



## **Modernizing the Grid to Support Electrification**

AMPED Webinar Series  
January 19th - 12:00-1:00 pm

# Agenda

- Introductions & Webinar Goals
- AMPED Campaign Overview
- Policy Drivers of Grid Expansion
- Planning Response & Projections
- Preparing the Grid for Changing Customer Needs
- Q&A

# Presenters



**Anne Reynolds,**  
Executive Director,  
Alliance for Clean  
Energy NY



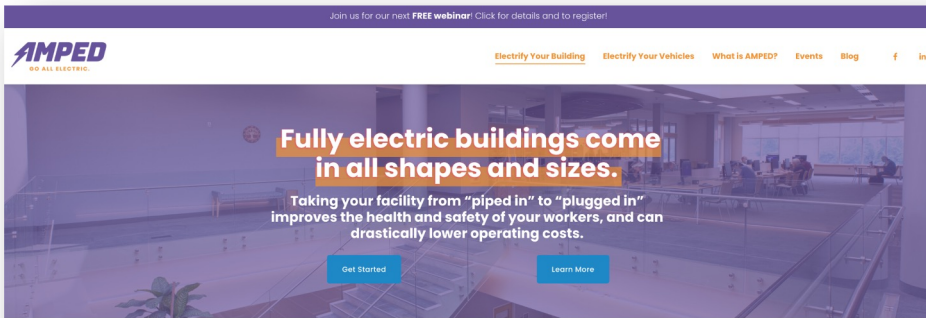
**Christina Ficicchia**  
Manager, Smart Grids Innovation  
AVANGRID

# Webinar Goals

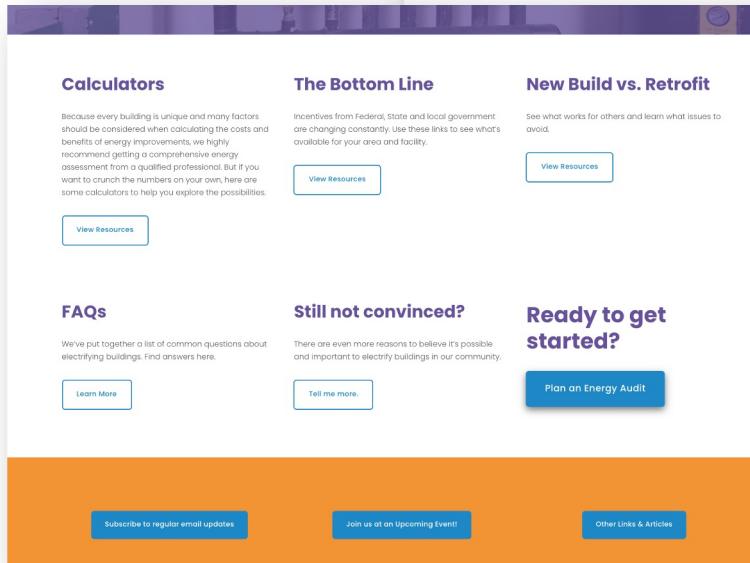
- Understand the relationship between the electric grid and NYS climate goals
- Learn how the electric grid system is expected to handle new demand from electrification
- Hear directly from our regional electricity service provider about plans for the electric grid



Mitigating the impacts of climate change by reducing carbon pollution caused by fossil fuels through the promotion of beneficial electrification in the Genesee/Finger Lakes region.



Website with information and resources



The case for **electrified buildings** is getting stronger every day. Explore this infographic to see how beneficial can be for your facility and your business.

## Let's get started!

Every building is different. It may take some expertise to know which technologies are most appropriate for your facilities. That's why the best place to start is a **comprehensive energy audit** of your facilities.

An energy audit will identify areas of your facility and operation where energy can be saved. This process will deliver you a report filled with energy- and cost-saving recommendations ranging from lighting to large-scale capital improvements. This gives you actionable advice to make informed investment decisions.

Thankfully, there are **incentives, tax credits, and financing options** available — from New York State Energy Research and Development Authority (NYSERDA) and others — to help businesses get started! If you need help to determine which option is right for your business, contact the HeatSmart Energy Advisor!

