

# Draft Climate Act Disadvantaged Communities Investment and Benefits Reporting Guidance

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# **Section 1 - Introduction**

This Guidance has been developed to provide direction to New York State agencies, authorities, and entities on the tracking and reporting of investments and benefits to disadvantaged communities (DAC), pursuant to Section 75-0117 of the Environmental Conservation Law, as amended by the Climate Leadership and Community Protection Act of 2019 (Climate Act).

## **1.1 The Climate Act**

The Climate Act aims to address the rising impacts and inequities of climate change in New York State by setting tangible requirements and goals for reaching economy-wide carbon neutrality and significant renewable energy expansion while expanding benefits and community ownership to DACs.

Pursuant to ECL § 75-0117:

*“State agencies, authorities and entities, in consultation with the environmental justice working group and the climate action council, shall, to the extent practicable, invest or direct available and relevant programmatic resources in a manner designed to achieve a goal for disadvantaged communities to receive forty percent of overall benefits of spending on clean energy and energy efficiency programs, projects or investments in the areas of housing, workforce development, pollution reduction, low income energy assistance, energy, transportation and economic development, provided however, that disadvantaged communities shall receive no less than thirty-five percent of the overall benefits of spending on clean energy and energy efficiency programs, projects or investments and provided further that this section shall not alter funds already contracted or committed as of the effective date of this section.”*

In this document, the requirement that no less than 35 percent of benefits of spending go to DACs is referred to as the “Investments and Benefits Requirement”. The Investments and Benefits Requirement is a statewide directive and, to the extent practicable, agencies will aim to reach 40 percent of benefits of spending to go toward DACs.

## **1.2 What is a Disadvantaged Community?**

ECL § 75-0101(5) defines DACs as communities that bear burdens of negative public health effects, environmental pollution, impacts of climate change, and possess certain socio-economic criteria, or comprise high-concentrations of low- and moderate- income households. The Climate Act charged the Climate Justice Working Group (CJWG) with the development of criteria to identify DACs to ensure frontline and otherwise underserved communities benefit from the state’s historic transition to cleaner,

greener sources of energy, reduced pollution and cleaner air, and economic opportunities.<sup>1</sup> The CJWG used a variety of indicators that measure environmental burdens and climate change risk, as well as population and health vulnerability, to identify census tracts in New York as DACs. In addition to the geographic DAC criteria, DACs include households with annual total income at or below 60 percent of State Median Income, or are otherwise categorically eligible for low-income programs (e.g., Home Energy Assistance Program) solely for the purpose of counting investments toward the Investments and Benefits Requirement. These households can be located anywhere in the state.

The Climate Act requires an annual review of the DAC criteria, which may result in future modifications. Detail on the DAC criteria, including a list of census tracts covered, documentation of indicators and methodology for developing the criteria, and shapefiles for the criteria can be found online at <https://climate.ny.gov/Resources/Disadvantaged-Communities-Criteria>.

### **1.3 Investment and Benefits Requirement**

Under the Climate Act, all New York State agencies, authorities, and entities that administer clean energy or energy efficiency programs or that make investments in clean energy or energy efficiency in the areas of housing, workforce development, pollution reduction, low -income energy assistance, energy, transportation and economic development, shall to the extent practicable invest in a manner that allows State agencies, authorities, and entities to achieve a goal for DACs to receive 40 percent of overall benefits of the spending. In addition, the Climate Act, provided DACs shall receive no less than 35 percent of the overall benefits of spending on clean energy and energy efficiency programs, projects, or investments.

To demonstrate New York State compliance with the investment and benefits requirements, each agency, authority, and entity that makes clean energy or energy efficiency investments shall track and report annually the investments occurring in DACs, associated co-benefits, and any other related outcomes in DACs associated with these investments.

Through the direction described in this Guidance, dollars invested through placed-based programs or investments, as described in Section 2, will be the primary metric tracked for the Investments and Benefits Requirement. In addition to tracking investment dollars, New York State agencies, authorities and entities will also track co-benefits associated with placed-based and statewide programs or investments. See Section 4, Co-benefits and the appendix for more information on Co-benefits and associated methodology.

## **Section 2 – Applicable Investments**

Applicable investments include incentives, grants, loans, and financing provided by agencies toward supporting clean energy and energy efficiency projects. Spending for agency operations, capital expenditures and procurements are not in scope of this reporting framework and instead fall under

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<sup>1</sup> See ECL § 75-0111.

