



The New York State Energy Research and Development Authority
Cleaner, Greener Communities Program

SUSTAINABILITY INDICATOR GUIDANCE DOCUMENT

June 7, 2013



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1. ENERGY

1A: Regional energy consumption per capita (MMBtu)

Energy consumption per capita is an indicator that encompasses all of the energy use within a region on a scale that is highly relatable. Understanding how much energy is consumed per capita can be very effective in illuminating the need to reduce overall energy consumption regardless of its source. To calculate the value for this indicator, the calculations for several other indicators are needed and should include all sources of energy consumption (fuel combustion, electricity, renewables, etc.).

Calculation:
 Regional energy consumption per capita =
 Σ (regional energy consumption) ÷ regional population

Σ (regional energy consumption) =
 Residential Energy Consumption + Commercial Energy Consumption + Industrial Energy Consumption +
 Transportation Energy Consumption

Required data	Definition	Suggested dataset
Residential Energy Consumption	Use of energy for residential purposes. Includes all sources (fuel combustion, electricity, renewables, etc.)	Regional Tier II Greenhouse Gas Inventory
Commercial Energy Consumption	Use of energy for commercial purposes. Includes all sources (fuel combustion, electricity, renewables, etc.)	Regional Tier II Greenhouse Gas Inventory
Industrial Energy Consumption	Use of energy for industrial purposes. Includes all sources (fuel combustion, electricity, renewables, etc.)	Regional Tier II Greenhouse Gas Inventory
Transportation Energy Consumption	Use of energy for transportation purposes. Includes all sources (fuel combustion, electricity, renewables, etc.)	Regional Tier II Greenhouse Gas Inventory

Notes on other data sources:

- See NYISO Gold Book
http://www.nyiso.com/public/markets_operations/services/planning/documents/index.jsp;
- And NYSERDA Patterns & Trends
http://www.nyserda.ny.gov/en/Publications/~/_media/Files/Publications/Energy-Analysis/EA-2010-pt-r.ashx

Regions: New York City, Southern Tier, Western, Mid Hudson, Long Island, Finger Lakes, Mohawk Valley, Capital, North Country

1B: Total installed renewable energy capacity

Renewable capacity provides an understanding of the willingness of the population to adopt newer, cleaner source of energy generation on their own. Monitoring this indicator over time can help the region understand any trends resulting from improvements in technology or changes in energy policy.

Calculation:

Renewable Energy Capacity = \sum (capacity of all renewable energy sources)

\sum (capacity of all renewable energy sources) = On-Site Solar PV Capacity + On-Site Solar Thermal Capacity + On-Site Wind Turbine Capacity + Capacity of Other Renewable Sources

Required Data	Definition	Suggested Dataset
On-Site Solar PV Capacity	Total capacity of all on-site generation from the use of solar photovoltaics	see the following reports: NYSEDA RPS Annual report http://www.nyserda.ny.gov/en/Page-Sections/Energy-and-Environmental-Markets/Renewable-Portfolio-Standard/Documents.aspx?sc_database=web
Solar Thermal Capacity	Total capacity of all on-site generation from the use of solar thermal	
Wind Turbine Capacity	Total capacity of all on-site generation from the use of wind turbines	
Capacity of Other Renewable Sources	Total capacity of all generation from the use of other renewable sources (CHP, fuel cells, anaerobic digesters, hydropower)	RPS Annual Report NYISO Gold Book

Note: Consider separating out small scale from utility scale generation to inform policy and investment decisions.

Regions: Western, Mid Hudson, Finger Lakes, Mohawk Valley, North Country

1C: On-site building fuel consumptions per end use (residential, commercial, and industrial)

Stationary energy combustion can be significant at a regional level. Reducing fossil fuel combustion is achieved by reducing the amount of fuel consumed for heating in the residential sector or reducing the amount of fuel consumed in industrial production.

Calculation: Regional fossil fuel combustion in stationary sources per capita = \sum (fuel combustion) \div regional population

\sum Fuel Combustion for each fuel type = [(Btu/Household/HDD for space heating) X HDD X (# of households)] + [(Btu/Household/CDD for space cooling) X CDD X (# of households)] + [(Btu/Household for dhw) X (# of households)] + [(#of Employees in region / # of employees in state) * Statewide commercial consumption] + [(#of Employees in region / # of employees in state) * Statewide Industrial consumption] - [Industrial fuel consumption * % consumed in non-energy uses]

Required Data	Definition	Suggested Dataset
Households	LPG, kerosene, natural gas, fuel oil, coal	LPG: American Community Survey (US

Required Data	Definition	Suggested Dataset
using a specific fuel type		Census Bureau 2008) Natural Gas: table A2 in EPA report ¹ Convert consumption data to BTUs using table A-1 on page 41 in the EPA report ² http://buildingsdatabook.eren.doe.gov/
CDD	Cooling degree day	National Climatic Data Center (DOC 2008)
HDD	Heating degree day	National Climatic Data Center (DOC 2008)
Household	person or group of people living in the same residence	US Census Bureau 2010
DWH	Domestic hot water	American Community Survey (US Census Bureau 2008)
# of Employees	Persons who are employed full or part time during a given payroll period. Temporary employees and those on paid-leave are included.	US Bureau of Labor Statistics
Statewide commercial and industrial consumption	Includes fuel types listed above as well as motor gasoline, petroleum coke, naphtha, coking coal, and miscellaneous petroleum products	See section 2.1.3 of EPA report

Regions: New York City, Southern Tier, Mid Hudson

1D: Regional electricity grid fuel mix

Indicates the penetration of non-fossil fuel-based electricity sources.

Calculation:
Installed electricity generation capacity by type (high level calculation)

Required data	Definition	Suggested dataset
Installed electricity generation capacity by type of fuel source	MW of generating capacity by type (natural gas, coal, nuclear, wind, etc.)	NYSERDA Patterns & Trends, EIA

Regions: Long Island

¹ Draft Regional Greenhouse Gas Inventory Guidance from the US EPA from January 20, 2009
<http://climateprotection.org/pdf/Appendix-F-USEPA-Draft-Regional-Inventory-Guidance-1-20-09.pdf>

² Ibid.

1E: Reduction in annual energy use per end use

Calculation:
 Σ (energy use reduction as a result of residential energy efficiency projects)
 Σ (energy use reduction as a result of commercial energy efficiency projects)
 Σ (energy use reduction as a result of industrial energy efficiency projects)

Required data	Definition	Suggested dataset
Energy Efficiency – Total reductions in annual energy use based on projects to reduce fuel consumption per end use (residential, commercial, and industrial)	Assess reductions from programs established to increase energy efficiency (To address EEPS)	Tracking of energy efficiency projects and energy saved within the region using PSC NYSERDA programs tracking and project specific data, utilizing GHG Protocol Calculation Methods See quarterly NYSERDA reports for energy savings/program http://www.nyscrda.ny.gov/Programs/Program-Evaluation/NYERDA-Evaluation-and-Status-Reports.aspx - - Each utility has a monthly scorecard of energy efficiency savings

Regions: Long Island, Western

1F: Number of Households and Businesses Enrolled in Energy Efficiency Programs and Implementation of NYSERDA-Funded Projects

Calculation:
 Household Energy Efficiency Program Enrollment = Σ (Households enrolled in energy efficiency programs)
 Business Energy Efficiency Program Enrollment = Σ (Businesses enrolled in energy efficiency programs)
 NYSERDA funded Energy Efficiency Projects = Σ (Projects funded by NYSERDA energy efficiency programs)
 Energy savings from NYSERDA-funded Energy Efficiency Projects = Σ (Energy saved from projects funded by NYSERDA energy efficiency programs)

Required data	Definition	Suggested dataset
<ul style="list-style-type: none"> • Household Energy Efficiency Program Enrollment • Business Energy Efficiency Program Enrollment • Energy savings from NYSERDA- 		Enrollment reports from identified programs; NYSERDA

funded Energy Efficiency Projects		
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Regions: Mohawk Valley

1G: Number of public buildings that have installed a renewable thermal energy fuel source to replace or supplement fossil fuel use.

<p>Calculation: Renewable Energy Capacity = Σ (capacity of all renewable energy sources) Σ (capacity of all renewable energy sources) = On-Site Solar PV Capacity + On-Site Solar Thermal Capacity + On-Site Wind Turbine Capacity + Capacity of Other Renewable Sources</p>

Required data	Definition	Suggested dataset
On-site renewable energy capacity and generation sources		See the following reports: NYSERDA RPS Annual report http://www.nysERDA.ny.gov/en/Page-Sections/Energyand-Environmental-Markets/Renewable-Portfolio-Standard/Documents.aspx?sc_database=web RPS Annual Report NYISO Gold Book GHG inventory/utilities

Regions: North Country

2. TRANSPORTATION

2A: Total percentage of people commuting via walking, biking, transit, and carpooling

This indicator provides a view to access to alternative modes of transportation.

Calculation: For each mode,
 Percent of workers commuting by mode X =

$$\frac{\text{Number of workers traveling by mode X in region}}{\text{Total number of workers in region}} \times 100$$
 See HUD OSHC Guidance on Performance Measurement and Flagship Sustainability Indicators, p9, for step-by-step instructions on how to calculate and access data sources:
<http://portal.hud.gov/hudportal/documents/huddoc?id=PerfMeasGuidJune2012.zip>

Required data	Definition	Suggested dataset
Total number of workers in region	Persons who are employed full or part time during a given payroll period. Temporary employees and those on paid-leave are included.	American Community Survey (ACS). Select Topics, then People, then Employment, the Commuting (Journey to Work), then appropriate Geography http://factfinder2.census.gov (data updated every year for large communities, less frequently for smaller)
Number of workers commuting by carpool, public transit, bike, walk	The number of employed persons that commute to work by carpool, public transportation, bike, or walking in the region/county	American Community Survey (ACS) Table B0830: Means of Transportation to Work. Universe: Workers 16 years and over 2008-2010 American Community Survey 3-Year Estimates (data updated every year for large communities, less frequently for smaller)

Regions: New York City, Southern Tier, Western, Mid Hudson, Long Island, Finger Lakes, Mohawk Valley, Capital, North Country

2B: Vehicle miles traveled per capita

This indicator provides a view to automobile usage in a region.

