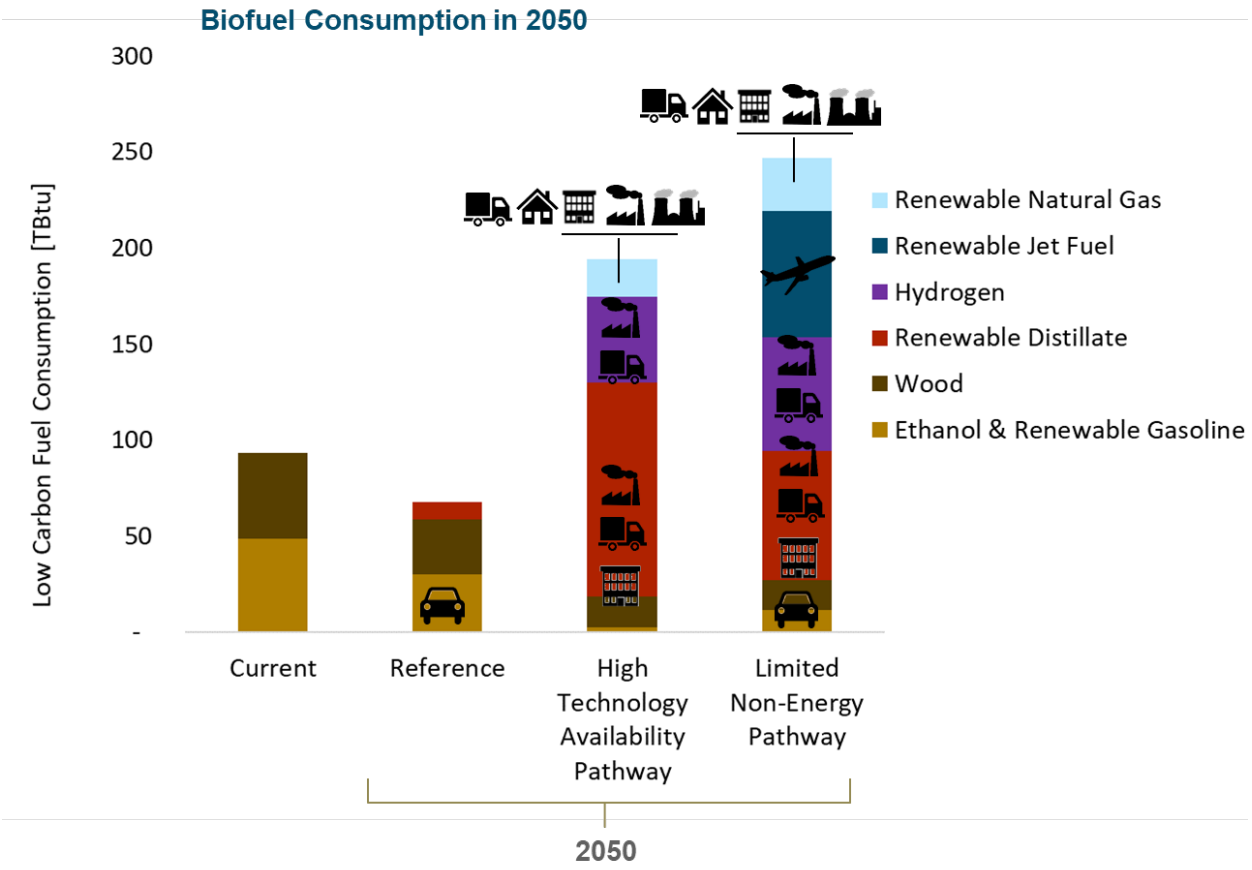
Load (TWh)	**91.9**	**88.7**	**138.4**

*Total 5.1 GW includes existing pumped storage capacity

Low-Carbon Fuels

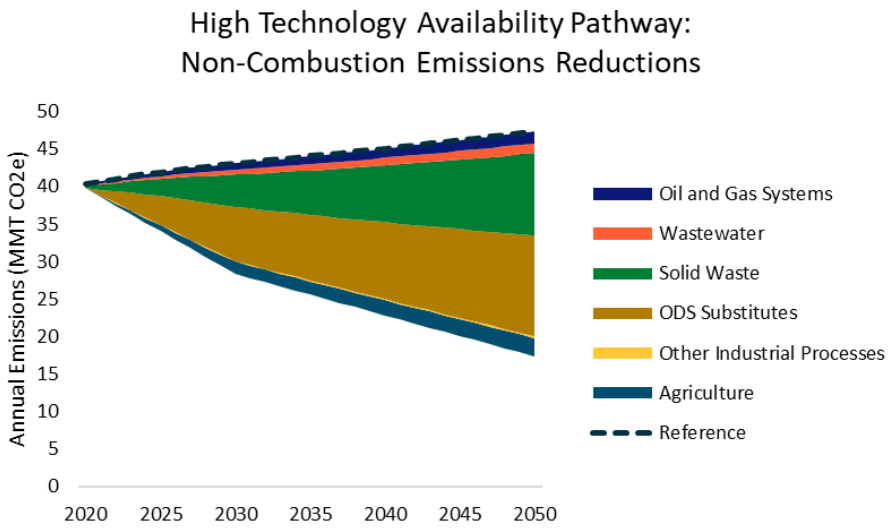
+ **Advanced low-carbon liquid and gaseous fuels are key to decarbonizing sectors where