Executive Order 22, except those programs, including agency operations, capital expenditures, and procurements that are specifically for clean energy and energy efficiency purposes and consistent with the discussion within this section (section 2). Funds awarded or committed/encumbered and not yet expended, although a good leading indicator of future DAC investment, are also not in the scope of this reporting.

Investments that meet the following conditions are subject to ECL § 75-0117:

1. Authorized or implemented by a **New York State agency, authority, or entity**;<sup>2</sup>
2. **Clean Energy or Energy Efficiency** investment as either a stand-alone program or as components within the categories outlined in the Climate Act (i.e., housing, workforce development, pollution reduction, low-income energy assistance, energy, transportation, and economic development); and
3. **Place-based**, where the benefits of a program can be localized to a defined geographic area and/or a clean energy or energy efficiency investment anywhere in the State that is within a **low-income household** defined as at or below 60 percent SMI.

Accounting for DAC Investments:

1. **Placed-Based investments within DACs and/or low-income investments (as defined in section 2.3 below) will be counted toward the investments and benefits requirement and as part of the total amount of investments the requirement is measured against.**
2. **Placed-based investments outside of DACs or unmapped projects will be counted only for measuring the total amount of investments the investments and benefits requirement is measured against, to understand what percentage of overall applicable funds went toward DACs.**
3. **State- or system-wide investments (as defined in section 2.3 below) will not be included in the reporting of spending going toward DACs; however, co-benefits from state- or system-wide investments will be reported.**

Please see below sections for more detail regarding these criteria.

## 2.1 New York Agency, Authority, or Entity

ECL § 75-0117 requires “*State agencies, authorities and entities*” to invest 35 percent of spending on clean energy and/or energy efficiency investments toward DACs. Therefore, all New York State agencies, authorities, and entities are required to meet the Climate Act’s “Investments and Benefits Requirement.” Further, the Investments and Benefits Requirements tracked and reported pursuant to this Guidance will be the clean energy and/or energy efficiency investments made by New York State agencies, authorities, and entities.

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<sup>2</sup> IOU/ratepayer funds authorized by PSC will fall under DPS for this report

## 2.2 Clean Energy or Energy Efficiency Focus

ECL § 75-0117 identifies “clean energy and energy efficiency programs, projects or investments in the areas of housing, workforce development, pollution reduction, low -income energy assistance, energy, transportation and economic development” to be considered for inclusion toward the Investments and Benefits Requirement. State entities like the New York State Energy Research and Development Authority (NYSERDA), New York Power Authority, and Long Island Power Authority have numerous investments with the primary goal of clean energy or energy efficiency. However, other state entities may have clean energy and energy efficiency investments that are only one component of their programs. State entities, in consultation with the New York State Department of Environmental Conservation, may exercise reasonable discretion in determining whether programs that have clean energy or energy efficiency components should be included for reporting.

Table 1 below provides a representative list of clean energy and/or energy efficiency investments within the investment areas specified by the Climate Act. While the list is not exhaustive, this table provides examples for clean energy and/or energy efficiency investments within the broad array of categories.

In addition to these clean energy and/or energy efficiency investments, low-income energy bill assistance programs such as the Home Energy Assistance Program (HEAP) and the Energy Affordability Program (EAP), are included in the scope of relevant programs and investments. These programs provide assistance to low-income customers in the form of utility bill discounts and cash benefits to help offset home energy costs. New York State has a goal that low-income households spend only six percent of their income toward energy bill. In the absence of Energy Bill Assistance programs, low-income residential customers can spend more than three times more of their income on energy than non-low-income households, a concept known as “energy burden.”<sup>[1]</sup>

<sup>[1]</sup> Income-based clean energy programs such as EmPower +, administered by NYSERDA, would also be included as relevant investments.