Calculation:

$$\frac{\text{(Vehicle miles traveled in MPO areas + Vehicle miles traveled in non-MPO areas)}}{\text{Total population of region}}$$

Required data	Definition	Suggested dataset
Vehicle miles traveled in MPO areas	Number of miles traveled in a personal vehicle for MPO areas within region	Metropolitan Planning Organizations
Vehicle miles traveled in non-MPO areas	Number of miles traveled in a personal vehicle for locations outside of MPO areas within the region	Get estimates from DOT website

Regions: Southern Tier, Western, Mid Hudson, Long Island, Finger Lakes, Mohawk Valley, Capital, North Country

2C: Number of alternative fuel registered vehicles

This indicator provides a view to fuel efficiency in transport.

Calculation:
No calculation required

Required data	Definition	Suggested dataset
# of alternative fuel registered vehicles	Hybrid, LNG, and electric vehicles	DMV (updated regularly)

Regions: Long Island, Mohawk Valley

2D: Transportation fuel consumption per capita

Mobile energy combustion can be significant at a regional level – this indicator provides insight into transport activity and the associated energy use.

Calculation:
Total transportation fuel consumption (in MMBtu) / regional population

Required Data	Definition	Suggested Dataset
Transportation fuel consumption	Fuels derived from oil, such as gasoline and diesel. Electric and natural gas vehicles should not be included.	Tier I or II GHG inventory
Population		Economic Development Working Group; US census

Regions: Southern Tier, Mid Hudson, Finger Lakes

2E: Percentage of population within X miles of transit

This indicator provides a view to the need for automobiles.

Calculation:
For Urban/Suburban Areas - Population within 0.5 miles of transit ÷ total population of region
For park and ride transportation - Population within 5 miles of transit ÷ total population of region
For inter-city transportation - Population within 30 miles of transit ÷ total population of region

Required data	Definition	Suggested dataset
Population within X miles of transit	Regional population within a walkable range of a form of public transportation (e.g. light rail, subway, bus)	New York State Department of Transportation
Bus and Ferry Routes	Bus and ferry routes within the region	Regional Counties

Regions: New York City

2F: Transit Score

Transit scores will be generated for the entire landscape to identify those locations that have the conditions to support transit (enabling the identification of locations for potential future transit) and those locations that do not have the conditions to support transit (enabling the identification of locations with transit and the land use changes necessary to make that transit more successful).

Calculation:
 Transit score = 0.41 (population per acre) + 0.09 (jobs per acre) + 0.74 (zero car households per acre)
 Low: < 0.6
 Marginal: 0.60-1.0
 Medium: 1.01-2.50
 Medium-High: 2.51-7.50
 High: > 7.50

Required Data	Definition	Suggested Dataset
Population per acre	Density of population	US Census
Jobs per acre	Density of employment	NYS DOL
Zero car households	Households without cars	US Census

Additional Comments and Discussion:

Example of appropriateness of transit services/investment by transit score:

A: Appropriate

C: may be appropriate depending on conditions

Transit Mode	High	Med-High	Med	Marginal	Low
Heavy Urban Rail	A				
Light Rail Transit	A	A	C		
Commuter Rail	A	A	C	C	
Bus Rapid Transit	A	A	C		
Bus Lanes	A	A			
Bus Priority Treatment	A	A	C		
Fix Route / Line Haul Bus Service	A	A	A	C	
Express Bus	A	A	C	C	C
Local Circulator Bus / Shuttle / Paratransit	A	A	A	C	A

Note: For this indicator, provide justification for the constants assigned to each variable of the equation.

Regions: Mid Hudson

2G: Transit Ridership

This indicator provides insight into the level of mass transit use.

Calculation: None required.

Required Data	Definition	Suggested Dataset
Transit Ridership	Amount of annual riders	Metropolitan Planning Organizations or NY Department of Transportation

Regions: Mid Hudson, Western, Mohawk Valley

2H: Travel Time to Work

This indicator tracks trends in travel commute times, reflecting the economic and social impacts of delays resulting from congestion.

Calculation: Average commute travel time in minutes for the region (averaged across U.S. Census responses for the Region)

Required Data	Definition	Suggested Dataset
Average Commute Travel Time	Average commute time in minutes for all modes.	American Community Survey – U.S. Census

Note: There may be an opportunity to track congestion on key corridors via NY511 in the future, but this is not available yet. This would measure delay

2G: Active vehicle registrations per 1,000 capita

This indicator tracks the amount of vehicles registered in a region, which reflects the degree of auto dependence in that region.

Calculation: Active vehicle registrations per 1,000 capita ((Total active vehicle registrations) / (The total population)) / 1,000

Required Data	Definition	Suggested Dataset
Active vehicle registrations	Active vehicle registrations per 1,000 capita	NYSDMV

Regions: Mid Hudson

2H: Annual commercial truck traffic at all toll barriers in the Region

This indicator tracks the amount of commercial traffic at toll barriers in a region, which reflects the degree to which goods are transported by on-road vehicles in that region.

Calculation: Total annual commercial traffic at toll barriers

Required Data	Definition	Suggested Dataset
Total annual commercial traffic	Total annual commercial traffic at toll barriers	NYSBA

Regions: Mid Hudson

2I: Walk score of downtown areas

Calculation: None required

Required Data	Definition	Suggested Dataset
WalkScore (2012)	Average Downtown Walk Score: 0.52 (medium-high walkability) (defined as ratio of the area of 1-mile walkshed to that of 1-mile straight line radius) Based on observations by Regional Plan Association and sample areas in the tri-state region, a rule-of-thumb threshold for walkability categories: a walk score lower than 0.3 generally indicates low walkability, between 0.3 and 0.6 medium, and above 0.6 high.	WalkScore (2012); US Census

Regions: Long Island

2J: Freight tonnage moved - Percent by truck; Freight tonnage moved - Percent by rail

Calculation: None required

Required Data	Definition	Suggested Dataset
Freight tonnage moved - Percent by		IHS/Global Transearch Database via NYSDOT

truck		
Freight tonnage moved - Percent by rail		IHS/Global Transearch Database via NYSDOT

Regions: Finger Lakes

2K: Regional trail network – miles of trails in the region

Calculation: None required. Total Pedestrian, bicycling, equestrian, snowmobile trails

Required Data	Definition	Suggested Dataset
Total miles of trails in region		County/NYS Parks/Dept of Conservation; State-wide parks advocacy organization

Regions: Mohawk Valley

2L: Change in transit volume minus change in auto traffic volume since 2007

Calculation: Change in transit volume minus change in auto traffic volume

Required Data	Definition	Suggested Dataset
Transit Volume, Auto traffic volume		New York City Department of Transportation

Regions: New York City

2M: Vehicle revenue miles (miles transit vehicles travel in revenue service)

Calculation: None required; direct count of Vehicle revenue mile

Required Data	Definition	Suggested Dataset
Vehicle revenue mile	miles transit vehicles travel in revenue service	National Transportation Database, http://www.ntdprogram.gov/ntdprogram/data.htm

Regions: New York City

2N: % of bridges meeting state of good repair (FY)

Calculation: Number of bridges in state of good repair /total number of bridges in region

Required Data	Definition	Suggested Dataset
Number of bridges in state of good repair; total number of bridges in region		New York City Department of Transportation

Regions: New York City

2O: % of roads meeting state of good repair (FY)

Calculation: Number of roads in state of good repair/total number of roads in region

Required Data	Definition	Suggested Dataset
Number of roads in state of good repair; total number of roads in region		New York City Department of Transportation

Regions: New York City

2P: % of station components meeting a state of good repair

Calculation: Number of station components meeting a state of good repair /total number of station components in region

Required Data	Definition	Suggested Dataset
Number of station components meeting a state of good repair /total number of station components in region		Metropolitan Transportation Authority

Regions: New York City

3. LAND USE & LIVABLE COMMUNITIES

3A: Land-use Patterns – Per capita land consumption

This indicator correlates to environmental consumption.

Calculation:

Characterize land-use within region according to the MRLC’s National Land Cover Database. Compute the total amount of land that is developed. Divide this total regional area by the population of the region to compute the per capita land consumption.

Required data	Definition	Suggested dataset
Area of developed land within region	Total area of developed land within region	MRLC – Multi-Resolution Land Characteristics Consortium - National Land Cover Database - http://www.mrlc.gov/

Regions: Southern Tier, Western, Long Island, Finger Lakes, Mohawk Valley, Capital, North Country

3B: Percentage of redevelopment of vacant buildings and sites

This indicator provides insight into regional development patterns, and more specifically the level of reuse and redevelopment of vacant buildings and previously developed sites in the Region.

Calculation:

Renovation and re-use of buildings and redevelopment in the region / Total development in the region

Required data	Definition	Suggested dataset
Building Re-use and Site Redevelopment Per Year	Building renovation/re-use of vacant buildings by square feet and redevelopment in acres per year for communities in the Region.	Town, village, city, and county planning department permit records. Tax parcel data classification changes
Total Development Per Year	Total development in building square footage and acres per year for the Region.	Town, village, city, and county planning department permit records. Analysis of satellite imagery.

Regions: Long Island

3C: Land-use Patterns – Percentage of jobs and population occurring inside municipal centers

This indicator correlates to the amount of transportation required to commute. ‘Municipal centers’ refers to areas deemed priority for growth, as deemed appropriate by the region.