Schedule a meeting with a HeatSmart Energy Advisor

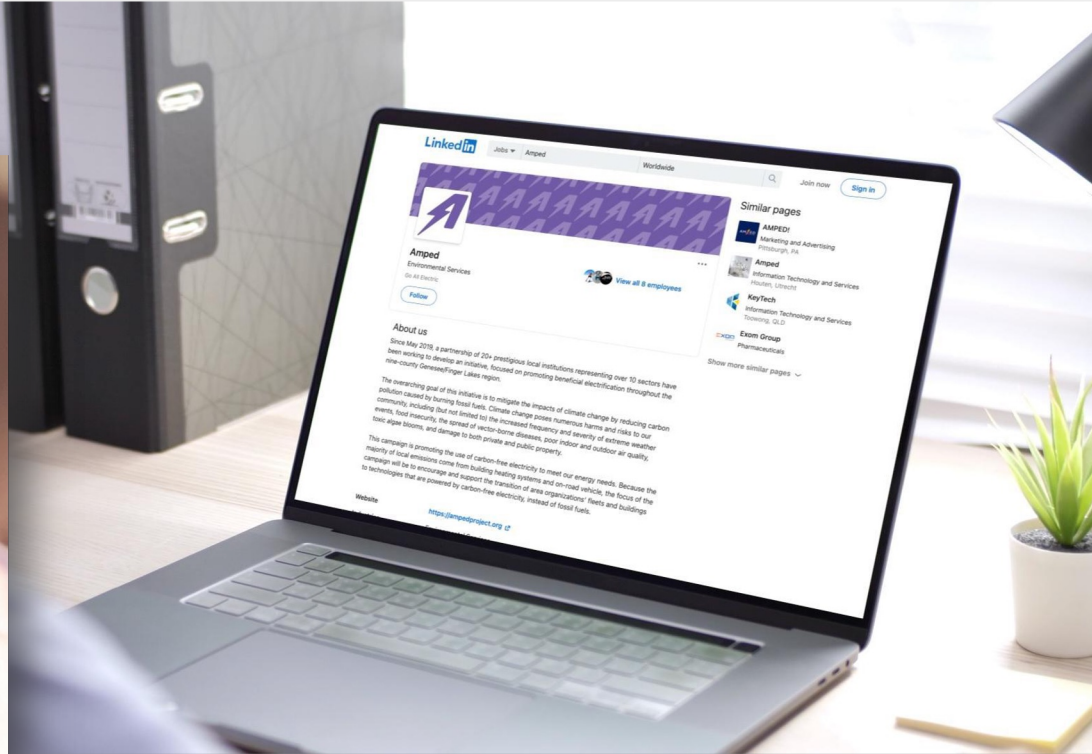
OR

Explore Energy Assessment Programs through NYSERDA

HeatSmart is a trusted partner of the AMPED Project, offering free energy assessments, unbiased expert advice, vetted installers, and timely information on local, state, and federal incentives.



# Social Media



# Funders



**Climate Solutions Accelerator**

of the Genesee-Finger Lakes Region





## Steering Committee Members

Causewave Community Partners  
Center for Community Health &  
Prevention

Common Ground Health

Dutton Properties

EMCOR Betlem

Empire State Development

Gallina Development

Genesee/Finger Lakes Regional  
Planning Council

Genesee Transportation Council

Greater Rochester Chamber of  
Commerce

Monroe County

PathStone Corporation

Piekunka Systems Inc.

Rochester Gas and Electric  
Corporation

Rochester Institute of Technology

Rochester Housing Authority

Rochester Regional Health

Regional Transit Service

SWBR

University of Rochester

## Creative Partners



**Lautner Marketing**

**Lauren  
Petra**

**Anne Reynolds**  
Alliance for Clean Energy NY



# The Accelerated Renewable Energy Growth and Community Benefit Act of 2020

- Better known for reforming the permitting process for larger wind and solar power projects, this law also had a section on transmission planning.
- Directed the NYS Public Service Commission (PSC) to have the utilities conduct the *Power Grid Study* – a study of what would be required for the grid to achieve the goals of the climate act (the “CLCPA”)
- Also gave NYPA the ability to propose and pursue “priority transmission projects” that need to be completed expeditiously to achieve CLCPA goals.
- This started a proceeding at the PSC titled: *Proceeding on Motion of the Commission to Implement Transmission Planning Pursuant to the Accelerated Renewable Energy Growth and Community Benefit Act*

# The Initial Grid Study, January 2021

## Initial Report on the New York Power Grid Study

### PREPARED BY

New York Department of  
Public Service Staff

New York State Energy Research  
and Development Authority Staff

Johannes Pfeifenberger  
Sam Newell  
Akarsh Sheelendranath  
Stephanie Ross  
Sharan Ganjam  
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Ketut Dartawan  
Ptterra Consulting