**Table 1. Examples of Applicable Investments**

INVESTMENT AREA	EXAMPLES
Energy	<ul style="list-style-type: none"> <li>• Incentives for distributed energy resources such as rooftop photovoltaics PV, energy storage, or geothermal systems</li> <li>• Construction that allows for the generation, storage and/or distribution of electricity from clean or renewable energy.</li> </ul>
Housing	<ul style="list-style-type: none"> <li>• Investments that reduce energy consumption or fossil fuel combustion in buildings or facilities, across all sectors including but not limited to appliances, lighting, envelope improvements, weatherization, ventilation, water heating, and space heating and cooling. Includes both retrofits of existing buildings and investments in high performance new construction.</li> </ul>

INVESTMENT AREA	EXAMPLES
	<ul style="list-style-type: none"> <li>• Investments that support energy efficiency and clean energy planning, design, and upgrades in regulated and unregulated affordable and market rate housing.</li> <li>• Financing, technical assistance, benchmarking or other non-physical services that assist in developing high performance (energy performance) housing (buildings or units).</li> <li>• Investments to repair structural deficiencies that can prevent energy efficiency or clean energy work from occurring (e.g., roof leaks, knob and tube wiring) or to prepare the building for deeper energy efficiency or electrification of heating and cooling (e.g., electric service/panel upgrades).</li> <li>• Preservation and new construction meeting energy performance or green thresholds (e.g., Enterprise Green Criteria or Passive House Criteria)</li> </ul>
Low -Income Energy Assistance	<ul style="list-style-type: none"> <li>• Energy bill assistance via grants or bill credits</li> <li>• Emergency heating and cooling assistance for low-income customers</li> </ul>
Pollution Reduction	<ul style="list-style-type: none"> <li>• Projects, incentives, or services that lead to improvements in local emissions reductions associated with combustion of fossil fuels</li> <li>• Provide for the remediation of brownfield, gray field, or other polluted site, in the siting of a clean energy project.</li> </ul>
Transportation	<ul style="list-style-type: none"> <li>• Incentives or services that assist in the transition from fossil fuel-based vehicles to electric or alternative fuels, including personal use vehicles, service vehicles and fleets, public transit, electric rail, non-road vehicles, etc.</li> <li>• Electric charging stations and other clean energy transportation infrastructure</li> <li>• Investment in cleaner fuels</li> <li>• Demand management strategies (e.g., carpooling, car sharing, bike paths)</li> <li>• Smart mobility technologies that reduce congestion and idling, or provide other measures to lessen GHG emissions from transportation sector</li> </ul>
Economic Development	<ul style="list-style-type: none"> <li>• Projects and services that increase the value proposition for clean energy or energy efficient technologies or services</li> <li>• Investments that contribute to clean energy or energy efficiency projects as part of the revitalization or redevelopment of communities</li> <li>• Provide financing or technical assistance to allow for clean energy, energy efficiency, or transportation projects</li> <li>• Investments in clean energy incubators and business model development for clean energy companies or contractors</li> <li>• Investments to support the growth of clean energy companies including financial support, and technical assistance and training.</li> </ul>

INVESTMENT AREA	EXAMPLES
Workforce Development	<ul style="list-style-type: none"> <li>• Projects and investments that general full-time, good-paying internships and jobs in energy efficiency, building electrification, large-scale renewables, and other clean energy technologies</li> <li>• Professional and technical skills training for the clean energy sector through on-line and in-person courses, on-the-job training, internships, apprenticeships, etc.</li> <li>• Developing, subsidizing, and supporting clean energy or energy efficiency certifications, stackable credentials, and continuing education credits</li> </ul>
Other	<ul style="list-style-type: none"> <li>• Funding energy efficiency upgrades (including related technical analyses and support) in commercial and institutional spaces, including offices, retail spaces, and schools</li> <li>• Support to develop capacity of municipal or community organizations to advance clean energy or energy efficiency projects</li> <li>• Demonstrations (where applicable) on technologies, services, or other methods of increasing clean energy solutions and adoption across all sectors</li> <li>• Investments in industrial process efficiency</li> <li>• Installation of LED street lighting</li> </ul>

### 2.3 Place-based Investments and/or low-income households

Clean energy and energy efficiency investments generally fall into two categories:

- **Place-based investments**, where initiatives can reasonably prioritize or target investments to individuals, households, businesses, and other entities within specific geographic areas (e.g., DAC or county).
- **State- or system-wide investments**, where initiatives are designed to meet the overall needs of the State's energy infrastructure or other system-wide grid objectives, even if the initiatives are prioritized or targeted at geographic locations that effectively meet such objectives.
  - For the “Investments and Benefits Requirements,” State entities will track and report on Place-based investments but not State- or system-wide investments. However, New York will track relevant co-benefits to DACs resulting from both, the Place-based and State/system-wide investments, to highlight the State’s efforts in directing benefits from such investments to DACs.