Calculation:

Total jobs within municipal centers of region ÷ total jobs in region

Proportion of population within existing municipal center = (municipal center current populations) ÷ (Region current population)

Required data	Definition	Suggested dataset
Total jobs within municipal centers	Jobs found within municipal centers of the region	http://onthemap.ces.census.gov/ (updated annually)
Total Jobs within region	All jobs found inside and outside municipal centers within the region	http://onthemap.ces.census.gov/ (updated annually)
Current Population in municipal centers	Sum of most recent ACS population estimates for all municipal centers	American Community Survey http://factfinder2.census.gov (data updated every year for large communities, less frequently for smaller)
Current Year Region-wide Population	Sum of most recent ACS population estimates for all counties	American Community Survey (data updated every year for large communities, less frequently for smaller)

Regions: Southern Tier, Finger Lakes, Mohawk Valley, North Country

3D: Percentage of housing units located within cities and villages that are affordable to low-moderate income households

To calculate this indicator, go to <http://egis.hud.gov/cpdmaps/> and close the Guide Me window that pops up on the screen. Use the map tools to zoom in on the areas of interest. Click on the Reports icon on the toolbar on the top of the screen. In the Target Jurisdiction drop-down menu, select “Place.” Use the drawing controls in the window to draw a selection around the entire region (using the “draw polygon” tool). Click the Next button in the lower-right corner of the Reports window. On the next screen, you will be prompted to choose an optional set of reference data to include in the report. “None (default)” should be selected; ensure that it is and then click the Next button. On the next screen, you will be prompted to choose the data that you want to include in the report. Click the “Uncheck All” button, and then click the check boxes next to Housing Supply, then click the Next button. On the next screen, you can enter a customized title for the report if you wish, and then click the Finish button in the lower right-hand corner of the Reports window. Your browser will download an Excel file of the report. (Note: if the download does not begin, you may need to turn of the pop-up blocker on your website.) Open the Excel file and select the housing supply worksheet to perform the following calculation.

Calculation:

Percentage of units located in the region’s cities and villages that are affordable to low-moderate income households =

[Σ The number of owner-occupied housing units located within cities and villages that are affordable to households earning 80% HudAnnualMedianFamilyIncome(HAMFI) + the number of rental units in cities and villages affordable to households earning 80% HAMFI]

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[Σ Total number of total owner-occupied units in cities and villages + the total number of rental units in cities and villages]

Required data	Definition	Suggested dataset
Owner-occupied affordable housing units within cities and villages	The number of owner-occupied housing units located within cities and villages that are affordable to households earning 80% HAMFI	http://egis.hud.gov/cpdmaps/
Renter-occupied affordable housing units within cities and villages	The number of rental units in cities and villages affordable to households earning 80% HAMFI	http://egis.hud.gov/cpdmaps/
Owner-occupied housing units within cities and villages	The total number of total owner-occupied units in cities and villages	http://egis.hud.gov/cpdmaps/
Renter-occupied housing units within cities and villages	The total number of rental units in cities and villages	http://egis.hud.gov/cpdmaps/

Regions: New York City

3E: Housing – Housing density (for urban, suburban, and rural). This indicator provides a view to the housing mix in an area which correlates to environmental impact.

Calculation:

Urban Housing Density - \sum Number of Units (urban areas) \div \sum Square Miles of land area (urban areas);
 Suburban Housing Density - \sum Number of Units (suburban areas) \div \sum Square Miles of land area (suburban areas);
 Rural Housing Density - \sum Number of Units (rural areas) \div \sum Square Miles of land area (rural areas)

The following population densities can be used for the purposes of analysis:

- Rural – Fewer than 500 people per square mile
- Suburban – Between 500 and 999 people per square mile
- Urban – Greater than 1,000 people per square mile

Required data	Definition	Suggested dataset
Square miles of land area	Total area in miles minus the water area in miles within town	U.S. Census Bureau – Fact Finder
Number of units	Total number of units within town	U.S. Census Bureau – Fact Finder

3F: Land-use Patterns – Sprawl-entropy Index. This metric provides a view to the extent of sprawl in a region. This correlates to transportation usage.

Calculation:

Based on Shannon Index:

Where P1 is the percentage of total regional area in category 1, P2 is the percentage of total regional area in category 2, and P3 is the percentage of total regional area in category 3.

Using census tract data for area and population, each tract can be classified as one of the following categories:

- Category 1 (densely populated/Urban) = 1,000+ population per square mile,
- Category 2 (moderately populated/ Suburban) = 500 – 999 population per square mile,
- Category 3 (lightly populated/ Rural) = 0 – 499 population per square mile.

The area of each tract should be added to the total for the appropriate category. Each category will be converted into a percentage of the total area sampled to determine the sprawl-entropy index. This index will result in a number ranging from 0 to 1, where 1 represents high levels of sprawl.

Required data	Definition	Suggested dataset
Census Tract Population	Total population for each census tract within region	U.S. Census Bureau – 2010 Census – http://www.census.gov/
Census Tract Area	Area of each census tract within region in square miles	U.S. Census Bureau – 2010 Census – http://www.census.gov/

3G: % of New Yorkers that live within a 1/4 mile of a park

Calculation: Includes schoolyards that are part of “Schoolyards to Playgrounds” program

Required data	Definition	Suggested dataset
GIS analysis		Performed directly by Parks Department

Regions: New York City, Western, Mid Hudson, Long Island

3H: Number of acres of high value active agricultural land in the Region and the number of acres of agricultural land in non-agricultural use.

This indicator is relevant because it provides an understanding on the types of land uses in the community and if agricultural land is available for farming/economic development.

Calculation: High value farmland defined by Natural Resources Conservation Service soil surveys in GIS comparison with agricultural lands zoned for other use.

Regions: Southern Tier, Finger Lakes, Mohawk Valley

3I: Acres of agricultural land enrolled in NYS Soil & Water Conservation Committee’s Agricultural Environmental Management Program (AEM) and Acres of Certified, Managed Forestland (Forest Stewardship Council + American Tree Farm System)

Calculation:
 Areas protected annually =
 Σ Acres of agricultural land enrolled in NYS Soil & Water Conservation Committee’s Agricultural Environmental Management Program (AEM)
 + Σ Acres of Certified, Managed Forestland (FSC Certification + American Tree Farm System)

Required data	Definition	Suggested dataset
Acres of agricultural land enrolled in NYS Soil & Water Conservation Committee’s Agricultural Environmental Management Program	AEM is the vehicle by which environmental regulations have been effectively implemented on larger livestock farms. With the assistance of AEM Certified Planners, these farms have developed science-based Comprehensive Nutrient Management Plans to control runoff, conserve soil and recycle nutrients.	Tracked by Soil & Water Conservation Districts.
Acres of Certified, Managed Forestland (FSC Certification)	Assesses forest management using the FSC principles, criteria, and standards, each certifier uses their own evaluative process. Certifiers evaluate both forest management activities (forest certification) and tracking of forest products (chain-of-custody certification).	http://www.fsc.org/certification.4.htm
Acres of Certified, Managed Forestland (American Tree Farm)	Forest certification is the certification of land management practices to a standard of sustainability. A written certification is issued by an independent third-	http://www.treefarmsystem.org/certification

System)	party that attests to the sustainable management of a working forest.	
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Regions: Southern Tier, Western, Mohawk Valley, North Country

3J: Acres protected through NYS DEC and other public, non-profit and private protected lands.

Calculation:
 Acres protected annually =
 Σ Acreage protected through state-owned forested lands and conservation easements, state parks, conservation easements and other public, non-profit, and private protected lands.

Required data	Definition	Suggested dataset
Forested land purchased or protected by NYSDEC or OPRHP	Acreage of land that is owned agencies or permanently protected under conservation easements by New York state agencies – Department of Environmental Conservation or Office of Parks, Recreation and Historic Preservation.	<p>NYS GIS Clearinghouse home http://gis.ny.gov/index.cfm</p> <p>NYS DEC http://gis.ny.gov/gisdata/inventories/member.cfm?organizationID=529</p> <p>NYS Parks http://gis.ny.gov/gisdata/inventories/member.cfm?organizationID=588</p> <p>Note: DEC is working on a ‘Conserved Lands’ dataset that should combine many sources of information into one more easily accessible data source. No timeline for completion was available.</p>
Forested land protected under conservation easement or owned by FLLT.	Acreage of land owned or protected by Finger Lakes Land Trust	Finger Lakes Land Trust www.fllt.org
Forested land owned or protected by NYC Department of Environmental Protection	Acreage of land owned or permanently protected by the NYC DEP to protect the water supply for New York City. This applies mainly to Delaware County in the ST region.	<p>NYC Department of Environmental Protection Terry Spies, Section Chief, GIS 845 340 7809 (office), tspies@dep.nyc.gov</p>
Farmland protected by PDR	Acreage of land protected in Purchase of Development Rights Programs (PDR)	<p>NYS Department of Ag and Markets http://www.agriculture.ny.gov/AP/agservices/agricultural-districts.html CUGIR (Cornell University Geospatial Information Repository) http://cugir.mannlib.cornell.edu/index.jsp</p>

3K: Land use patterns: housing mix

This indicator shows housing mix in the region.

Calculation:
Number of housing units of each type / total number of housing units

Required Data	Definition	Suggested Dataset
Number of housing units by type	Number of single family houses, duplexes, triplexes, multi-family units, etc.	US Census
Total number of housing units	All housing units found in the study area	US Census

Regions: Mid Hudson

3L: Acres of urbanized land per capita

Calculation:
(Total acreage of urban development) / (Total population)

Required Data	Definition	Suggested Dataset
Total acreage of urban development	Acres of urbanized land in the region	Urban development data – Urban Area, U.S. Census
Total population	Total population	US Census

Regions: Mid Hudson

3M: Rate of poverty in population centers

Calculation:
Poverty rate by geography

Required Data	Definition	Suggested Dataset
Total acreage of urban development	Acres of urbanized land in the region	Urban development data – Urban Area, U.S. Census

Regions: Finger Lakes

3N: Grocery Stores per Capita

Calculation:

The number of supermarkets and grocery stores in the county per 1,000 county residents.