electrification is challenging, such as freight transportation, aviation, marine, and high-temperature industrial applications**

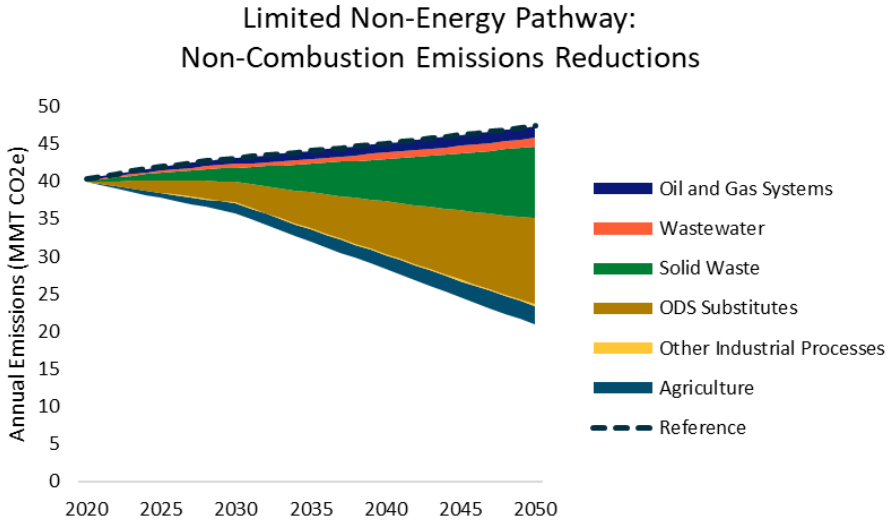


+ **"Starting Point" pathways can achieve deep decarbonization using in-state feedstocks for advanced biofuels**