The DAC Criteria, as adopted by the CJWG, includes a **low-income households criterion** where clean energy and/or energy efficiency investments made toward households at 60 percent or below State-Median Income (SMI), or are otherwise categorically eligible for low-income programs (i.e., Home Energy Assistance Program), may be counted solely for the purposes of reporting on the Investment and

Benefits Requirement. As a result, State entities will track and report investments and benefits toward low-income households, as established within the DAC Criteria, which establishes these low-income investments will count toward the 35 percent requirement. State entities that authorize or implement clean energy or energy efficiency programs for single family residential and multifamily households, have the ability to report, where data is available, low-income investments, regardless of whether those low-income investments occur in a DAC. Moreover, investments within affordable housing may lack data availability with regards to the income of tenants due to the complexity and diversity of affordable housing portfolios. In working with Homes and Community Renewal (HCR) and New York City Housing Preservation & Development (HPD), New York State has derived an estimate of the ratio of low-income tenants (as defined by the DAC Criteria) in affordable housing to be approximately 40 percent. For multifamily affordable housing projects, New York State will use this factor when deriving the percentage of investments going toward low-income residents.

Table 2 below shows a representative list of investments that are placed-based or system/statewide for clean energy and/or energy efficiency investments. While this list is not exhaustive, it is intended to serve as examples to determining if an investment falls within the placed-based or system/statewide category.

**Table 2: Place-based vs Systemwide or Statewide investments:**

CATEGORY	PLACE-BASED	SYSTEMWIDE OR STATEWIDE
Definition	<ul style="list-style-type: none"> <li>Investments designed to serve <i>specific</i> individuals, households, business types or communities</li> </ul>	<ul style="list-style-type: none"> <li>Investments intended to provide statewide or systemwide benefits, such as grid resilience, large scale implementations of renewable energy on the electric grid, or market transformation</li> </ul>
Examples	<ul style="list-style-type: none"> <li>Residential and commercial building energy efficiency or electrification</li> <li>Industrial process efficiency</li> <li>Distributed Energy Resources including community solar, commercial and residential rooftop solar, behind the meter energy storage, geothermal, small wind and hydro, etc.</li> <li>Zero emission cars, school/transit/shuttle buses, local trucks, marine engine, and non-road equipment</li> <li>Electric vehicle charging stations</li> <li>Community-level investments</li> <li>Internships and On-the-job training programs</li> </ul>	<ul style="list-style-type: none"> <li>Utility-scale renewables and storage</li> <li>Zero Emissions Credits or ZECs (to nuclear facilities)</li> <li>Transmission, distribution, and generation</li> <li>Investment in clean energy research</li> <li>Developing tools to accelerate heat pump market development</li> <li>Investments in clean energy supply chains or product development</li> </ul>



Funding	<ul style="list-style-type: none"> <li>• Include funding toward the Investments and Benefits Requirement</li> </ul>	<ul style="list-style-type: none"> <li>• Exclude from counting toward the Investments and Benefits Requirement</li> </ul>
Co-Benefits to DACs	<ul style="list-style-type: none"> <li>• Include reporting of co-benefits in annual DAC reporting</li> </ul>	<ul style="list-style-type: none"> <li>• Measuring co-benefits to DACs is more complex and will be reported outside of the annual DAC reporting process, such as through special analyses, evaluation studies</li> </ul>

## 2.4 Treatment of Non-place based Investments

In many state-administered clean energy and energy efficiency programs, there are aspects of spending that are not project- or site-specific, but support a program or portfolio of programs. Administration and Evaluation costs are often managed at a portfolio level. There may be other program investments that do not directly fund projects or sites, such as implementation support, quality assurance, market research, marketing activities and outreach, research and studies. Such spending is not always easily localizable, unless agencies to allocate the spending across project sites. In order to avoid creating unreasonable reporting burden on agencies, non-place-based investments are not included in annual DACs reporting.