Required Data	Definition	Suggested Dataset
Total number of grocery stores in region		Economic Research Service (ERS), U.S. Department of Agriculture (USDA). Food Environment Atlas. http://www.ers.usda.gov/data-products/foodenvironment-atlas/go-to-the-atlas

Regions: North Country

3O: Number of Community Centers Awarded Brownfield Opportunity Areas Funding

Calculation:

None required; direct count.

Required Data	Definition	Suggested Dataset
Number of participating communities; Department of State Brownfield Opportunity Area Program (BOA)		Number of participating communities; Department of State Brownfield Opportunity Area Program (BOA): http://www.dos.ny.gov/communitieswaterfronts/brownFieldOpp/BOA_Projects/region06.html

Regions: Mohawk Valley

4. WASTE MANAGEMENT

4A: Total Solid waste generated per capita

Description: This indicator provides an overall view of the region’s contribution to waste, including municipal solid waste (MSW), industrial, construction and demolition, and bio-solid waste.

Calculation:

Total regional solid waste generated per year =

\sum (MSW + Industrial + C&D + Bio Solids + Hazardous) per municipality per year

Solid waste generated per capita = total regional solid waste generated per year / regional population

Required Data	Definition	Suggested Dataset
Total MSW generated per year	Total municipal solid waste in tons per year for the entire region.	For year 1: use the Regional Tier II Greenhouse Gas Inventory OR DEC Landfill reports (currently available on the wiggio site under http://sustainableny.wiggiosites.com/folder/solid and sewage waste/2010_DEC_Landfill_and_WTE_data.xlsx On an ongoing basis use NYS Department of Environmental Conservation datasets http://www.dec.ny.gov/chemical/65541.html Solid Waste planning units
Total Industrial Solid Waste generated per year	Total industrial solid waste in tons per year for the entire region.	
Total C&D Solid Waste generated per year	Total construction and demolition (C&D) waste in tons per year for the entire region	
Total bio-solids waste generated per year	Total bio-solids waste in tons per year for the entire region.	
Total Hazardous waste generated per year	Total hazardous waste in tons per year for the entire region.	
Population of region	Total population of region	

Regions: Southern Tier, Western, Mid Hudson, Long Island, Finger Lakes, Mohawk Valley, Capital, North Country

4B: Solid waste diverted (i.e. not landfilled or exported) per capita

This indicator provides a view to the effectiveness of recycling initiatives.

Calculation:
 Total regional solid waste diverted per year / Population of region

Required data	Definition	Suggested dataset
Total regional solid waste generated per year	Total solid waste in tons per year for the region.	NYS Department of Environmental Conservation datasets http://www.dec.ny.gov/chemical/65541.html
Total regional solid waste that is diverted	Total solid waste in tons per year that is recycled, composted, or salvaged for the region	Solid waste planning units OR DEC Beyond Waste report http://www.dec.ny.gov/chemical/41831.html DEC Landfill reports (currently available on the wiggio site under http://sustainableny.wiggiosites.com/folder/solid_waste/2010_DEC_Landfill_and_WTE_data.xlsx
Population of region	Total population of region	U.S. Census Bureau – Census – http://quickfacts.census.gov/qfd/states/36000.html (updated every 10 years)

Regions: New York City, Western, Mid Hudson, Long Island, Finger Lakes, Mohawk Valley, North Country

4C: Percentage of total municipal solid waste generated that is landfilled, combusted, or exported.

This indicator provides a view of the extent to which landfills are used.

Calculation:
 Total regional solid waste generated per year that is landfilled, combusted, or exported / Total regional solid waste generated per year

Required data	Definition	Suggested dataset
Total Municipal solid waste generated per year	Total municipal solid waste in tons per year for the region.	Regional Tier II Greenhouse Gas Inventory OR NYS Department of Environmental Conservation – http://www.dec.ny.gov/chemical/65541.html
Total regional solid waste that is landfilled	Total municipal solid waste in tons per year that is landfilled	Regional Tier II Greenhouse Gas Inventory OR NYS Department of Environmental Conservation http://www.dec.ny.gov/chemical/65541.html

4D: Annual energy use of waste collection fleet per vehicle – by fuel type. This indicator correlates to the amount of waste that is generated.

Calculation:

Collect a representative sample of the yearly gallons of gasoline and other fuel types used by the waste collection fleet for at least 25% of total waste collected in your region. Compute an average for the amount of gasoline used for this representative sample. Divide this average energy use by the percentage sampled to compute the total regional energy used by waste collection fleets. Additionally, collect data on the number of vehicles for each of the sampled waste collection fleets, and divide by the percentage of total waste accounted for in your sample (at least 25%). This will give you an estimate on the total number of waste collection vehicles in your region. Please note that the representative sample must also take into account regional percentages of area that is considered suburban, urban, and rural. The following population densities can be used for the purposes of analysis:

- Rural – Fewer than 500 people per square mile
- Suburban – Between 500 and 999 people per square mile
- Urban – Greater than 1,000 people per square mile

Required data	Definition	Suggested dataset
Total annual energy used for regional municipal solid waste collection	Estimation based on representative sample of annual energy used by fleets collecting municipal solid waste by fuel type (as described above)	NYS Department of Environmental Conservation
Total number of MSW collection vehicles	Estimation based on representative sample of the number of municipal solid waste vehicles in the region by fuel type	NYS Department of Environmental Conservation

Regions: Western

4E: Public participation in waste management plans and actions

This indicator measures public involvement, education, and the transparency of the waste management sector in a region.

Calculation: None required.

Required data	Definition	Suggested dataset
Number of public outreach meetings or other actions	Number of public meetings held to discuss plans, actions, or policy of solid waste management and the number of public outreach actions taken to educate the public on new policy	County and municipal government, Waste Management Utility Public Outreach Department

4F: Cost of waste management method per metric ton of waste

This indicator evaluates the monetary cost of waste processing per ton of waste through a selected waste management process.

Calculation: Annual cost of operating a solid waste treatment facility / total annual tons of waste processed

Required Data	Definition	Suggested Dataset
Annual facility operating costs	Total annual (non-subsidized) cost of operating a solid waste treatment facility	Waste treatment facility, municipal government
Total weight of waste processed	Total weight of waste processed through a solid waste facility per year	Waste treatment facility, municipal government

Regions: Mohawk Valley

4G: Expenditures per Capita Dedicated to Education and Outreach

Calculation: Annual budget for education and outreach / regional population

Required Data	Definition	Suggested Dataset
Annual budget for education and outreach		Annual budgets from Planning Units and or County government.
Regional population		U.S. Census Bureau http://quickfacts.census.gov/qfd/states/36000.html (updated every 10 years)

Regions: Mohawk Valley

5. WATER MANAGEMENT

5A: Water demand per capita, by sector

This indicator provides a breakdown of water usage with respect to the population as well as each sector of use.

Calculation:

Water demand by sector/total population of region
 Use USGS reported sectors for water use: public supply, domestic, irrigation, livestock, aquaculture, industrial, mining, and thermoelectric power.

Required data	Definition	Suggested dataset
Total water use of region	Summation of the county water use data for all counties within region	USGS Water Use County Data – http://water.usgs.gov/watuse/data/2005/index.html
Population of region	Summation of county data on population	U.S. Census Bureau – Census – http://quickfacts.census.gov/qfd/states/36000.html

Regions: New York City, Western, Mid Hudson, Long Island, Finger Lakes, Mohawk Valley, North Country

5B: Total Number of Impaired Waters

This indicator quantifies those waters that do not support appropriate uses and that may require development of a Total Maximum Daily Load (TMDL)

Calculation:

∑ bodies of water in region listed in part 1 and 2 of NYDEC Section 303(d)

Required Data	Definition	Suggested Dataset
Total number of impaired waters	Part 1 - Individual Waterbodies with Impairment Requiring a TMDL Part 2 - Multiple Segment/Categorical Impaired Waterbodies - Includes Acid Rain Waters, Fish Consumption Waters, and Shellfishing Waters	NYSDEC http://www.dec.ny.gov/chemical/31290.html (updated every 2 years)

Regions: Southern Tier, Western, Mid Hudson, Long Island, Finger Lakes, Mohawk Valley, North Country

5C: Energy use by water and sewer utilities per million gallons supplied or treated

This indicator is correlated to water usage.

Calculation:

Energy use (MMBtu) per quantity of water treated =

$$\frac{\sum \text{Energy use by water and sewer utilities}}{\sum \text{million gallons supplied or treated}}$$

Required data	Definition	Suggested dataset
Public water and	Public water and	Descriptive Data of Municipal Wastewater Treatment Plants

wastewater treatment facilities in Southern Tier	wastewater treatment facilities in Southern Tier	in New York State (http://www.dec.ny.gov/docs/water_pdf/descdata2004.pdf)
Energy usage by local WWTPs	Energy used by local wastewater treatment plants (WWTPs)	Gather from WWTPs (Malcolm Purney document done on behalf of NYSERDA from 2009)
Water supply treated (if available)	The amount of water supply treated by WWTPs	Descriptive Data of Municipal Wastewater Treatment Plants in New York State (http://www.dec.ny.gov/docs/water_pdf/descdata2004.pdf)
Alternate: energy usage at Southern Tier utilities	Energy usage at Southern Tier water or wastewater utilities	Reach out to local/regional utilities
National estimates on energy usage at water facilities	National estimates of the energy usage of water facilities	CEC, 2005. California's Water-Energy Relationship. Prepared in response to the 2005 Integrated Energy Policy Report Proceeding (04-IEPR-01E) . (http://www.energy.ca.gov/2005publications/CEC-700-2005-011/CEC-700-2005-011-SF.PDF).