Non-Combustion Sources

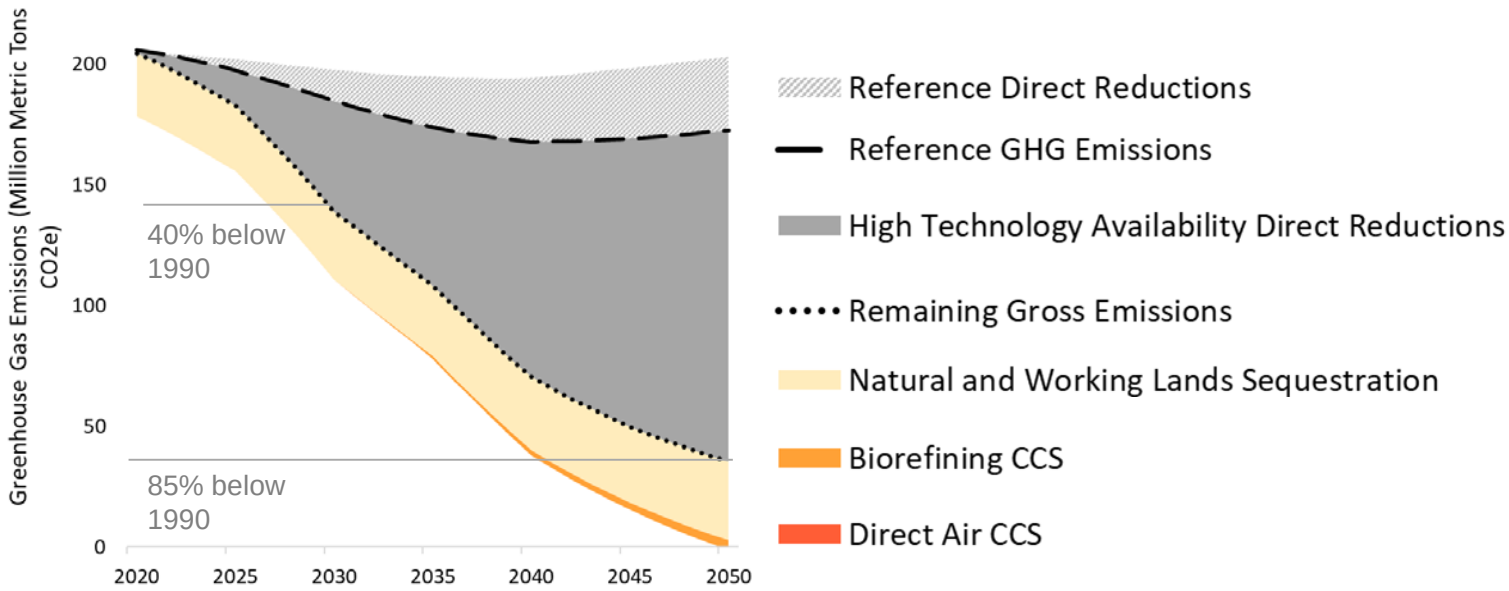
- **Non-combustion emissions are projected to increase over time. To bend the curve, significant reductions are needed across non-combustion emissions sources, which include landfills, farms, industrial facilities, and natural gas infrastructure.**
- **Mitigation of short-lived climate pollutants is key, with a focus on methane mitigation and climate-friendly refrigerants (ODS Substitutes). Further analysis needed to identify full range of mitigation options and strategies in these areas.**





Negative Emissions

- **Negative emissions have an important role to play in carbon neutrality**
- **With nearly 20 million acres of forest, New York State's natural and working lands sink provides between 23 to 33 MMT CO2e of negative emissions across scenarios**
- **Biorefining with CCS and direct air capture can provide additional negative emissions to offset remaining emissions in the energy and non-combustion sectors.**



Energy+Environmental Economics

Next Steps

Next Steps

- ***Adding CLCPA GHG accounting viewpoint***
  - *Upstream emissions from imported fuels*
  - *20-year Global Warming Potential*
- ***Review of performance and cost assumptions***
- ***Incorporation of Panel input into integrated, economy-wide pathways analysis***

Energy+Environmental Economics

Questions?

Workforce Development a Top Priority

Growing the clean energy workforce is critical to meeting New York's climate action goals

> Supports a just transition for historically disadvantaged populations
  - Includes individuals who are low income, formerly incarcerated, disabled, veterans, 16-24 years of age participating in work preparedness programs, or who reside in Environmental Justice areas.