January 19, 2021

### PREPARED FOR



Department  
of Public Service  
NYSERDA



- Transmission upgrades underway have positioned the State well for 2030.
- Needs: (a) accelerate some LT&D upgrades; (b) expand Long Island bulk transmission for offshore wind (OSW); (c) identify OSW interconnection-related substations and local upgrades in NYC; and (d) storage deployment.
- 9,000 MW of OSW by 2035 achievable without major onshore bulk transmission upgrades beyond what is mentioned above, but cable routing limits in New York Harbor and other space constraints is a problem.
- The already-planned projects assumed : Western NY Empire State line 345 kV project in Zone A, AC Transmission Segment A & Segment B 345 kV projects in Zone E and F, and the Northern New York 345 kV projects in Zone D and E (including upgrades from Porter to Edic). The 2040 study assumed a new 1,250 MW HVDC transmission line into NYC.
- Probable future bulk transmission needs through 2040, but it “depends on how the State progresses toward its renewable generation goals”

# Recent Grid Enhancement Activities at NY's Public Service Commission ...

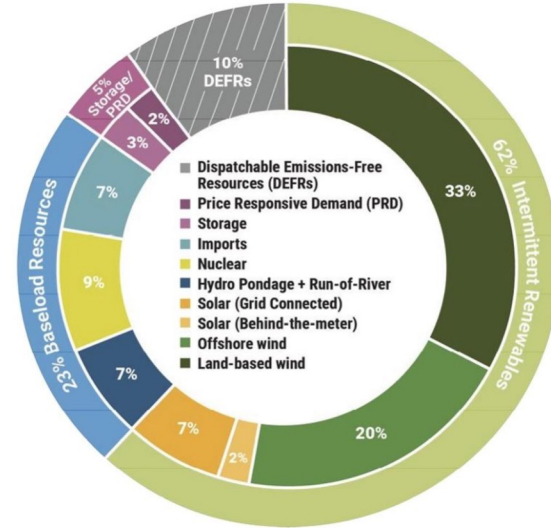
- Developed criteria and selected one priority bulk project: NYPA's Northern New York project;
- 2 contracts to deliver power to NYC: Champlain Hudson Power Express and Clean Path NY
- Directed utilities to identify reliability or asset condition projects that also help with CLCPA goals ("Phase 1 projects") in rate case filings; subsequently approved 53 of these projects.
- Determined a "Public Policy Requirement" for facilities to deliver offshore wind power & referred that need to the NYISO. Plus, started Cable Corridor Study (for offshore wind)
- Approved a new methodology for calculating headroom for utilities to use.
- Directed utilities to develop a coordinated grid planning process, propose a cost recovery for Phase 2 projects, and propose solutions for 3 "generation pockets" for renewables growth.

# The context for NY's Transmission Planning: NY's Climate Scoping Plan

Sources of Greenhouse Gas Emissions in New York



Figure 1. 2040 Projected Climate Act Winter Energy Production by Resource Type



Source: NYISO Power Trends 2021.

# New York's Climate Leadership

The Climate Act solidifies New York's status as a climate leader. It establishes the country's—and perhaps even the planet's—strongest GHG emission reduction and clean energy requirements.

- 40% reduction in GHG emissions by 2030
- 85% reduction in GHG emissions by 2050
- 100% zero-emission electricity by 2040
- 70% renewable energy by 2030
- 9,000 MW of offshore wind by 2035
- 3,000 MW of energy storage by 2030
- 6,000 MW of solar by 2025
- 185 trillion Btu of end-use energy savings

Created a 22-member Council, 20 made up of the heads of various State agencies, as well as others

Creates the Climate Justice Working Group (CJWG) within DEC, which comprises representatives from environmental justice communities and State agencies

# The Electricity Role

- While the electric sector is responsible for just 13% of the emissions in New York, it is a key sector for achieving the climate goals.
- In a nutshell, the plan calls for building enough renewables, transmission, and storage to decarbonize the grid, and electrify nearly everything.
- Therefore, decarbonizing the electricity sector is equally important for reducing emissions from buildings and transportation, as those sectors electrify.

