



PROGRAM MATERIALS

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Climate Crisis: New York State Has the Solution

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Climate Change Solutions: New York State has the Answer!

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What is New York's new Climate Change Law?

- ▶ the Climate Leadership and Community Protection Act (CLCPA)
 - ▶ enacted in 2019, codified generally at NY Environmental Conservation Law Article 75 §§75-0101 - 75-0119, NY ECL Article §54-1523, NY Public Service Law Article 4 §66-p
 - ▶ by 2030, reduction of greenhouse gas emissions to 60% of 1990 emissions; by 2050 reduction to 15% of 1990 emissions
 - ▶ by 2030, 70% of electric power must be from renewables; by 2040, 100%
 - ▶ The CLCPA requires the establishment of:
 - ▶ 9,000 megawatts of offshore wind by 2035
 - ▶ 6,000 megawatts of photovoltaic solar generation by 2025; and
 - ▶ 6,000 megawatts of energy storage by 2030
 - ▶ addresses other sectors including transportation, building heating and cooling emissions standards, appliance efficiency and nuclear power plant phaseouts

What are New York's main energy sources today?

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- ▶ About 25% from nuclear power plants
 - ▶ New York has recently closed a nuclear power plant and the remaining plants are scheduled to close in upcoming decades, meaning there will be less and less contributions by nuclear power
- ▶ About 40% of electric power comes from natural gas
 - ▶ It is likely these plants will eventually phase out under stricter emissions standards and regulation
- ▶ Approximately 23% of electricity come from hydro electric facilities in upstate New York
 - ▶ There is very limited capacity to expand hydro electric in New York State
- ▶ New York State closed its last coal fired power plant in 2020



Indian Point Nuclear Power permanently ceased operations in April 2021.



Robert Moses Niagara Power Plant and the Lewiston Pump Generating Plant in Niagara Falls generates 2.6 million kw of clean energy annually.

What about energy storage?

- ▶ The CLCPA calls for:
 - ▶ By 2025, 3,000 megawatts (1.5MW) of storage capacity; and
 - ▶ By 2030, 6,000 megawatts (6MW) of storage capacity
- ▶ A total of 1,301 MW of storage contracts have been awarded, as of October 2022
- ▶ Currently, there is only about 130 MW of installed energy storage
 - ▶ There is a substantial rooftop solar industry in NY in addition to several commercial farms - business will be expanding considerably
 - ▶ storage does not generate electricity, it provides power when renewable energy is not producing, when wind or sunshine are not available
 - ▶ Most of the storage projects procured through 2030 are expected to provide 4- to 8-hours of duration, long-duration storage (capable of 10+ hours of duration) is expected to become an important component of the long-term energy system.
- ▶ To maximize the feasibility of these procurements and diversify technology options, the State is focusing on the development of programs for bulk, retail, and residential storage projects across the state.



What about transportation?

- ▶ Transportation accounts for 28% of greenhouse gas emissions in NY
- ▶ CLCPA requirements to reduce transportation emissions will likely result in:
 - ▶ replacement of gas passenger cars, trucks and buses with electric vehicles (EVs)
 - ▶ establishment of a substantial system of charging stations
 - ▶ upgrading and incentivizing the use of mass transit, railroads, etc.
- ▶ To achieve CLCPA requirements, by 2030 nearly 100% of passenger cars sales and 40% of medium- and heavy-duty vehicle sales must be zero-emission and a substantial portion of personal transportation in urbanized areas would be required to shift to public transportation
 - ▶ As of November 2022, out of roughly 10 million cars, only 10,000 were EVs
- ▶ CLCPA goals can be attainable through ZEV sales requirements and accompanying incentives, investments in expanded public transportation and micro-mobility, enhanced bicycle and pedestrian infrastructure, and smart growth development.
 - ▶ In 2022, New York required by 2027 all new school bus purchases must be zero emission vehicles and by 2035 all school buses operating in the state must be ZEVs.



What about buildings?