Regions: Southern Tier, Mid Hudson, Mohawk Valley

5D: Total area under conservation agreement per watershed unit-area

This indicator provides an overall view of watershed conservation efforts.

Calculation:
 Acres of land under conservation agreement / total acres of land within a watershed) x 100

Required data	Definition	Suggested dataset
Total area under conservation agreement in a watershed region	Acres of land protected from development by a conservation agreement	NYSDEC regional office
Total area within a regional watershed	Acres of land within a watershed	NYSDEC regional office

Regions: North Country

5E: Ratio of water withdrawn to renewable supply

This indicator examines the regional water balance – measure of renewable water supply versus consumption.

Calculation:
Renewable water supply – total water consumption

Required Data	Definition	Suggested Dataset
Total renewable water supply	Sum of precipitation and imports of water minus the water not available for use through natural evapotranspiration and exports	USGS Water Use - http://water.usgs.gov/watuse/misc/consuse-renewable.html
Total water consumed	Average consumption of water withdrawn from regional surface water supplies	USGS Water Use - http://water.usgs.gov/watuse/data/2005/index.html

Additional Comments and Discussion: This indicator can also provide insight into the water available for key ecosystem functions.

5F: Surface and ground water quality

This indicator tracks the overall quality of drinking water sources in the region.

Calculation: None required.

Required data	Definition	Suggested dataset
Number of Impaired water sources	Surface and ground waters that are negatively impacted by pollution	NYSDEC: Waterbody Inventory and Priority Waterbodies List (GIS)

Additional Comments and Discussion:

This indicator should be applied to both surface water and groundwater sources.

5G: Percentage of wastewater effluents with tertiary treatment

This indicator measures efforts to remove nutrients from wastewater effluents.

Calculation:
Total number of wastewater discharge outfalls / number of discharge outfalls with tertiary treatment) x 100

Required data	Definition	Suggested dataset
Total number of wastewater discharge outfalls	Wastewater outfalls that discharge into the environment (sea, river, lake, ground, etc.)	NYSDEC regional office Descriptive Data http://www.dec.ny.gov/docs/water_pdf/descdata2004.pdf
Number of discharge outfalls with tertiary treatment	Number of wastewater outfalls that have a tertiary treatment (effluent polishing) process in place prior to discharge into the environment.	NYSDEC regional office Descriptive Data http://www.dec.ny.gov/docs/water_pdf/descdata2004.pdf

Note: Since 2004 there have been some upgrades to treatment plants so this is not a current indicator. An update of this report has not yet been planned.

Regions: North Country

5H: Improvement in Waterbody Inventory/ Priority Waterbody List (WI/PWL) rating that is developed through Rotating Integrated Basin Studies (RIBS)

Calculation:

% water bodies with known impacts = (# water bodies with water body assessment categories: impaired waters or waters with minor impacts)/ (total # of water bodies)

Required data	Definition	Suggested dataset
Water body assessment rating	The water quality rating uses raw chemical and biological water quality data to measure the ability of the body of water to support a variety of uses, including water supply, recreation, and aquatic life.	WI/PWL Water body Assessment provides a rating of the water quality of bodies of water within each of the watersheds in New York State. http://www.dec.ny.gov/chemical/36730.html

5I: Percent impervious surface area relative to total developed and hardscaped surface

This indicator measures the percentage of impervious (built and hardscaped) surfaces in the region, which is correlated with stormwater runoff generation.

Calculation:

Impervious surface area (%) = (area of impervious surface / total hardscaped area) x 100

Required Data	Definition	Suggested Dataset
Total watershed surface area	Total surface area within a watershed	NYSDEC regional office (GIS)
Impervious area	Total impervious surface area within a watershed	NYSDEC regional office (GIS)

Note: It is unclear whether this data is readily available.

Regions: North Country, Mid Hudson

5J: Infrastructure reliability and efficiency

This indicator looks at the proportion of water that is produced but not delivered due to of leaks, broken infiltration and inflow, or otherwise inefficient infrastructure.

Calculation:

Total end user water consumption / total water withdrawn from environment

Required data	Definition	Suggested dataset
Total water	The volume of water withdrawn from	Utility data, NYSDEC

withdrawn	a surface or ground water source, in MGD.	
Total water delivered to consumer	Regional water demand in MGD	NYSDEC

Note: not sure if this data is readily available on a regional level. It may only be available on a water plant basis.

5L: % of customers that are metered

This indicator would address the ability of the region to measure the water used by its residents.

Calculation: None required

Required data	Definition	Suggested dataset
Total number of residents whose water use is metered		Regional water utilities
Total population of region		US Census data

5M: Percent of streams assessed under biomonitoring program

Calculation: (Total number assessed) / (Total number of streams)

Required data	Definition	Suggested dataset
Total number of streams assessed		NYSDEC Stream Biomonitoring Program, 2012
Total number of streams		NYSDEC Stream Biomonitoring Program, 2012

Regions: Mid Hudson

5N: Number of impaired waters with established total maximum daily load requirements

Calculation: (# water bodies in region for which a TMDL is developed) / (Σ bodies of water in region listed in part 1 and 2 of NYDEC Section 303(d))

Required data	Definition	Suggested dataset
TMDLs		# TMDLs http://www.dec.ny.gov/docs/water_pdf/303dlistpropfnl2012.pdf
Number of impaired waters		All Impaired Waters -NYSDEC http://www.dec.ny.gov/chemical/31290.html

Regions: Finger Lakes

50: Number of drinking water analyses below maximum contaminant level

Calculation: % of drinking water analyses that are below maximum contamination level is as defined by NYC DEP

Required Data	Definition	Suggested Dataset
% of drinking water analyses that are below maximum contamination level is as defined by NYC DEP		New York City Department of Environmental Protection

Regions: New York City

6. ECONOMIC DEVELOPMENT

6A: Housing + Transportation Index: Transportation / Housing affordability

This indicator provides insight into the cost of living within the region.

Calculations:
None required.

Required Data	Definition	Suggested Dataset
H + T Index	Percentage of household income spent on housing and transportation	H+T Affordability Index – Center for Neighborhood Technology (http://htaindex.cnt.org/)

Regions: Southern Tier, Western, Long Island, Finger Lakes, Mohawk Valley, Capital, North Country

6B: Sector Analysis – Jobs created (by sector)

This indicator provides a macro level view to economic development and represents economic growth.

Calculation:
Jobs Created = \sum Jobs created by county = Change in total private sector jobs + Change in total government sector jobs + Change in farm jobs

Required data	Definition	Suggested dataset
Change in total jobs	Increase of decrease in nonfarm jobs over a one month period not seasonally adjusted	Bureau of Labor Statistics and NYS Labor Department (updated quarterly)

Regions: New York City, Long Island, Finger Lakes

6C: Unemployment rate

This indicator covers total unemployment as provided by the Bureau of Labor Statistics / NYS Labor Department. It provides a macro level view of economic development.

Calculation: None required.

Required Data	Definition	Suggested Dataset
Unemployment rate	Unemployment rate by county	NYS Department of Labor; 2010 United States Census; 2006-2010 American Community Survey (data updated every year for large communities, less frequently for smaller)

6D: Socioeconomics: average weekly wages

At the regional level, this indicator will demonstrate if or how policy changes or programs affect one region or industry disproportionately, in terms of wages. While census data is released quarterly, the average yearly wage can be used as an indicator because it will account for seasonal shifts.

Calculation: Average Annual Weekly Wage, by county, adjusted to 2012 dollars

Required Data	Definition	Suggested Dataset
Average Annual Weekly Wages by County	Average weekly wages, by county	Quarterly Census of Employment and Wages (http://www.bls.gov/cew/) http://data.bls.gov/pdq/querytool.jsp?survey=en In the query window, select: <i>New York State – County X – Total, all industries – Total covered – Average Weekly Wage.</i>

Regions: Capital

6E: Farms: acreage / production of farms

This indicator provides a macro level view to economic development a major industry in New York State.

Calculation: None required

Required data	Definition	Suggested dataset
Acreage of farms	Area of land used for growing crops and rearing animals, typically under control of one owner or manager.	NYS Office of the State Comptroller (see 2010 report) http://www.osc.state.ny.us/reports/other/agriculture21-2010.pdf (updated infrequently)
Production (\$) of farms	Cash receipts by county from farm marketings	USDA National Agricultural Statistics Service Annual Statistical Bulletin http://www.nass.usda.gov/Statistics_by_State/New_York/Publications/Annual_Statistical_Bulletin/2011/2011%20page90%20-%20Cash%20Receipts%20County%20Estimates.pdf

Regions: Southern Tier, Mid Hudson, Mohawk Valley

6F: Revenue generated from local businesses

This indicator provides a view to the portion of business activity within the Region that can be attributed to local businesses.

Calculation:
Regional retail sales at specialty stores – Regional retail sales at specialty chain merchants = Regional retail sales remaining to local independent merchants

Required data	Definition	Suggested dataset
Annual Revenue from Local Businesses	Revenue generated from businesses with headquarters and/or primary locations in the Region. The Business Alliance for Local Living Economies has proposed a methodology for defining local (http://www.livingeconomies.org/local-first-defining-local).	Previous studies have used sources such as Claritas and analysis of public filings and trade journals.

6G: Relationship of wages to changes in employment

This is an indicator of the types of jobs/wage earning opportunities being created in the Region. For example, if employment is increasing but wages are stagnant, this is a signal of the types and quality of employment opportunities being created.

Calculation:

Percentage change in weekly wages by sector annually.
Percentage change in employment by sector annually.