> **Governor's Workforce Development Initiative** - New $175 million Workforce Development Initiative, with funding from SUNY, CUNY, ESD, NYSDOL and NYSERDA
  - Announced in Governor Cuomo's 2018 State of the State and released in the FY 2019 Enacted Budget
  - New Executive Office of Workforce Development (OWD) created to coordinate, and improve transparency of, workforce development efforts across state entities

> **NYSERDA** is investing $108M to support training institutions that will train 40,000 workers over the next five years - as announced in 2020 State of the State.
  - Upskill existing workers across sectors and throughout supply chain
  - Prepare new entrants to enter the clean energy economy

Workforce Development a Top Priority

Growing the clean energy workforce is critical to meeting New York's climate action goals

> **NYSDOL** – The Workforce Innovation and Opportunity Act (WIOA) provides services to job seekers and businesses with the goal of matching businesses with the skilled workers they need to compete in the global economy
  - Provides Job Seekers with access to employment, education, training and supportive services.
  - Provides Businesses with job posting and job recruitment services.

> **Homes and Community Renewal (HCR)**
  - HCR provides weatherization training and technical assistance to service providers participating in the Weatherization Assistance Program (WAP)

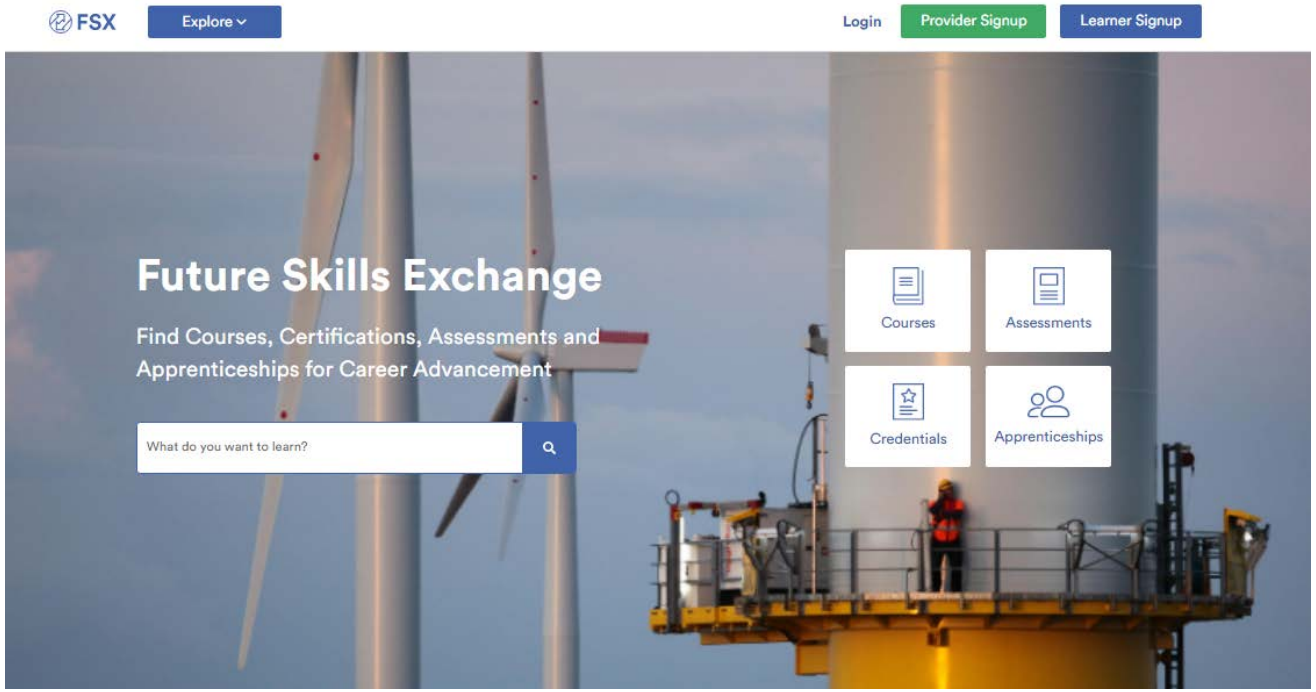
> **State agencies partner** with many training organizations such as unions, trade groups, community-based orgs, community colleges, universities technical high schools, etc.