- ▶ Natural gas and oil is used for heating and cooling total about 25% of NY's energy usage
- ▶ CLCPA focuses on “decarbonizing buildings” and requires the establishment of appliance efficiency standards, strengthening building energy codes etc.
 - ▶ State codes to require new construction to be highly efficient, zero emission, and resilient
 - ▶ Phase out fossil fuel use in existing buildings by requiring zero-emission equipment and appliances at the time of replacement
 - ▶ Setting energy efficiency performance standards for large existing buildings
- ▶ Decarbonizing building operations describes the reduction or elimination of GHG emissions from building end uses through energy efficiency improvements to reduce energy demand and through switching from equipment and systems powered by burning gas, oil, or other fossil fuels to highly efficient equipment and systems powered by zero-emission energy sources
- ▶ essential that buildings make significant investments in energy efficiency, install a diverse mix of heat pump technologies, and adopt smart controls, energy storage, and other load flexibility measures.
 - ▶ widespread improvements to building envelopes (air sealing, insulation, and replacing poorly performing windows) will reduce energy demand from the buildings sector by 30% - 50% by 2050.
- ▶ In 2022, New York enacted a State Geothermal Income Tax Credit equal to 25% of geothermal system expenditures up to \$5,000 for owner-occupied homes

What about offshore wind?

- ▶ Under the CLCPA, an incredible increase in offshore wind is required
 - ▶ 9,000 MW by 2035
- ▶ If each wind turbine is 10 MW, this would result in 900 offshore wind turbines - there are presently zero
- ▶ A typical nuclear power plant generates approximately 1000 MW
 - ▶ anticipated generation of offshore wind = 9 nuclear power plants!
- ▶ In late 2019, the New York State Energy and Research and Development Authority (NYSERDA) finalized contracts for the first two offshore wind projects
- ▶ In 2020, NYSERDA issued a second round of offshore wind solicitation seeking up to 2,500 MW of projects
- ▶ In 2022, NYSERDA launched the State's third competitive solicitation for an expected minimum of 2,000 MW of offshore wind energy
- ▶ New York's combined clean energy solicitation is now up to 6,000 MW of offshore wind renewable energy capacity
 - ▶ One third of CLCPA's requirement of 9,000 MW

What is NY's project procurement strategy?

- ▶ New York's procurement approach is similar to that of European countries whose offshore wind efforts are lightyears ahead of us
- ▶ NYSERDA executes contracts with the awarded projects, which define the projects' obligations and the terms for purchasing offshore renewable energy certificates (ORECs)
 - ▶ An OREC represents the positive environmental attributes associated with one megawatt-hour (MWh) of electricity generated from offshore wind resources and consumed by retail customers in New York
 - ▶ Can be Fixed ORECs (pre-determined prices) or Index ORECs (adjustable prices)
 - ▶ Only once construction is completed and power is delivered to the grid, will NYSERDA purchase ORECs from offshore wind developers and resell them to utility companies and other load serving entities (LSEs) who are required to purchase clean energy credits in order to meet the State's goals

How will NY accomplish this?

- ▶ the Accelerated Renewable Energy Growth and Community Benefit Act
 - ▶ enacted in April 2020
 - ▶ aims to simplify the siting process for large-scale renewable energy projects
 - ▶ to be implemented by the NYS Department of State, NYS Energy Research and Development Authority, NYS Department of Public Service, NYS Department of Environmental Conservation, NY Power Authority and the Empire State Development Corporation.
- ▶ established a first-of-its-kind Office of Renewable Energy Siting
 - ▶ intended to provide a single forum tasked with consolidating the environmental review of major renewable energy facilities.
 - ▶ ensure siting decisions and public comments are responsibly considered and are delivered in a timely manner.

Office of Renewable Energy Siting

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- ▶ Intended Roles:
 - ▶ Establish regulations and uniform standards that involve:
 - ▶ environmental impacts commonly associated with large, renewable energy projects;
 - ▶ mitigation measures to address those impacts;
 - ▶ net conservation benefit to any impacted endangered and threatened species
 - ▶ DEC authorization to implement an endangered and threatened species mitigation bank fund using funds from permitted projects;
 - ▶ develop draft permits for public comment and local community input;
 - ▶ ensuring complete applications are acted upon within one year, except certain former commercial and industrial sites, which will be reviewed within six months.