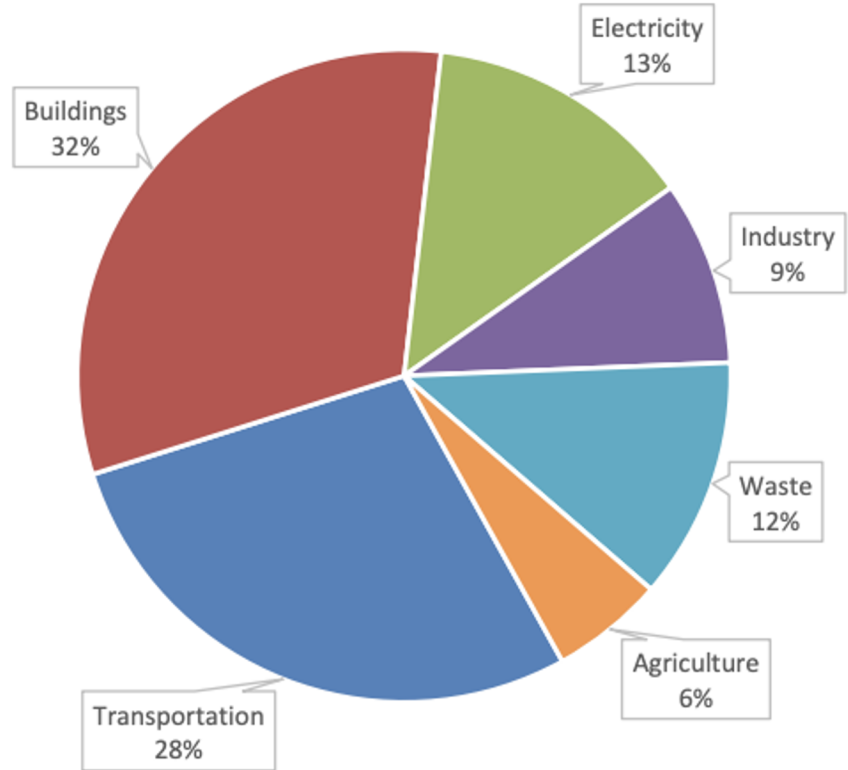


Fig 3. 2019 New York State GHG Emissions Removals by Sector (in MMT CO<sub>2</sub>)



# Electricity- State of the Sector

## *13.1 Overview of the Sector*

- New York's electricity sector comprises traditional fossil fuel-fired power generation facilities and nuclear generation facilities, along with clean energy generation such as wind, solar, hydropower, energy storage, and transmission infrastructure.

## *Vision for 2030*

- The Climate Act requires that 70% of statewide electricity come from renewable energy sources by 2030

## *Vision for 2050*

- By 2040, the Climate Act requires that the State achieve a zero-emission electricity system as well as 9,000 MW of offshore wind by 2035.

# Electricity- Key Sector Strategies

## *Transform Power Generation*

### E1. Retirement and/or Repurposing of Fossil Fuel Fired Facilities

- Assessment and determination of emissions reduction targets
- Regular and transparent resource planning

### E2. Accelerate Growth of Large-Scale Renewable Energy Generation

- Evaluate and adjust policies
- Support successful development programs and establish permitting goals

### E3. Facilitate Distributed Energy Resources

- Make investments in hosting capacity and interconnection

# Electricity- Key Sector Strategies continued

## *Transform Power Generation Pt 2.*

### E4. Support Clean Energy Siting and Community Acceptance

- Invest in Clean Energy Development; Public Education and Outreach; Commercial Rooftop & Parking Lot Solar

### E5. Promote Community Choice Aggregation

- allow local governments to make bulk power purchases on behalf of participating homes and businesses in their jurisdiction, making it easier for residents and employers to benefit from local clean energy projects, while also improving project economics and advancing the Climate Act requirements

## *Enhance the Grid*

### E6. Deploy Existing Storage Technologies

- Provide increased funding for energy storage deployment,
- Incorporate energy storage into energy delivery and transmission planning.
- Work with the NYISO

# Electricity- Key Sector Strategies continued

## E7. Invest in Transmission and Distribution Infrastructure Upgrades

- Transmission and distribution expansion, Strategic investment, Increasing hosting capacity, Education infrastructure

## E8. Improve Reliability Planning and Markets

- Planning and Analysis of Needs, Resiliency investment, Improving Grid Reliability through Markets, and Support of Distributed Energy Resources and Demand-Side Opportunities