Spotlight: WDI & Future Skills Exchange

The Future Skills Exchange (FSX): a free, web-based marketplace for developed by the Workforce Development Institute that connects people seeking courses, apprenticeships, and credentials directly to the education and training providers who deliver them.

- FSX makes courses, etc. easily discoverable/ findable that previously required searching across multiple web sites.
- Allows training providers to reach a broader, more diverse pool of potential learners than through their traditional marketing efforts.
- There is no charge to either post courses or to search for courses.

https://futureskillsx.org/



Spotlight: NYSERDA On-the-Job Training (PON 3982)

Goals:

> To reduce the costs to businesses for recruiting, hiring, and training new workers

> To teach new workers occupational skills to help clean energy businesses succeed

Target Audience:

> "Workers" include those who design, manufacture, specify, sell, distribute, install, operate, maintain, repair, inspect energy efficiency and clean energy technologies and systems

> Priority populations

> Energy efficiency, electrification and clean technology businesses

To Date:

> 305 new workers supported to date, including 71 from priority populations

> Average wage - $18.50/hr

> Average subsidy per worker - $7,000

NYSERDA works closely with the NYSDOL to implement the program

Spotlight: WIOA Training and Registered Apprenticeship

> **WIOA Training**
  - Individual Training Accounts (ITA) Training – Payment agreement established on behalf of a participant (Job Seeker) with a training provider. Training is for Occupational Skills and is generally more traditional training (classroom type).
  - On-the-Job Training (OJT) - Training contract established on behalf of a participant (Job Seeker) with a business that hires the participant. Business is reimbursed a portion of the participants wages during the training period to offset the extraordinary cost of training.

> **Registered Apprenticeship**
  - Registered Apprenticeship produces skilled workers through a combination of structured on-the-job training with a skilled trainer and trade-specific classroom instruction. Apprentices are full-time paid employees who produce high-quality work while they learn skills that enhance their employment prospects.
  - With a streamlined approval process, a new program can launch quickly – in a matter of months.
  - There are currently over 930 a Registered Apprenticeship programs in NYS run by 620 employers with over 18,600 active participants.

Power Plant Inventory & Reuse Opportunities

> Agencies conducting preliminary power plant research and review

> Focus on characteristics including:
  - Facility age (and age of oldest steam and gas turbine units)
  - Recent capacity factor (annual run-time percentage)
  - Primary fuel type
  - DEC Peaker Rule compliance plans
  - Public statements/filings, including notices of deactivation, plans for clean energy

> *"…issues and opportunities presented by reuse of those sites…"*
  - Identifying these issues and opportunities will be collaborative process for the JTWG to engage in
  - Effort can be informed by learnings from recent NYSERDA RFI and forthcoming RFP related to consultant support for city/town power plant site reuse studies and statewide toolkit (2020 State of the State)
  - Monitoring tax updates, clean repowering plans, and other emerging topics