Let's Focus on Offshore Wind

- ▶ There are currently 4 major offshore wind projects proceeding in NY
- ▶ Project developers include:
 - ▶ Equinor, a Norwegian energy company
 - ▶ U.S. affiliates of Ørsted, a Danish energy company
 - ▶ Both have substantial experience in Europe in the development of offshore wind
- ▶ Presently, there are only five offshore wind turbines operating in the Northeast US
 - ▶ located off the coast of Block Island
 - ▶ Ørsted currently operates the 30 MW Block Island Wind Farm



Block Island Wind Farm – view from Atlantic Ocean



Block Island Wind Farm – view from Southeast Lighthouse, Block Island

What are NY's offshore wind projects?

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▶ South Fork Wind

- ▶ developed by Ørsted U.S. Offshore Wind and Eversource Energy (an energy service provider in the Northeast)
- ▶ 130-megawatt project with 12 turbines located 35 miles offshore from Montauk, NY
- ▶ includes approximately 3.5 miles of 138-kilovolt export cable buried in state waters and approximately 4.1 miles buried underground
- ▶ joint proposal filed with Public Service Commission in support of an application for a Certificate of Environmental Compatibility and Public Need under Article VII of the Public Service Law
- ▶ has a power purchase agreement with LIPA to power the South Fork
- ▶ contracted to begin operation in December 2023



Area shown in dark blue is the location of South Fork Wind

What are NY's offshore wind projects?

▶ Sunrise Wind

- ▶ developed by Ørsted U.S. Offshore Wind and Eversource Energy
- ▶ 924-megawatt project proposed to be located 30 miles off the coast of Long Island, and southeast of the South Fork Wind Farm
 - ▶ Creating nearly 800 construction jobs and significant investments in local colleges and training programs
- ▶ will construct an operations and maintenance hub in Port Jefferson
 - ▶ Creating over 100 local, permanent full-time jobs
- ▶ will connect to New York's electricity grid at the Holbrook Substation
- ▶ Fugro, a Dutch offshore survey company, performed a four-month long, large-scale site characterization involving geotechnical and geophysical data including cable corridor selection and turbine foundation design and installation
- ▶ Submitted Draft Environmental Impact Statement (DEIS) to Bureau of Ocean Management (BOEM) in December 2022
- ▶ expected commissioning date for the Sunrise Wind farm is 2025
- ▶ Expected to power over 600,000 homes

What are NY's offshore wind projects?