## 2.5 Treatment of Co-Investments from Multiple Agencies

For some clean energy and/or energy efficiency investments, multiple agencies may provide funding for a program or project. In other instances, funds may be transferred between agencies, before being distributed to projects (such as Regional Greenhouse Gas Initiative (RGGI) fund transfers from NYSERDA to other state entities). State agencies should collaborate to ensure that neither funding nor co-benefits are double-reported in the DAC reporting template, to the extent practicable.

## 2.6 Reporting of Community-wide Investments

Some state administrators provide incentives directly to local governments, municipalities, and other community-based entities. These investments may be geographically dispersed throughout a community, such as LED street lighting, and data limitations may prevent an agency from reporting these investments at the census tract level. Other investments may benefit the entire community, such as a community campaign or technical assistance, and may not be suitable for census tract level reporting. To account for these investments, New York State has developed a list of municipalities (including counties, towns, cities, and villages) and has calculated the percentage of the population residing within DACs for each municipal boundary. In the absence of census tract level data, state agencies may report at the community level using the DAC percentage calculated for each community. To the extent practicable, agencies should only utilize this component when the investment is directed towards disadvantaged communities within the municipality the investment is provided to. For the list of the DAC populations residing within each municipal boundary, see the Data Collection Template. The census-tract level reporting, when practicable, will be preferred over the community-level reporting.

*Community Calculation Example:* City X has 42 percent of its population residing within a DAC. New York State invests \$10,000 to City X to spend on whatever clean energy projects the local government chooses. New York State would claim \$4,200 as going toward DACs.

## **2.7 Reporting of Workforce Training Investments**

Programs designed to increase training capacity in the clean energy sector provide individuals with training opportunities, such as on-the-job-training or internships. In these scenarios, two geographic locations could be tracked: the site location of the training center or business (for internships or on-the-job-training), and the location where the individual resides.

Where the program is targeting individuals for training, agencies should track investments based on where the trainee resides. Where an investment is focused on building an organization's training capacity (e.g., new training equipment, updated curriculum, training additional trainers), and not funding individual trainees, the investment can be shown at the location of the training center.

## **2.8 Reporting of Community Solar Investments**

Community solar programs provide energy savings to participating households through residents subscribing to a portion of the output of a nearby local community solar farm. The investments within a solar farm location are not where the benefits of the program are realized but rather benefits are to the individual subscribers of the program. For the tracking of community solar investment, New York State will therefore look to track the allocation of these funds to disadvantaged communities based on where the residents live as opposed to where the community solar project is located.

Some state administrators however may lack available data and are unable to collect the information on where subscribers from a particular project is located. New York State has derived an estimate on the rate of subscribers residing within disadvantaged communities from community solar project to be approximately 24 percent. For community solar projects New York State will use this factor when deriving the percentage of investments going toward disadvantaged communities. Moreover, New York State will work to improve data availability on community solar subscriber data moving forward.

## **2.9 Funds Committed Prior to January 1, 2020**

ECL § 75-0117 states that the section “shall not alter funds already contracted or committed as of the effective date of this section.” As a result, any investments or programs that were contracted or committed prior to January 1, 2020, will not be included in this reporting.

# **Section 3 - Co-benefits**

In addition to tracking place-based investments in DACs, New York State will also report the associated co-benefits of place-based as well as state/system-wide investments. New York State has identified several initial co-benefits, shown on Table 3, that can be tracked starting with the first reporting cycle. This is an initial list of co-benefits New York has identified as measurable; however, New York State may examine additional co-benefits for future reporting cycles.

New York State examined indoor air quality as a potential metric for inclusion in this reporting cycle but determined that the methodologies for associating the impacts of energy efficiency measures to increased health benefits requires more exploration at this time. New York State will continue to examine methods to include this metric for reporting on co-benefits moving forward.

The following table presents a list of co-benefits that will be reported for both placed-based and state/system-wide DAC reporting:

**Table 3. Co-Benefits Categories for Climate Act Reporting**

CO-BENEFITS CATEGORY	CO-BENEFITS METRICS
Electricity and Fuel Savings	<ul style="list-style-type: none"> <li>• Electricity Savings (MWh)</li> <li>• Fuel Savings (MMBtu)</li> </ul>
Participant bill savings*	<ul style="list-style-type: none"> <li>• Participant bill savings from reductions in electricity and fuel usage (Dollars)</li> <li>• Transportation fuel cost savings (Dollars)</li> </ul>
Health benefits related to outdoor/ambient air quality	<ul style="list-style-type: none"> <li>• Monetized health impacts due to changes in electricity and fuel use (Dollars)</li> <li>• Reduction in air pollutants (NH3, NOX, PM25, SO2, VOC)</li> </ul>
Employment impacts	<ul style="list-style-type: none"> <li>• Directly contracted jobs (FTE)</li> <li>• Number of individuals trained (Count)</li> </ul>

\*Energy bill assistance to low-income customers will also be tracked within the funding metric.