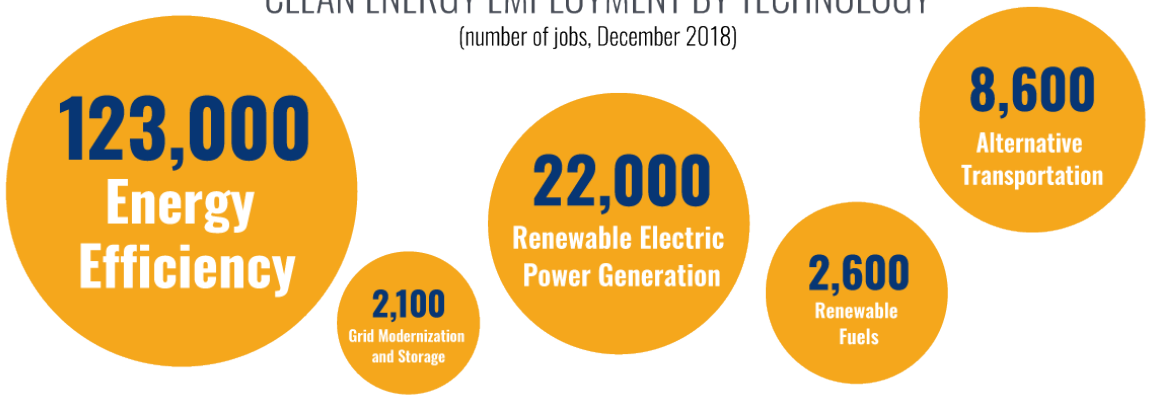
"Identify sites of electric generating facilities that may be closed as a result of a transition to a clean energy sector and the issues and opportunities presented by reuse of those sites"

Clean Energy Industry Report

nearly **159k** **clean energy jobs in 2018**
across New York State

7.2k **new clean energy jobs in 2018**
employers expect to hire 12,000 more in 2019

CLEAN ENERGY EMPLOYMENT BY TECHNOLOGY
(number of jobs, December 2018)



https://www.nyserda.ny.gov/About/Publications/New-York-Clean-Energy-Industry-Report

Jobs Study

Objectives

CLCPA specifically directs the just transition working group to “conduct a study of and report on”:

1. The number of jobs created to counter climate change, which shall include but not be limited to the energy sector, building sector, transportation sector, and working lands sector.
2. The projection of the inventory of jobs needed and the skills and training required to meet the demand of jobs to counter climate change.
3. Workforce disruption due to community transition from a low carbon economy

Jobs Study

Key Outputs

1. A quantitative projection of jobs created to counter climate change over time, through mid-century.
2. A detailed inventory associated with that projection that describes
3. the jobs created at a sector aggregate level (e.g., construction, professional services, etc.)
   a) profiles and descriptions of the specific job types/occupations to enable the study to address the topic of required skills/training.
      - May also include information on compensation/wage levels, labor standards and as barriers and opportunities for disadvantaged community participation (e.g., local hiring requirements).
4. A description of the specific job types/occupations that could experience transitions to a low carbon economy.
5. Potentially, high-level skills mapping that matches the current workforce skill sets to “future” workforce occupations and associated skill sets and helps to identify workforce development needs

Jobs Study

Recommended Method/Approach

1. Review of relevant literature on employment impacts of climate mitigation, including historical and current impacts.
2. Building on literature review, develop detailed green jobs inventory framework that includes job categories/types/occupations and profiles, broken out by sector and subsector.
3. Develop approach to use a macroeconomic impact model to project employment impacts.
4. Run macroeconomic impact model using inputs from selected scoping plan scenario(s) to generate key outputs

Initial JTWG timeline

- **August 2020:** Appoint working group membership
- **September 17, 2020**: Convene first meeting of the working group
- **September - October 2020:** Workplan and scope development
- **October - December 2020:** Begin work on all tasks and deliverables; meet with other advisory panels to understand how the clean energy transition may impact workers and businesses in their sector
- **January - March 2021:** Continue meeting with advisory panels
- **January - Q4 2021**: Complete jobs study (task 8-G)
- **February - March 2021**: Meet with advisory panels; deliver recommendations to CAC

Next Steps

> Schedule next meeting / establish regular meeting cadence.

> Developing and refining workplan to be able to report out to the CAC in October

> NYSERDA to share information about the scope/RFP for the jobs study

Thank you for attending!

> Please visit www.climate.ny.gov for regular updates about future activities of the Just Transition Working Group, other Advisory Panels, and the Climate Action Council at large.