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▶ Empire Wind 1

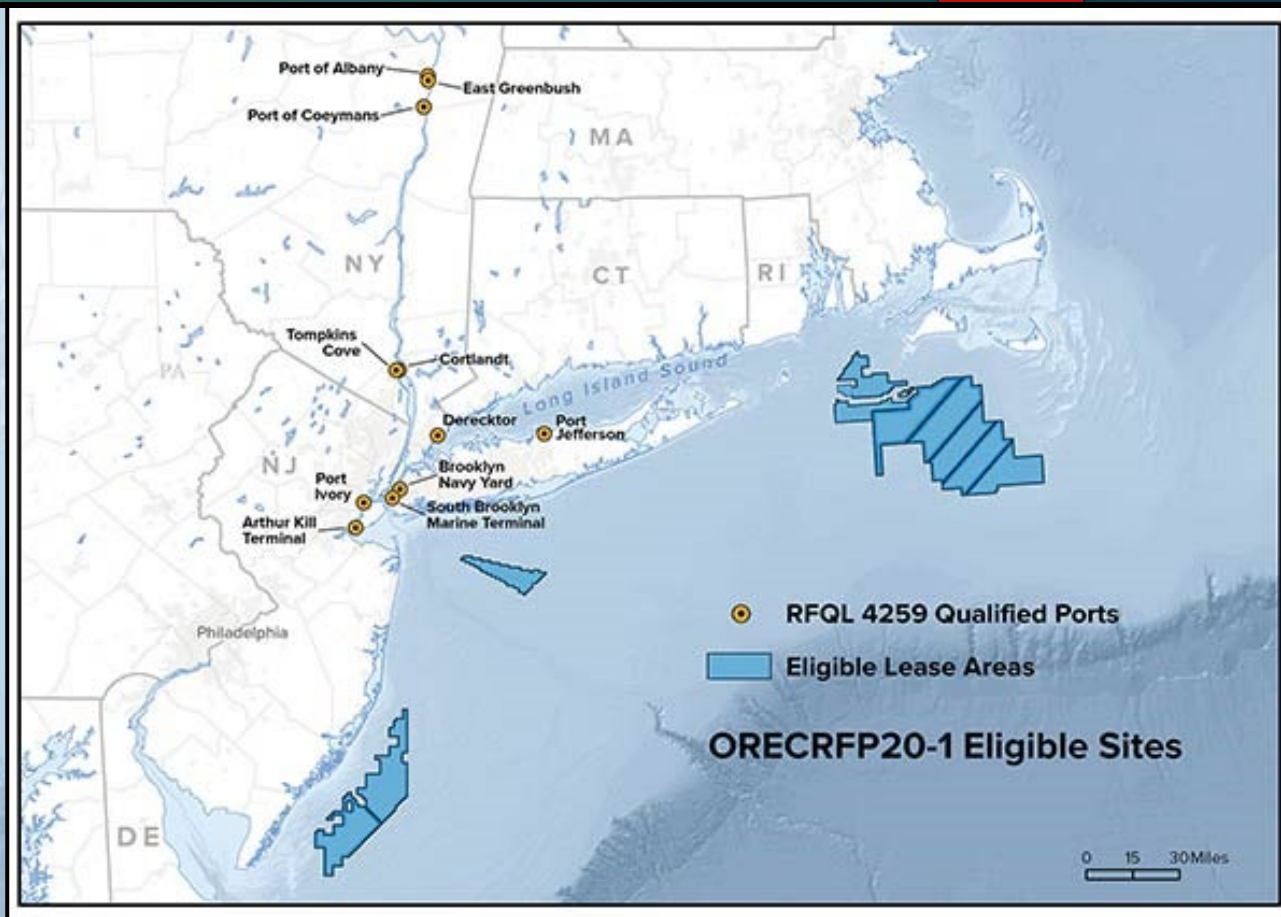
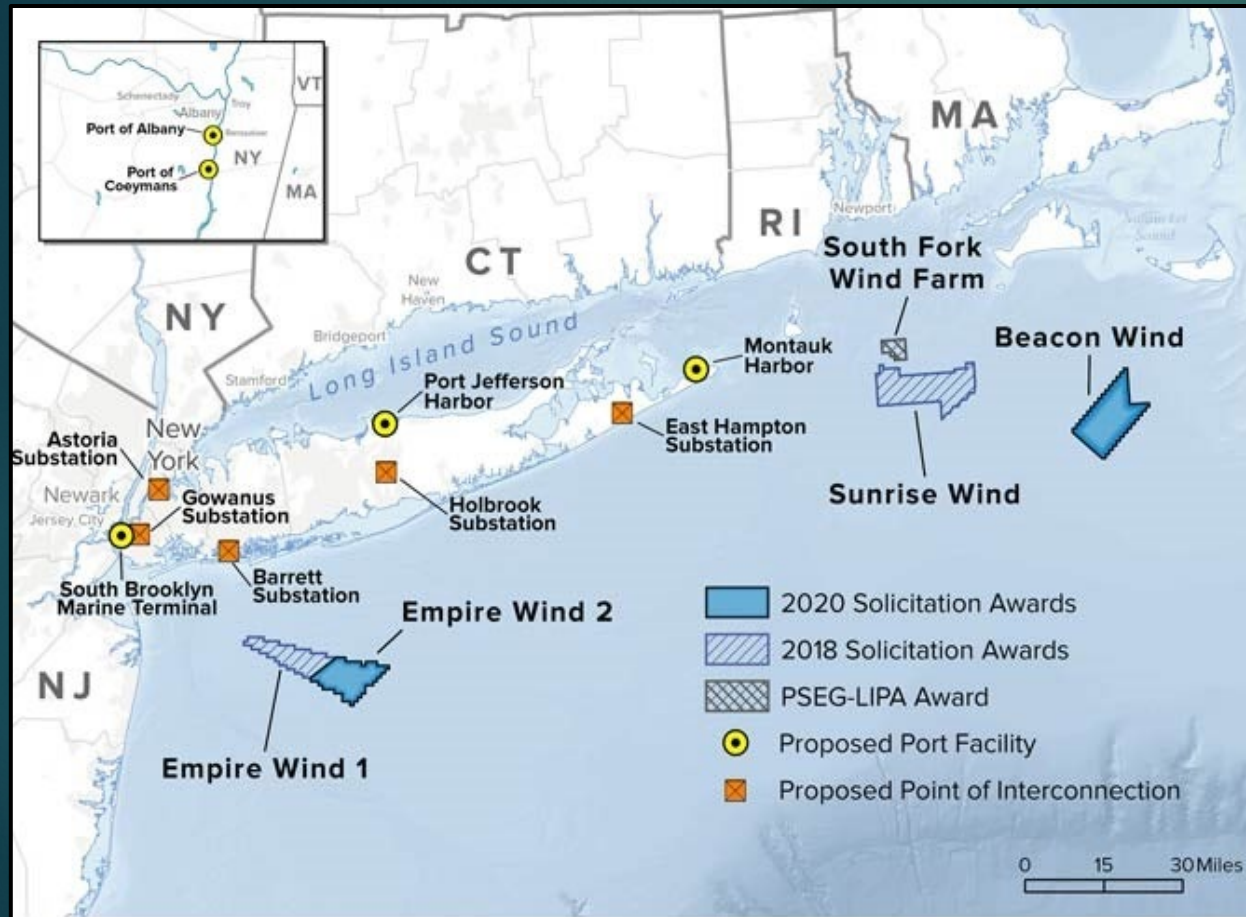
- ▶ developed by Equinor, an energy company headquartered in Norway
- ▶ 816-megawatt project located approximately 14 miles from Jones Beach State Park
- ▶ will connect to New York's electricity grid at the Gowanus Substation in Brooklyn
- ▶ will use gravity-based foundations to minimize risks to marine wildlife
- ▶ will establish an operations and maintenance base in Sunset Park, Brooklyn
- ▶ Equinor partnered with BP who agreed to pay \$1.1 billion for a 50% stake in Equinor's two offshore projects - Empire Wind and Beacon Wind (a project off southern New England)
- ▶ expected commissioning date for Empire Wind farm is 2026
- ▶ Expected to power over 1 million homes with Empire Wind 2