## **Section 4 – Reporting Process**

### **4.1 Initial Reporting Timeline**

New York State expects to produce its first report on the Investment and Benefits Requirement in Q2 2024. This initial report will include tracking for investments made starting January 1, 2020 through December 31, 2022. New York State agencies, authorities, and entities subject to these reporting requirements will be required to submit all necessary data for the relevant clean energy and/or energy efficiency investments to NYSERDA utilizing the data collection template. Following the submission of the completed data collection templates by end of Q1, NYSERDA will coordinate with individual State entities to ensure quality assurance and quality control (QAQC) of submitted data.

### **4.2 Future Reporting Timeline**

Following this initial report, New York State will produce an annual report tracking the State’s progress toward meeting the 35 percent investments and benefits requirements and 40 percent goal. Each annual report will track clean energy and/or energy efficiency investments made by New York State through the past calendar year.

## 4.3 Quality Assurance and Quality Control of Data

All state agencies will be responsible for ensuring the quality of their own data. NYSERDA will be responsible for compiling data templates submitted by agencies and producing outputs for reporting such as data visualizations and aggregated files, which agencies can use as part of their QA/QC processes. Each annual update will include a review period whereby agencies are expected to review their draft data outputs for inaccuracies, prior to the report being finalized. Agencies will be given time to refile data collection templates if errors are discovered during this process. If errors are discovered after the annual reporting cycle is completed, corrections will be incorporated in next year's data collection template.

## Appendix – Co-Benefit Methodology

### Electricity and Fuel Savings

New York State agencies will report electricity savings in MWh and fuel savings in MMBtus associated with clean energy and energy efficiency investments. Energy benefits will be reported in terms of savings (reduction in consumption) as well as usage (increase in consumption or “negative savings”). For example, electrification measures such as heat pumps and electric vehicles result in both fuel savings and electricity usage. Electricity and fuel savings and usage values will be used to calculate estimated participant bill savings, pollutant reductions, and monetized health benefits. Please see subsequent sections of this Appendix for more details on the co-benefits calculation methodologies.

Please refer to the data collection template's data dictionary for the full set of reported metrics and their definitions.

### Participant Bills Savings

Bill savings to program participants can take several forms:

1. **Direct financial assistance** to households, such as through Low Income Home Assistance Program (LIHEAP), that offsets electricity or natural gas utility bills.
2. **Participant energy bill savings** from reductions in electricity or fuel usage for residents of DACs and/or low-income households due to either implementation of energy-efficient upgrades and technologies or installation of renewable energy. In cases where fuel switching occurs, bill savings in dollars will be calculated using both increases and decreases in energy consumption that result from fuel-switching. For example, electrification of appliances that eliminate the use of fuels (e.g., replacing a gas stove with an efficiency electrical stove) would both increase electric utility bills while decreasing natural gas bills.
3. **Transportation fuel cost savings** resulting from adoption of personal EVs, electric buses and trucks. Transportation cost savings will be calculated as a net value that incorporates both fuel savings and electricity usage.

Participant Bill Savings and transportation fuel cost savings are estimated by applying a factor by fuel type, sector and utility to the associated primary energy metric reported by the Program Administrator. Where the utility is unknown, statewide factors are used. Factors are intended to provide a general estimate of the energy bill savings experienced by the customer, utilizing typical customer billing data,

and do not reflect the participating customers' costs of purchasing energy efficient equipment and services.