Required data	Definition	Suggested dataset
Wage Data by Sector	Percentage change in weekly wages by sector.	Department of Labor Sector/Wage Data
Employment Data by Sector	Percentage change in employment by sector.	Department of Labor Sector/Wage Data

Regions: Southern Tier, Mohawk Valley

6H: Farms: number of farmers markets

This indicator provides insight into market access for local food products.

Calculations: None required.

Required Data	Definition	Suggested Dataset
Number of farmers markets	Number of seasonal farmers markets within the region	GIS as available from Counties and NYS (farmers market layers); general farmers market listings

Regions: Mid Hudson, Mohawk Valley, North Country

6I: Economic Development - Total number of visitors and regional tourism dollars spent

This indicator provides a macro level view of economic development for a major industry in New York State.

Calculation: None required.

Required Data	Definition	Suggested Dataset
Total visitors to region	Number of visitors to the region	NYS Department of Economic Development, County Tourism Departments
Total dollars spent by visitors to region	Amount spent by visitors to region	NYS Department of Economic Development, County Tourism Departments

6J: Jobs and housing balance

This indicator measures the ratio of jobs to housing in the region.

Calculations:

Jobs and Housing Balance = Number of jobs in the region / number of housing units in the region.

Required Data	Definition	Suggested Dataset
Number of jobs	Regional jobs	US Census Bureau - Economic Census and Annual Economic Surveys; NYS Department of Economic Development
Number of housing units	Housing units	2010 Census; 2006-2010 American Community Survey

Regions: Mid Hudson

6K: GINI Index

This indicator measures the distribution of income within a region.

Calculations: None required.

Required Data	Definition	Suggested Dataset
GINI Index	GINI Index (at County and regional scale)	2010 Census; 2006-2010 American Community Survey

Regions: Capital

6L: Investment in infrastructure (transportation, drinking water and wastewater facilities, stormwater, and energy)

This indicator is intended to track resources dedicated towards improving aging infrastructure throughout the Region.

Calculation:

Transportation:

Σ Annual investment dollars in alternative fuel vehicle infrastructure

Σ Annual Investment dollars in public transportation
 Σ Annual investment dollars in bike/pedestrian infrastructure

Drinking Water and Wastewater:

Σ Annual investment dollars in water treatment and distribution infrastructure
 Σ Annual investment dollars in wastewater treatment and distribution infrastructure
 Σ Annual investment dollars in stormwater management infrastructure

Energy:

Σ Annual investment dollars in renewable energy projects
 Σ Annual investment dollars in smart grid infrastructure
 Σ Annual investment dollars in energy efficiency retrofits

Required data	Definition	Suggested dataset
Total Investment Dollars - Transportation	Total investment dollars for the installation of alternative fuel vehicle infrastructure and implementation of public transportation. Bike/pedestrian infrastructure has also been added as it is a noted priority for the Region.	Town, village, city, and county planning and transportation departments; NYSERDA; Capital District Transportation Committee (CDTC) and Capital District Transportation Authority (CDTA); TriState Transportation Campaign
Total Investment Dollars - Water	Total investment dollars for the treatment and distribution of water, wastewater, and stormwater in the Region.	Town, village, city, and county water and wastewater utilities; NYSERDA;
Renewable Energy	Total investment dollars in energy generated from natural resources such as sunlight, wind, tides, and geothermal heat.	Energy utilities in the region; town, village, city, and county planning departments; NYSERDA;
Smart Grid	Total investment dollars in a digitally enabled electrical grid that allows information to flow between the energy user and generator.	Energy utilities in the region; town, village, city, and county planning departments; NYSERDA;
Energy Efficiency Retrofits	Total investment dollars in renovations to existing or older buildings to decrease energy usage.	Energy utilities in the region; town, village, city, and county planning departments; NYSERDA;

Regions: Southern Tier, Mid Hudson, North Country

6M: Economic Activity: Gross Regional Product

Change in the region’s overall output would provide indicator of general economic development and how the regional economy may be changing.

Calculations: None required.

Required Data	Definition	Suggested Dataset
GRP, with breakdown by largest sectors, (potentially including biotech, IT, manufacturing or other REDC target industries)	Market value of final goods and services produced within the region	US Department of Commerce, Bureau of Economic Analysis; NYS Economic Development Council; or IMPLAN (\$350 cost per County for data)

7. CLIMATE CHANGE ADAPTATION

7A: Number of Sanitary and Combined Sewer Overflows

Calculation: None required.

Required Data	Definition	Suggested Dataset
Number of sanitary sewer overflows	Annual number of sanitary and combined sewer overflows reported	Local reporting or annual DEC reporting data

Regions: Western, Finger Lakes

7B: Flood zones: communities participating in NFIP Community Rating System

The National Flood Insurance Program's (NFIP) Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS: reduce flood losses, facilitate accurate insurance rating, and promote the awareness of flood insurance.

Calculation: None required.

Required Data	Definition	Suggested Dataset
Number of CRS Communities	The communities that are participating in CRS	http://www.fema.gov/library/viewRecord.do?id=3629

Regions: Southern Tier, Long Island, North Country

7C: The degree to which climate change and adaptation is discussed within the required Hazards Mitigation Plans (and 5-year updates)

Calculation:

% of Hazard Mitigation Plans (HMPs) that mention climate change = # of HMPs that mention climate change / total # of completed HMPs in the region

% of HMPs that discuss local impacts and specific vulnerabilities = # of HMPs that discuss local impacts and specific vulnerabilities / total # of completed HMPs in the region

% of HMPs that include a climate change vulnerability assessment and suggest specific adaptation options = # of HMPs that include a climate change vulnerability assessment and suggest specific adaptation options / total # of completed HMPs in the region

Required data	Definition	Suggested dataset
Copies of the Hazards Mitigation Plans for all required counties, municipalities, in the Southern Tier region.	The percentage of Hazards Mitigation Plans in which (1) climate change is discussed, (2) local climate change impacts and vulnerabilities are assessed, and (3) adaption actions are identified. In most cases, the HMP scoring should be inclusive – HMPs that are in the third category would also be counted in the first and second.	Each municipality, county that submits a FEMA-required Hazards Mitigation Plan. that should be readily available during each update.

Regions: Southern Tier, Finger Lakes, North Country

7D: Miles of transport routes, electric circuits, rail, and other critical infrastructure threatened by sea level rise (SLR) in the next 50/100 years

This indicator provides insight into the potential vulnerabilities of infrastructure due to flooding.

Calculation: GIS analysis required for baseline assessment.

Required Data	Definition	Suggested Dataset
Roads GIS file		NYS GIS Portal
SLR inundation GIS shapefile		To be created by Consultant Team

Note: This indicator is difficult to measure but there are some preliminary files available. Better quality data will be available in the near future.

Regions: Mid Hudson

7E: Economic value of property vulnerable to storm surges and flooding

This indicator provides a view to the potential economic impact of climate change.

Calculation:
Determine the regional area affected by a 100-year flood. Compute the economic value of flood zone areas in the affected areas using a sampling of assessed property and infrastructure values.

Required data	Definition	Suggested dataset
Base Flood Elevation boundary	Elevation boundary of flooding expected in the event of a 100-year flood	FEMA – Flood Insurance Rate Maps (firms)
Economic value of flood zone area	Assessed value of property	Town, village, and city assessor

Regions: Capital

7F: SAIFI – System Average Interruption Frequency Index

Calculation:
 SAIFI = Total number of customer interruptions / total number of customers served

Required data	Definition	Suggested dataset
Total number of customer interruptions	Total number of electricity customers service interruption within region	Regional Utilities
Total number of customers served	Total number of electricity customers within region	Regional Utilities

Regions: New York City, Long Island, Finger Lakes

7G: Ratio of land conserved to land developed

This indicator demonstrates the vulnerability of an area to climate change adaptation.

Calculation:
 Create an inventory of the land that is conserved using the many tools outlined in New York State’s Open Space Conservation Plan. These inventories should include the area of land protected within your regional boundaries. Divide the total area of land conserved by the total area of land developed.

Required data	Definition	Suggested dataset
Inventory of conserved land	A list of all conserved land within region that could include but is not limited to: agricultural districts, forest stewardship, designation programs, heritage areas, scenic districts, scenic byways, national/state registers, and natural landmarks.	NYS Department of Environmental Conservation, OPRHP – NYS Office of Parks, Recreation and Historic Preservation.

7H: Percentage of regional water supply governed by rule curves

A rule curve is a graph of water levels to which a particular body of water is regulated. Rule curves are a compromise for water level management between navigation levels, reliable water supply, and critical habitat concerns.

Calculation:
 Create an inventory of regional water supply in your area. Determine which of these bodies of water are governed by rule curves. Divide the number of waterways with rule curves by total number of water supply sources in your region.

Required data	Definition	Suggested dataset
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Inventory of Regional Water Supply Resources	Inventory of the sources for the region's water supply.	NYSDEC – New York State Department of Environmental Conservation
Inventory of Water Resources Governed by Rule Curves	Inventory of water resources that are governed by rule curves	NYSTACC – New York State Thruway Authority Canal Corporation

7I: Agricultural economic loss attributable to temperature and drought stress, and flooding

This indicator tracks the impacts of climate change on the agricultural sector of the Region – one of the Region's identified priorities.

Calculation: Σ Agricultural economic loss from temperature and drought stress Σ Agricultural economic loss from flooding

Required data	Definition	Suggested dataset
Agricultural Economic Loss	Total annual economic loss to the agricultural sector as a result of each of the impacts noted.	New York State Department of Agriculture & Markets: www.agriculture.ny.gov NYSERDA ClimAID USDA National Agricultural Statistics Service: www.nass.usda.gov

Regions: Finger Lakes

7J: Number of cooling centers and ozone action programs

This indicator is a measure of the regional infrastructure provided for vulnerable populations to address regional climate change impacts.