Offshore Wind Proposals

- ▶ Two additional proposals submitted by Equinor and BP:
 - ▶ Empire Wind Phase 2
 - ▶ 816 MW
 - ▶ 80,000-acre lease area 15 to 30 miles southeast of Long Island at water depths between 65 and 131 feet
 - ▶ expected online in 2027 connecting to the power grid in Nassau County at the Barrett Substation in Oceanside
 - ▶ Beacon Wind
 - ▶ 1,230 MW
 - ▶ 128,000-acre lease area located approximately 20 miles south of MA and 60 miles east of NY at water depths between 120 and 200 feet
 - ▶ expected to connect to the power grid through the Astoria Substation in Queens in 2028
- ▶ All offshore wind energy projects have the potential to power approximately 2.4 million homes and generate over 6,800 new jobs in NY

Maps of Project Locations



This map shows the lease areas of awarded projects: Empire Wind 1 and 2, South Fork Wind Farm, Beacon Wind and Sunrise Wind

Map of the northeast US coast and Long Island Sound showing eligible sites for solicitation

What else is required?

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- ▶ All proposed offshore wind projects remain dependent on obtaining the necessary federal permits from the Bureau of Ocean Energy Management (BOEM)
 - ▶ The projects are located in federal waters
 - ▶ In 2021, the Army Corps issued Nationwide Permits for land-based renewable energy generation facilities (NWP 51) and water-based renewable energy generation pilot projects, like offshore wind farms (NWP 52)
- ▶ Edison Chouest Offshore (ECO), Ørsted, and Eversource signed a long-term charter agreement for the first-ever U.S.-flagged Service Operations Vessel (SOV)
 - ▶ SOV to be engineered, constructed, and operated by ECO as a fundamental part of the operation and maintenance of Ørsted and Eversource's offshore wind farms
 - ▶ SOV to operate from NY and be used throughout the phases of the offshore wind projects
 - ▶ SOV to serve as an at-sea base to accommodate and transfer technicians, tools, and parts to and from the wind turbines
 - ▶ expected to be Jones Act compliant, meaning that since it will be transporting people and material from U.S. ports to offshore installations, it must be owned, crewed, operated, and built by U.S. entities.