See Appendix B of DPS's Data Dictionary and Scorecard Guidance:

<https://dps.ny.gov/system/files/documents/2022/11/ce-10-data-dictionary-and-scorecard-guidance.pdf>

## **Outdoor Air Quality and Health Effects**

Clean energy and energy efficiency investments can result in health benefits due to changes in outdoor and indoor air quality. Broadly speaking, changes in air pollutant emissions result in changes to ambient (outdoor) air quality concentrations, which can be quantified in terms of individual health outcomes using established values for improved health outcomes including avoided premature mortality. Replacement of fuel combustion with non-combustion alternatives and reductions in fuel consumption will lead to outdoor air quality co-benefits. For example, if a program subsidizes electric buses to replace diesel buses, health benefits related to decreased vehicular emissions can be estimated. Decreased fuel usage can reduce emissions of primary pollutants and secondary pollutants formed in ambient air. Decreased fine particulate matter (PM<sub>2.5</sub>) and ozone concentrations in the air reduce negative population health impacts, including cardiovascular and respiratory conditions and , premature mortality, and also lead to positive outcomes from a reduction in school loss days and an improvement in worker productivity.

### **New York State Air Pollution Health Impacts Estimates**

New York State will use marginal health values developed based on the health analyses presented in the New York State Climate Action Council Scoping Plan to calculate health impacts from unitary changes in energy usage by sector and by year. For a detailed description of the scenario analyses, see the New York State Climate Action Council Scoping Plan.<sup>3</sup> The analysis used data on changes in fuel consumption by location to estimate the health effect by region specific to each sector and fuel type and the distribution of health changes associated with electricity consumption by region. The scenario modeling estimated the change in air pollution emissions associated with the change in energy consumption in all sectors, including electricity generation, industry, commercial and residential buildings, on-road vehicles, and nonroad fuel consumption. These analyses were also repeated for each subsector and fuel type and evaluated to ensure the component analyses represented the full combined benefits. Values were then unitized to produce the marginal health values applied here.

### **Estimating Health Impacts from Fuel Savings**

For fuel savings from the buildings, industry, on-road, and nonroad sectors, health factors related to fuel type and sector were applied to three regions: Upstate, Downstate (except for New York City), and New York City. Weighting factors were applied to evaluate more specific effects of vehicle classes based on the vehicle PM and NOx emission factors used for the modeling. Marginal health benefit values were provided for all sector/fuel/region combinations in each year, in terms of \$/MMBtu and \$/physical units (e.g., million cubic feet of natural gas, thousand gallons of diesel fuel).

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<sup>3</sup> New York State. Climate Action Council Draft Scoping Plan, Appendix G, Section 2 and Annex 3. <https://climate.ny.gov/resources/scoping-plan/>

## Estimating Health Impacts from Electricity Savings

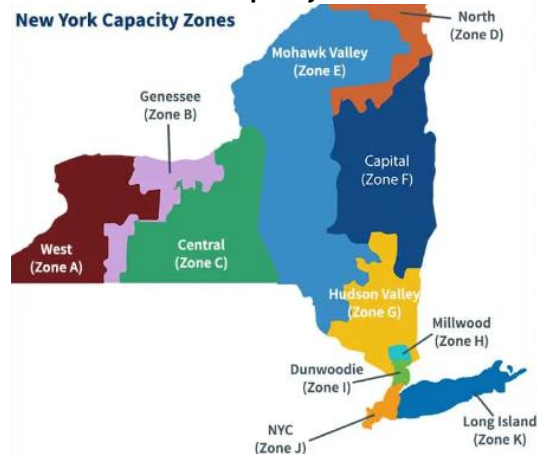
The marginal benefits for changes in electricity use were developed based on the health effects of the emitted pollutants which occur where electricity is generated, not consumed. To account for this, NYSERDA evaluated the fraction of electricity demand that was generated in the NYISO regions, using the electricity modeling prepared for the scenario analyses used to inform development of the , and applied the weighted benefits for a load region based on how much of that load was generated in each region. The approach to developing the marginal benefits values for electricity consumption is similar to the methodology for the other sectors, with certain key differences. For the other sectors, NYSERDA applied the benefits of the emission reductions between the Reference case and the Policy scenario (see New York State Climate Action Council. 2022. “New York State Climate Action Council Scoping Plan – Appendix G.” <https://climate.ny.gov/2022-Scoping-Plan> )For the electricity sector, NYSERDA applied the full effect of emissions from the electricity generation in each region. In other words, this approach modeled the total impact of emissions from the electricity sector under the Policy scenario in each region to determine the negative effect of remaining fossil generation on air quality.