## E9. Advance Demand Side Solutions

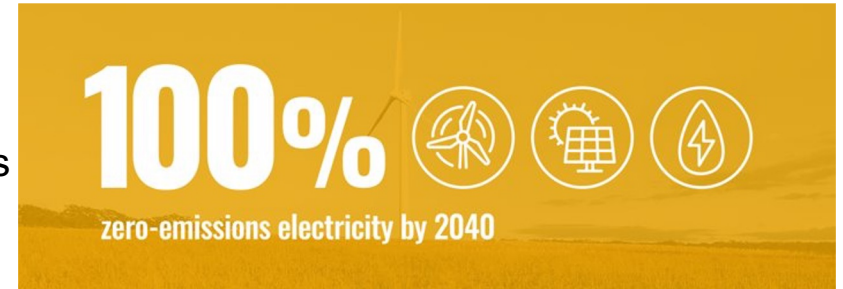
- Planning and Analysis, Development of Standards and Tests, Prioritize Under-Resourced Communities

# Electricity- Key Sector Strategies continued

## *Invest in New Technology*

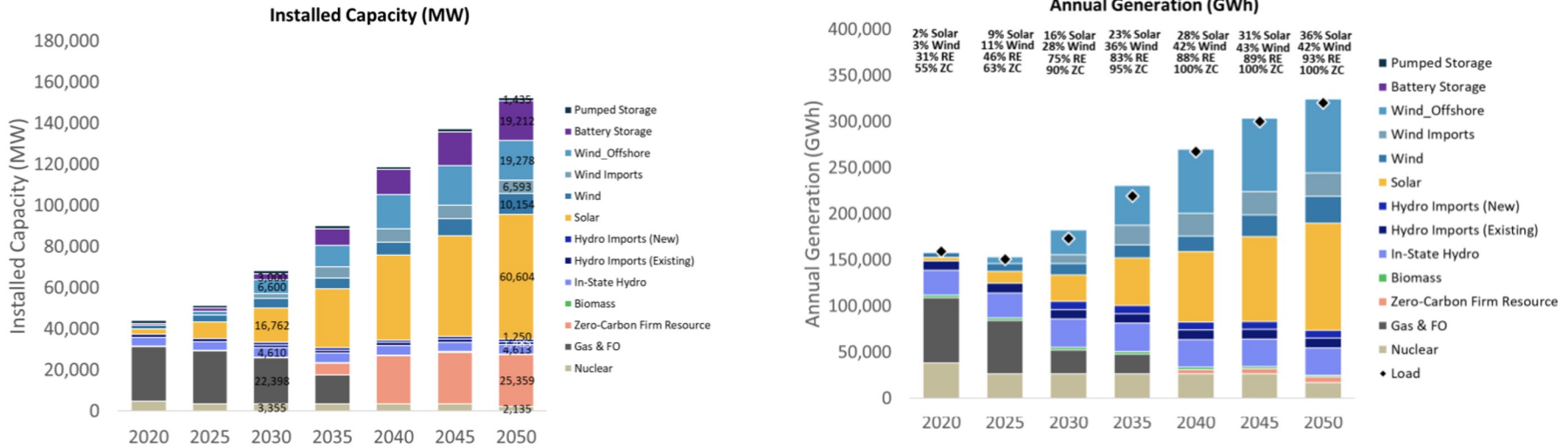
### E10. Explore Technology Solutions

- Create Solutions for Dispatchable Technologies
- Analyze Alternative Fuels
- Consider Nuclear Generation



# Appendix G - How Much Renewable Energy Capacity will New York Need

Figure 29. Installed Capacity and Annual Generation for Scenario 3: Accelerated Transition away from Combustion<sup>30</sup>



# E6. Deploy Existing Storage Technologies

## Elements of the Strategy

- The PSC should consider methods to create a market for retail and wholesale storage that could be implemented no later than the end of 2023.
- A better understanding of how energy storage would fit into the state's future energy system is needed so storage can be integrated into delivery and transmission planning.
- The state should work with NYISO as it ramps up energy storage to optimize costs and reliability.