Calculations: Regional count of cooling centers and community ozone action programs.
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Required data	Definition	Suggested dataset
Cooling Centers and Ozone Action Programs	Total number of public centers in the Region set up to address the health effects of heat waves, particularly for vulnerable populations such as the elderly who may lack air conditioning. Communities with formal programs to alert residents to days with high ozone levels.	Village, town, city, and county survey data.

7K: Climate Adaptation - Water resources: River estuary water quality

Intense precipitation events are related to reduced water quality due to sewage discharged into the river. Climate change will result in such events occurring more frequently. Coupled with warming

temperatures (lower oxygen levels), low flowing rivers and loss of natural buffers and wetlands from sea level rise, the water quality of estuaries is at significant risk from climate change. Riverkeepers already often collect data from various locations throughout estuaries, including the sewage-indicating microbe of the genus *Enterococcus* (“Entero”). This microbe is recommended by the EPA for use as sewage indicators in both salt and fresh water.

Calculation:
Percent of water samples unacceptable (failing EPA single sample guideline for safe swimming)

Required Data	Definition	Suggested Dataset
Percent of water samples unacceptable	Failing EPA single sample guideline for safe swimming	Riverkeeper Water quality report

Additional Comments and Discussion: See the following report: http://www.riverkeeper.org/wp-content/uploads/2011/08/RvK_How-Is-the-Water_2006-10.pdf.

7L: Livable communities: number of high ozone days per year

The National Lung Association rates counties based on the number of high ozone days per year. <http://www.stateoftheair.org/2012/states/new-york/>

Calculation: None

Required Data	Definition	Suggested Dataset
Number of high ozone days per year		National Lung Association, EPA

Additional Comments and Discussion: This could also use the National Lung Association’s grading system: number of counties receiving a grade of C or below OR average grade all counties in region.

7M: Agriculture: crop damage from flooding

This indicator looks at the impact of flooding on the agricultural sector of the region’s economy.

Calculation: None

Required Data	Definition	Suggested Dataset
Crop damage (millions \$)		National Weather Service http://www.nws.noaa.gov/om/hazstats/state11.pdf

Note: This data may not be available on a regional or county level.

7N: Flooding: insurance premium rates OR number of flood insurance claims filed

Insurance premiums have increased dramatically across the nation due to high claims rate.

Calculation: None required.

Required Data	Definition	Suggested Dataset
Insurance Premium Rates		New York Property Insurance Underwriting Association
Number of Flood Insurance Claims Filed		New York Property Insurance Underwriting Association

Note: This data may not be readily available.

7O: Flood zone: number of people living in floodplains

Understanding how many people are at risk to flooding both present and future is a critical indicator. FEMA floodplains could be used as a baseline, however models that take into account future sea level rise and flooding should be used to calculate how many people will be living in harm's way in the future.

Calculation:

GIS is used to create a population density point file from land-use layers. This is called Dasymetric Mapping. USGS offers a GIS plug in tool to do this. The tool and methodology is explained here <http://geography.wr.usgs.gov/science/dasymetric/>.

Required Data	Definition	Suggested Dataset
Population data	Require census block group GIS data	Census, ACS (?)
Land-use data		USGS
FEMA Floodplains		FEMA/NY GIS portal
SLR/Flood models	Future floodplains based on precipitation changes and SLR	GIS layers to be created by Consultant Team

Additional Comments and Discussion: This requires GIS work. Future updates may be an issue, especially as projections change and new models are needed.

Note: The population data is not available on a frequent basis.

Regions: Mid Hudson

7P: CAIDI (Customer Average Interruption Duration Index)

Calculation: None required.

Required Data	Definition	Suggested Dataset
CAIDI (Customer Average Interruption Duration Index)		ConEdison

Regions: New York City

8. GOVERNANCE

8A: Programmatic Involvement – Number of Climate Smart Communities within region & number of certified Climate Smart Communities

This indicator measures programmatic involvement in the region, specifically with the Climate Smart Communities initiative.

Calculation:

None required.

Required data	Definition	Suggested dataset
Number of Climate Smart Communities	A community is considered part of Climate Smart Communities when it makes its pledge to the program.	Department of Environmental Conservation - http://www.dec.ny.gov/energy/50845.html
Number of Certified Climate Smart Communities	Certification attained in accordance with Climate Smart Communities program requirements	Department of Environmental Conservation - http://www.dec.ny.gov/energy/50845.html

Note: Certification will begin by end of 2013.

Regions: Southern Tier, Western, Long Island, Finger Lakes, Capital

8B: Leading by example – Benchmarking and LEED certifying municipal buildings.

This indicator demonstrates the influence of public policy decisions.

Calculation:

Quantify the number of municipal building within the region that were Energy Star benchmarked or LEED certified

Required data	Definition	Suggested dataset
Benchmarking and certifying - Number of municipal buildings	The number of municipal buildings within the regional border that have been Energy Star benchmarked or LEED certification.	

Regions: New York City

8C: Percent of regional population living in areas with local energy codes exceeding state requirements, and/or regulations for benchmarking and retrofitting private buildings

This indicator provides a view to the influence of building and energy codes on energy consumption.

Calculation:
 Total regional population living in areas with local energy codes above state requirements ÷ total population of region

Required data	Definition	Suggested dataset
Total regional area with local energy codes	Regional population living in areas with local building energy codes that exceed existing state requirements	Database of State Incentives for Renewables and Efficiency http://www.dsireusa.org/

Note: This data is not readily available at a regional level, but this information can be gained via surveys.

Regions: Finger Lakes

8D: Percent of municipalities with tax policies and incentives to encourage development in municipal centers

This indicator provides a view to the role of tax policy to affect economic development.

Calculation:
 Total number of region’s municipalities with tax policies and incentives / total number of region’s municipalities

Required data	Definition	Suggested dataset
Total Number of region’s municipalities with tax policies and incentives	Number of municipalities within region with tax policies and incentives meant to stimulate growth in their municipal centers.	Gather from individual municipalities

Note: This data is not readily available at a regional level, but this information can be available via surveys.

Regions: North Country

8E: Percent of region with TOD zoning, mixed use zoning, and/or other sustainable zoning policies

This indicator provides a view to zoning policy.

Calculation:
 Total population covered by sustainable zoning policies ÷ total population of region

Required data	Definition	Suggested dataset
Total area covered by sustainable	Regional area with transit oriented development zoning, mixed use zoning, and/or other sustainable zoning policies	County Planning Departments - County maps and GIS data on zoning policies?

zoning policies		
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Regions: Mohawk Valley, North Country, Western

8F: Number of communities in region with policies that support the Sustainability Plan

This indicator provides a view to the level of policy being used to drive action and sustainability in the Region in alignment with the Regional Sustainability Plan. It takes a higher level of approach to the proposed indicators in the Guidance Document with the assumption that higher-level policy – particularly as represented in each community’s comprehensive plan - will translate down to sustainability in codes, financial incentives, etc.

Calculation:
Count of communities with applicable policies =
 Based on surveys with community planning departments, if a community has policies that address and align with one or more of the following Sustainability Plan topic areas, they should be included in the count:
 Energy
 Water Management
 Waste Management
 Land Use & Livable Communities
 Transportation
 Greenhouse Gas Emissions
 Climate Change Adaptation

Required data	Definition	Suggested dataset
Count of Communities with Applicable Policies	Number of communities that have policies that support and align with one or more of the topic areas outlined in the Sustainability Plan.	Survey of all towns, villages, cities, and counties within the region. One option is to use each community’s comprehensive plan as the focal point for this effort.

Regions: North Country

9. GREENHOUSE GAS EMISSIONS

9A: CO₂e emitted by emission source (fuel combustion, industrial production, agriculture, transportation), absolute and per capita

This indicator provides an overview to emissions related to fuel combustion.

Calculation:

Calculation for total emissions done within Tier II GHG inventory
 Emissions per capita = GHG emissions in CO₂e/population of region

Required data	Definition	Suggested dataset
Total GHG emissions by source	Total GHG emissions in region broken down by source	Tier II GHG inventory
Population of Region	Total population of region	U.S. Census Bureau – Census – http://quickfacts.census.gov/qfd/states/36000.html

Regions: New York City, Southern Tier, Western, Mohawk Valley, Capital

9B: GHG emissions per \$ GRP

This indicator normalizes emissions and provides a view of emissions intensity per dollar of economic activity.

Calculation:

Total GHG Emissions / \$ GRP

Required data	Definition	Suggested dataset
Total GHG emissions		Tier II GHG Inventory
GRP	Gross Regional Product	Not officially published figure, so consider data availability if choosing this indicator

9C: GHG emissions per unit of electrical power (lbs CO₂e/MWh). This indicator correlates to energy usage

Calculation:

Total GHG emissions/MWh consumed

Required data	Definition	Suggested dataset
Total GHG emissions		Tier II inventory
MWh consumed		Utilities or EA analysis?

Regions: Mid Hudson

10. Agriculture and Forestry

10A: Acreage of preserved farmland in the Region

This is a measure of the Region’s capacity to provide secure food production. It includes farmland that is formally protected/preserved in perpetuity using fee-simple acquisition, conservation easements, transfer of development rights programs, or other similar initiatives.

Calculations:

Total acreage of farmland preserved (fee simple acquisition, conservation easements, transfer of development rights, etc.)

Required data	Definition	Suggested dataset
Acres of Farmland Preserved	Total acreage of farmland preserved in perpetuity under conservation easements, fee simple acquisition, transfer of development rights programs, or other similar mechanisms.	County Assessor parcel data, aggregated for the Region.

Regions: Western

10B: Number of community food-producing gardens in municipal centers

This indicator tracks the capacity and infrastructure of municipal/urban centers in the Region to produce food. Suburban and rural areas where the need for community gardens is significantly less due to larger parcel sizes are excluded.

Calculations:

Total count of community food-producing gardens in municipal centers.