To estimate the marginal value for electricity consumption (in \$/GWh), the total benefits from [COBRA](#) were divided by the total electricity generation in each region to develop values of the benefits (\$) per gigawatt-hour (GWh) of electricity generation. These marginal values estimate the benefits per GWh *generated* in each region. These values were then corrected for grid losses to account for the difference between demand and generation load.

For example, it is estimated that in 2025 60 percent of New York City’s energy demand will be met by energy generated in New York City (NYISO Zone J), 28 percent of New York City’s energy demand will be met from energy generated in Upstate (Zones A-F), and 12 percent of New York City’s energy demand will be met from energy generated in the Lower Hudson Valley (Zones GHI) with less than 1 percent of New York City’s energy demand being met from energy generated in Long Island.

(New York State Climate Action Council. 2022. “New York State Climate Action Council Scoping Plan – Appendix G.” [climate.ny.gov/ScopingPlan](https://climate.ny.gov/ScopingPlan)). Therefore, for any change in electricity consumption in New York City there will be health impacts estimated in New York City, but also in Upstate New York and the Lower Hudson Valley regions. This same approach is used for calculating health benefits for distributed energy resources such as rooftop solar. The regions modeled for the electricity sector include: Upstate (NYISO Zones A-F), the Lower Hudson Valley (Zones GHI), New York City (Zone J), and Long Island (Zone K).

**Visual 1: New York Capacity Zones:**



## **Attributing Health Impacts to Disadvantaged Communities**

The unitized and monetized health benefit factors (e.g., \$/MMBtu) are designed to appropriately attribute the projected health benefits from specific changes in fuel usage and energy resources (reductions in fuel combustion, use of electricity, etc.). There is no perfect method for accurately determining the precise benefits of each of these actions because the ultimate health outcome is a result of the combination of all changes in pollutant concentration, rather than a sum of individual actions. To truly evaluate the effect of each individual action would require analyzing each action, but the sum of those effects individually would be different than the outcome of all actions occurring simultaneously. The chemical and physical transformation of pollutants resulting in ultimate concentrations affecting populations is complex. Furthermore, the inherent uncertainty in the details of implementation require that assumptions be made to best estimate the outcomes. However, all measures from the Integration Analysis were included, and therefore, the benefits evaluated system-wide in that analysis can be attributed proportionally to individual measures implemented.

While uncertainty will always exist at the local and hyper-local (micro) level (e.g., what locations exactly are potentially affected by the exhaust from a specific boiler stack or changes in on-road emissions), this attribution uses the best available estimates at the system level and assigns them to specific components in the best way available, allowing for the reliable aggregation of these results (e.g., the health effect of on-road emissions changes associated with a clean truck program in DACs and outside DACs in a given region).

When it comes to attributing health benefits for clean energy and energy efficiency measures to DACs, many measures provide benefits that extend beyond the census tract where they occur. For example, on-site fuel savings in buildings generally deliver more local benefits to DACs than electricity savings which are more regional in nature, with the notable exception of communities located near large fossil-based generation sources and industrial energy users. In addition, fuel savings from transportation measures, such as electric buses, trucks, and passenger vehicles, also provide a mix of local and more regional benefits, depending on vehicle routes and where vehicles are domiciled. Therefore, measures that occur in DAC census tracts can have benefits that extend beyond DAC census tracts, and vice versa. Currently, the model accounts for health benefits at a regional level and is not able to show the health benefits occurring at a more granular level such as at the census tract level. As future methods for the system-wide analysis progress, NYSERDA will explore the potential for modifying the methodology to show more specific impacts to DACs.

## **Appendix – Frequently Asked Questions**

### **Q: What about committed or encumbered investments?**

A: Funds that are committed or encumbered and not yet expended, although a good leading indicator of future DAC investment, are not in scope for this reporting.

### **Q: What about energy storage?**

A: Bulk and off-site retail storage projects that deliver energy directly into the transmission and distribution system, provide benefits across the electric system and are considered statewide investments. On-site retail and residential projects provide direct local benefits to the site location and should be reported under the place-based reporting framework.

### **Q: What about investments to midstream partners or distributors?**

A: In the case of energy rebates being offered through a brick-and-mortar midstream partner (e.g., Home Depot) the funding should be reported under the census tract of the store location.

### **Q: What about unmapped projects?**

A: If an address cannot be geocoded to a location, the place-based funding should still be reported in the data collection template as “unmapped”.