## How Much Storage Do We Need?

- CLCPA requires 3 GW by 2030
- Governor increased this goal to 6 GW by 2030
- Climate Scoping Plan identifies a need for 15 GW of storage by 2050

# E7. Invest in Transmission and Distribution Infrastructure Upgrades

- The state should expand transmission and distribution systems to support energy delivery and continue to research and implement advanced grid technology
- NYPA, LIPA and utilities should continue their strategic investment
- Reduce and eventually halt sulfurhexaflouride emissions
- The state should also continue its efforts on hosting capacity, renewable energy zones, upgrades for offshore wind, multi-port infrastructure and education



# E8. Improve Reliability Planning and Markets

- Evaluate energy planning capacities every other year in conjunction with NYISO. Evaluations should consider potential climate impacts.
- Invest in the necessary infrastructure to protect the grid from future climate impacts.
- Update, expand and improve its relevant energy markets
- Continue its efforts on energy markets (market flexibility, market participation, wholesale market improvements, support flexible resources, resource adequacy, value environmental attributes, earnings adjustment mechanism).
- Build out more demand-side opportunities and market access for DERs.

# E9. Advance Demand Side Solutions

- Advanced demand side solutions, such as demand response (DR), could help optimize the deployment of renewable energy by reducing the need for electricity at certain times.
- NYSERDA and DPS should undertake a study to see how DR could serve as an alternative to upgrading the grid.
- NYSERDA, DOS and other partners should develop standards and tests that help implement DR solutions in buildings and other infrastructure.

# Key Issues for Modernizing the Grid to Support Electrification

- On the supply side, the most important issue is to build renewable energy projects: land-based wind, solar, and offshore wind. Delivering this power will require local transmission system upgrades, and so far 53 of those projects have been approved. To meet the 2030 goals, this needs to happen in 7 years.
- There are many planning and reliability studies examining NY's transition, that are assuming electrification of buildings and transportation occurs under various scenarios and at various rates.
- The new coordinated grid planning process is being put into place to plan for 2040 and beyond.
- Power demand is expected to grow significantly between 2040 and 2050.

# Christina Ficicchia

AVANGRID





*AMPED Webinar Series*

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# **Modernizing the Grid to Support Electrification**

January 19, 2023

# RG&E : A company that believes in sustainable energy

**AVANGRID 2.2 million electric customers**

All of our Networks Companies believe in a sustainable energy future for the U.S. :

- Grid investments that support clean and renewable energy resources.
- Support research for Smart Grid Innovation.
- Promote energy conservation.
- Promote the use of electric and hybrid vehicles
- Support responsible environmental policies
- Seek to reduce our own carbon footprint.



**Forbes JUST 100**  
**Ranked number one**  
 w/in the utility industry



**14M MT**  
 CO<sub>2</sub> EMISSIONS AVOIDED



**3M CARS**  
 REMOVED FROM THE ROAD

# RG&E Tools are Helping Customers CHOOSE EV

## EV MODEL INFO

## RG&E EV Market Today

## ESTIMATED SAVINGS POTENTIAL

HOME EV FACTS SAVINGS CALCULATOR CO2 REDUCTION ALL-ELECTRIC MODELS PLUG-IN HYBRID MODELS TAX CREDITS & REBATES TIME OF USE RATE PUBLIC CHARGING

Calculate your estimated monthly savings potential.

30 Input the estimated miles you drive each day.

REFLECTS LOCAL ESTIMATES

Select Gas Vehicle: 2022 Chevrolet Equinox

Select EV Type: All Electric Vehicle

2022 Chevrolet Equinox: Monthly Fuel Cost\* \$190/mo. (\$2,280/yr.)

2022 Chevrolet Bolt EV: Monthly EV or PHEV Cost\* \$17/mo. (\$213/yr.)

Local fuel price per gal: \$3.55

Est. MPG of vehicle: 17.00

RESET ALL

Est. mi./kWh: 3.400

Est. utility kWh rate\*: \$0.0666

Estimated Savings\* \$172/mo. (\$2,064/yr.)

MPG is often Off-Peak, On-Peak and Standard rates. Our Off-Peak rate provides the most cost-effective rate for EV charging.

#EV To Charge On-Peak 11:30PM-7:00AM (1.0566 kWh)

#EV To Charge On-Peak 7:00AM-11:30PM (1.1258 kWh)

Off-Peak Residential Rate \$1.0566 kWh

HOME EV FACTS SAVINGS CALCULATOR CO2 REDUCTION ALL-ELECTRIC MODELS PLUG-IN HYBRID MODELS TAX CREDITS & REBATES TIME OF USE RATE PUBLIC CHARGING

### Electric Vehicle Model Information

We're providing basic information about electric vehicle (EV) models to help you understand the various performance attributes to consider when making a purchase. We try to keep the information up-to-date, but EV models and attributes change rapidly. Please refer to manufacturers for additional details. This tool does not include information about plug-in hybrid (PHEV) or hybrid (HEV) electric vehicles.