What are common obstacles?

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- ▶ Common Obstacles to Project Implementation:
 - ▶ Concerns of impacts to fish and wildlife populations and ecosystems
 - ▶ Concerns over project costs and increased electricity rates
 - ▶ the intermittent nature of wind means supply will be weakest when demand peaks in the summer, and strongest when demand lessens in the winter
 - ▶ costs of offshore wind should diminish with increased and enhanced storage capacity and overall technological advances in these industries
 - ▶ NYSERDA estimates that residential customers will see an increase of less than one dollar per month in their monthly bill
 - ▶ Concerns over aesthetics
 - ▶ Classic NIMBY-ism
 - ▶ proposed South Fork Wind project local residents are outraged by the location to land the cable in the developers' plan

What are the positives?

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- ▶ the Block Island Wind Farm has proven beneficial to fisherman as a new habitat, formed of artificial reefs around the turbine bases, has created an abundance of fish populations
 - ▶ boosted the local economy with increased fishing and general boat tours around the turbines
- ▶ increase in demand for thousands of jobs in project development, component manufacturing, installation, and operations and maintenance
 - ▶ Equinor has proposed America's first offshore wind tower manufacturing facility in upstate NY
 - ▶ would create about 350 direct jobs
- ▶ addressing environmental justice and supporting disadvantaged communities, basing many project investments in underserved communities
- ▶ Overall benefits to the environment and public health

Offshore Wind & Community Benefits

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- ▶ Creation of The Ecosystem Fund
 - ▶ collaboration between Equinor and the New York City Economic Development Corporation (NYCEDC)
 - ▶ will contribute \$5 million towards the following objectives:
 - ▶ Scaling the talent pipeline in offshore wind-related careers
 - ▶ Supporting low-income New Yorkers and New York City Housing Authority residents in the green energy transition
 - ▶ Growing the green energy innovation ecosystem in New York City
- ▶ Sunrise Wind agreed to invest more than \$400 million in New York in accordance with our Offshore Wind Renewable Energy Credit agreement with the state.
 - ▶ committed to working with minority- and women-owned businesses to ensure that the developing offshore wind supply chain is inclusive and diverse.
- ▶ Thousands of other indirect and induced jobs will be created to support project work – ranging from companies that will monitor wildlife and the seabed around the project to boosting local businesses who provide goods and services within the vicinity of the projects
- ▶ Sunrise Wind committed \$10 million in seed funding to create a National Offshore Wind Training Center in Suffolk County. Together with partners from labor, academia, and the environmental community, the Center will feature facilities and programming that aim to cement Suffolk County's role as an integral part of the offshore wind industry.

CLCPA Focus on Community Benefits

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- ▶ NYS agencies, authorities and entities will invest to ensure that disadvantaged communities receive 35% of overall benefits of spending on clean energy and energy efficiency programs, projects or investments, with the goal of achieving 40%. ECL § 75-0117.
- ▶ Deliver significant economic benefits to disadvantaged communities and support the responsible retirement of aging fossil-fuel power plants near key environmental justice communities
- ▶ Healthy living for families through improved air quality, increased active transportation such as walking and biking, and promoting energy efficiency in low- and moderate-income homes. New Yorkers will see positive health benefits that will help avoid tens of thousands of premature deaths, thousands of non-fatal heart attacks, asthma-related emergency room visits, and other hospitalizations
- ▶ Addressing energy affordability concerns and reducing energy burden;
- ▶ Reducing environmental burden from greenhouse gas emissions and co-pollutants;
- ▶ Ensuring full participation in the new clean economy and corresponding job growth, including through access to good quality jobs and union-based employment opportunities;
- ▶ Ensuring an inclusive process and full participation by Disadvantaged Communities and their representatives in the ongoing work of developing and implementing climate action policies and programs

Questions?

Thank you for your participation.
Please feel free to contact us for more information.

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