Year: 2022 | 2021 | 2020

Manufacturer: Price Range\* Range per Charge Battery Capacity (kWh) Efficiency (kWh/Mi)

All Brands | Lower to Higher | Longer to Shorter | Lower Capacity | More Efficient

Sort Order (i) | Filter | Clear

2021 Chevrolet Bolt EV  
 Estimated Price \$30,000 to \$40,000  
 Technology: All Electric EV  
 Range: 239 miles (range)  
 Battery Capacity: 65 kWh  
 kWh Consumption (200 miles): 28.7  
 Federal Tax Credit: No longer available for this model  
 \$7,500 before 01-31-2022  
 \$1,730 on 02-2019-09-30-2019  
 \$1,875 on 10-2019-09-30-2020

2021 Hyundai Kona Electric  
 Estimated Price \$30,000 to \$40,000  
 Technology: All Electric EV  
 Range: 258 miles (range)  
 Battery Capacity: 64 kWh  
 kWh Consumption (200 miles): 27.0  
 Federal Tax Credit: \$7,500

2021 Nissan Leaf (62 kWh battery pack)  
 Estimated Price \$30,000 to \$40,000  
 Technology: All Electric EV  
 Range: 226 miles (range)  
 Battery Capacity: 62 kWh  
 kWh Consumption (200 miles): 31.3  
 Federal Tax Credit: \$7,500



- ~5,500 EVs
- 648 Public L2 ports at 265 locations
- 25 Public Fast Chargers at 11 locations

(Source: [EvaluateNY – Atlas Public Policy \(atlaspolicy.com\)](https://www.atlaspolicy.com/) DEC 2022)

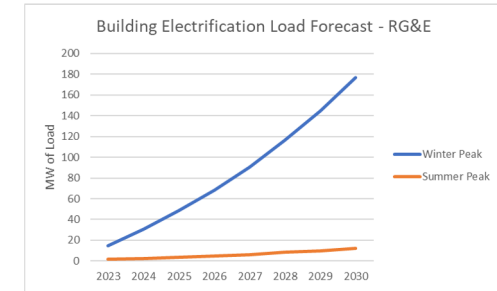
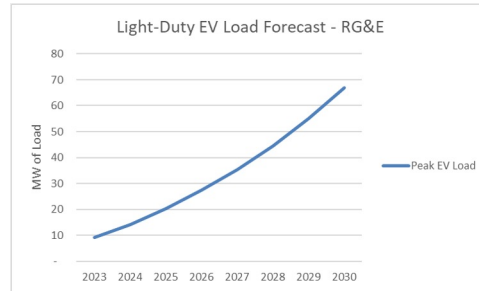
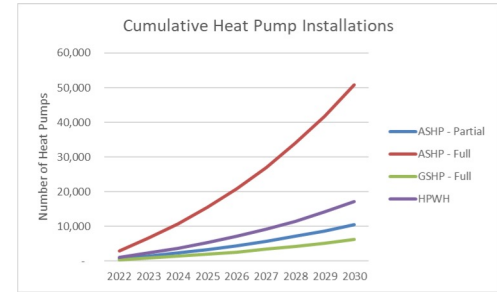
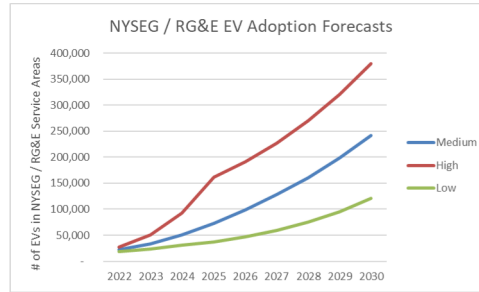
# Preparing the Grid for Changing Customer Needs



## CURRENT ACTIVITY

Continuously improving Beneficial Electrification Forecasts

- EV charging data usage analysis
- Heat pump usage data analysis
- Academic Research collaborations
- Circuit allocation of EV load forecasts
- Development and demonstration of solutions to produce circuit level EV, heat pump, and solar PV forecasts





# Preparing the Grid for Changing Customer Needs



## FUTURE ACTIVITY

### Adding New Tools and Data to Inform Forecasting

- Comprehensive fleet inventory and electrification assessment
- Using traffic volume data to identify areas with higher likelihood of future charging infrastructure
- Heat pump adoption and utilization analysis
- Evaluating tools for developing “bottom up” forecasts

The screenshot shows the Central Maine Power website. At the top, there is a navigation bar with links for 'Pay Bill', 'Emergency', and a search bar. Below the navigation bar, there are dropdown menus for 'Account', 'Smart Energy', 'Outages', and 'Safety'. The main content area is titled 'Smart Energy / Innovation / Plug-In Electric Vehicles'. Under the heading 'IN THIS SECTION', there are links for 'Why is CMP Involved?', 'CMP EV Charging Station Program', 'Grant Recipients', 'Electric Vehicles in Our Fleet', and 'Electric Buses in Your Fleet?'. The 'Electric Buses in Your Fleet?' link is selected, leading to a page with the heading 'Electric Buses in Your Fleet?'. The page content includes a sub-heading 'Join our pilot program to improve local charging options' and a paragraph: 'We are launching a pilot program to help school districts and school bus operators assess the costs, benefits, and considerations for transitioning to electric school buses. As the transportation market edges towards electrification, we find it critical to supporting our customers in transitioning to a clean energy future that can improve overall air quality and Green House Gas emissions while reducing operational costs. We are partnering with industry leader Hiltachi to develop an Electric Fleet Assessment program that will provide tools for our customers to understand the costs, benefits, and other considerations for transitioning from diesel school buses to zero-emission electric school buses. This Program will study and forecast the economic and operational impacts on these fleets. Additionally, this Program will help identify the changes that may be required to the electric grid in order to enable electrification of school bus fleets. We are currently seeking school bus fleet operators to participate in a pilot that will provide valuable analysis and assessments to help them make informed decisions regarding school bus electrification. Pilot participants will be provided analysis data of fleet electrification that may include: Identification of replacement electric vehicles, Fuel cost comparison, Electricity rate analysis, Implementation cost estimate, Operations and maintenance cost estimation, Charging hardware costs, Greenhouse gas emissions, and Incentives and tax cred.

At the bottom of the page, there is a 'Quick Links' section with icons for 'Energy-Saving Products' and 'Energy Library'. The Central Maine Power logo and 'An AVANGRID Company' are also visible.

### Municipal and School Bus Electric Vehicle Fleet Assessment Pilot Customer Intake Form

In order to set your business up to participate in the Municipal and School Bus Electric Vehicle Fleet Assessment Pilot we need participants to complete the below information. Please complete all fields in this fillable PDF and email to: [Aaron.Smith@avangrid.com](mailto:Aaron.Smith@avangrid.com)

Please be sure to keep a copy for you records to access the pilot data system.

Contact First Name	
Contact Last Name	

# State Policies and Utility Regulators Expect More EVs

## NYS Policies Support EVs Through Legislation

ZEV Mandate Compliance in NY sets targets for 850,000 EVs by 2025

NY Governor signs California rules to ban light-duty ICE vehicles sales by 2035 and MHD by 2045

NY Governor signed amendments to Senate Bill S7836 to create tariffs utilizing alternatives to traditional demand-based structures to facilitate faster charging

## Utility Regulators Support EVs through Encouraging Utility Incentive and Programs

Approved \$601 million to support Make-Ready Programs in NYS, \$206 million must directly benefit disadvantaged communities, which includes:

- Incentives for businesses to install charging stations
- Assistance to fleets for creating EV fleet transition plans
- A pilot program to convert MHDV to electric alternatives
- A Mass Market Managed Charging Program that encourages customers to charge at times with the least impact to the electrical grid

**NEXT UP: MEDIUM & HEAVY DUTY FLEET SECTOR TARGET**





# THANK YOU

CHRISTINA FICICCHIA

| Manager, Smart Grids Innovation

**What's Next?**

# Next Steps

- [Subscribe](#) to AMPED updates for the latest in electrification news
- Contact [your local utility](#) if you're interested in electrifying your fleet or hosting a charging station
- [Send a letter](#) to Governor Hochul letting her know that you support allowing additional EV sales locations in New York state
- Contact [info@AMPEDproject.org](mailto:info@AMPEDproject.org) to let us know who you want to hear from at webinars or what resources and tools you need



Next Get AMPED Webinar:

March 16th, 12:00-1:00