Required data	Definition	Suggested dataset
Community Food-Producing Gardens	Total number of community gardens dedicated to food production in municipal centers (over xx in population and xxx in density per square mile).	City and County parcel data, data from non-profit community garden organizations.

10C: Number of farms, acres, parcels within agricultural districts

This indicator offers information regarding areas protected from development.

Calculation: None required.

Required Data	Definition	Suggested Dataset
Farms, acres, and parcels	Farms, acres, and parcels within agricultural districts	County government

Regions: Mid Hudson

10D: Acres of Purchased Development Rights (PDR) for priority properties

This indicator offers information regarding areas protected from development.

Calculation: None required.

Required Data	Definition	Suggested Dataset
PDR Acres	Acres of PDR for priority properties	American Farmland Trust, WNY Land Conservancy, counties with PDR programs

10E: Number of acres with permanent USDA easement

This indicator offers information regarding areas protected from development.

Calculation: None required.

Required Data	Definition	Suggested Dataset
USDA permanent easements	Number of acres with permanent USDA easement	NRCS

10F: Acres of cropland using soil conserving and organic matter building practices such as crop rotations, cover crops, residue management

This indicator looks at opportunities to increase land productivity including protection from degradation. Carbon sequestration may be increased through increased use of crop rotations, cover crops, residue management, improved management of manures and other organic materials. This will result in soil conservation benefits as well.

Calculation: None required.

Required Data	Definition	Suggested Dataset
Acres of land under cultivation using soil conserving and organic matter building practices		NRCS

10G: Net increase in highly erodible cropland planted to perennial vegetation

This indicator looks at opportunities to increase land productivity including protection from degradation.

Calculation: None required.

Required Data	Definition	Suggested Dataset
Highly erodible cropland	Net increase in highly erodible cropland planted to perennial vegetation	NRCS

Additional Comments and Discussion: A baseline year would need to be established.

10H: Number of CSAs within the region

This indicator looks at opportunities to generate profitable (i.e. sustainable) economic activity at the regional level.

Calculation: None required.

Required Data	Definition	Suggested Dataset
CSAs	Number of CSAs in region	NASS, NYS Ag and Mkts?

10I: Number of urban farms and value of products

This indicator looks at opportunities to generate profitable (i.e. sustainable) economic activity at the regional level.

Calculation: None required.

Required Data	Definition	Suggested Dataset
Urban farms	Number of urban farms and product value	NASS, NYS Ag and Mkts?

10J: Methane generation and combustion

This indicator looks at economic opportunities to generate methane from manure, food waste, and woody biomass.

Calculation: None required.

Required Data	Definition	Suggested Dataset
Methane	MWh of energy produced, value of energy used, sold for	NYSERDA, EIA?

generation and combustion	methane generated from manure and food waste and combustion of wood and other plant materials	
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10K: Net Cash Farm Income per Farmer

Calculation: ((Total cash farm receipts) / (Total cash farm costs)) / (Total number of farmers)

Required data	Definition	Suggested dataset
Total cash farm receipts		USDA Census of Agriculture
Total cash farm costs		USDA Census of Agriculture
Total number of farmers		USDA Census of Agriculture

Regions: Mid Hudson

10L: Average Acreage of Contiguous Forest

Calculation: (Total acreage of contiguous forest) / (The number of counties in the Region)

Required data	Definition	Suggested dataset
Total acreage of contiguous forest		NYSDEC

Regions: Mid Hudson

10M: Direct farm sales per capita (as a percent of at-home food expenditures)

Calculation: Total value of farm sales direct to consumers (including sales from roadside stands, farmers markets, pick-your-own, door-to-door, etc., but not sales of craft items or processed products, such as jellies, sausages, and hams) divided by the number of residents of the county.

Required data	Definition	Suggested dataset
Direct Farm Sales		USDA Food Atlas' Local Foods data ; http://www.ers.usda.gov/data-products/foodenvironment-atlas.aspx

Regions: Finger Lakes

10N: Use of external inputs in farm production

Calculation: % of total operational expenses dedicated to chemical and fertilizer purchases; country-level estimates of N,P,K applied per year (1987-2002)

Required data	Definition	Suggested dataset
% of total operational expenses dedicated to chemical and fertilizer purchases		USDA Ag Census, 1997-2007; Ruddy (2006); study http://quickstats.nass.usda.gov/ ; http://pubs.usgs.gov/sir/2006/5012/

Regions: Finger Lakes

10O: Diversity of production (Shannon's Diversity Index)

Calculation: Shannon's diversity index = $-\sum P_i \cdot \ln(P_i)$. This index is the sum of the products of relative proportion of each crop harvested within the county times the natural log of each proportion. May be normalized or indexed to 1.

Required data	Definition	Suggested dataset
Diversity of production		USDA Ag Census, 1997-2007; http://quickstats.nass.usda.gov/

Regions: Finger Lakes

10P: Amount of biomass in live trees

Calculation: Tons of biomass in live trees on forestland.

Required data	Definition	Suggested dataset
Tons of biomass in live trees on forestland.		USFS FIA Standard Reports numbers 10.1; http://apps.fs.fed.us/fido/

Regions: Finger Lakes

10Q: Wildfire occurrences

Calculation: Number of wildfire occurrences in Region in past 5 years

Required data	Definition	Suggested dataset
Number of wildfire occurrences in Region in past 5 years		Available from DEC Division of Lands and Forests

Regions: Finger Lakes

10R: Invasive Species Index (tracking European Woodwasp, Hemlock Woolly Adelgid and Emerald Ash Borer)

Calculation: Sum of index values for each species in region
 Index Value for a species = 1 + .5 x (the number of counties where it is present in the region, other than the first county)
 Example: Species A is present in 4 counties
 Species A index value = 1 + (.5x3) = 2.5

Required data	Definition	Suggested dataset
Invasive species distribution throughout region		New York Invasive Species Clearinghouse (NYIS); http://www.nyis.info/index.php

Regions: Finger Lakes

10S: Number of wood-processing facilities in region

Calculation: None required; direct count

Required data	Definition	Suggested dataset
Number of wood-processing facilities in region		http://www.dec.ny.gov/docs/lands_forests_pdf/primary.pdf http://www.dec.ny.gov/docs/lands_forests_pdf/secondary.pdf

Regions: North Country

10T: Number of permitted food-processing facilities in region

Calculation: None required; direct count

Required data	Definition	Suggested dataset
Number permitted food-processing facilities in region		NYS Department of Agriculture and Markets (NYS DAM) Permits: 5A (animal slaughter facilities other than beef and pork) 20C (retail food processing)

Regions: North Country

10U: Number of farms with completed energy audits in region.

Calculation: None required; direct count

Required data	Definition	Suggested dataset
Number of farms with completed energy audits.		USDA NRCS county offices and NYSERDA fund energy audits and/or energy efficiency upgrades and should have data on number of audits/efficiency projects; implementation data may be problematic Other programs that may be important: NYSEG/RG&E Commercial Industrial Rebate Program National Grid Agri-business Productivity USDA Rural Energy for America Program

Regions: North Country

11. Other Indicators

11A: Percentage of deficient state, local, and other bridges in region.

Calculation: Number of deficient bridges/ total bridges in region x 100%

Required data	Definition	Suggested dataset
Number of deficient bridges in region		Bridge disrepair data: http://regionalcouncils.ny.gov/content/NC-Physical-Built/ (origin NYSDOT)

Regions: North Country

11B: Inclusion of shipping and distribution plans and strategies in county comprehensive plans.

Calculation: Number of deficient bridges/ total bridges in region x 100%

Required data	Definition	Suggested dataset
Number of deficient bridges in region		County Comprehensive Plans

Regions: North Country

11C: Number of utility and community facilities using biomass for energy

Calculation: None required; direct count

Required data	Definition	Suggested dataset
Number of utility and community facilities using biomass for energy		Operational and planned on-farm biogas facilities: http://www.manuremanagement.cornell.edu/ Total number of facilities using low-value wood or wood residues for energy Total number of wood biomass energy facilities http://wilderness.org/sites/default/files/Wood-Biomass-Energy-Facilitiesin-Northeast-map.pdf Number of community facilities using biomass for heating or combined heat and power Biomass Energy Resource Center (BERC) http://www.biomasscenter.org/database/mapsearch-tool.html

Regions: North Country

11D: Other - Fecal coliform rates in harbor (cells/100mL) (5 yr rolling avg)

Calculation: 5 year rolling average used to smooth out weather-related fluctuations

Required data	Definition	Suggested dataset
Harbor Water Quality Survey		DEP

Regions: New York City

11E: Other - Dissolved oxygen rates in New York Harbor (mg/L) (5 yr rolling avg)

Calculation: 5 year rolling average used to smooth out weather-related fluctuations

Required data	Definition	Suggested dataset
Harbor Water Quality Survey		DEP

Regions: New York City

11F: City ranking in average Particulate Matter 2.5 (3 yr rolling avg)

Calculation: 3 year rolling average is used to smooth out weather-driven fluctuations

Required data	Definition	Suggested dataset
PM 2.5 concentration	Fine particulate matter (PM _{2.5}) is an air pollutant that is a concern for people's health when levels in air are high.	New York City Department of Health and Mental Hygiene, U.S. EPA

	<p>PM_{2.5} are tiny particles in the air that reduce visibility and cause the air to appear hazy when levels are elevated. Outdoor PM_{2.5} levels are most likely to be elevated on days with little or no wind or air mixing. The New York State Departments of Health (DOH) and Environmental Conservation (DEC) alert the public by issuing a PM_{2.5} Health Advisory when PM_{2.5} concentrations in outdoor air are expected to be unhealthy for sensitive groups.</p>	
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Regions: New York City

11G: Change in average PM 2.5 (year-on-year % change in 3 yr rolling avg)

Calculation: 3 year rolling average is used to smooth out weather-driven fluctuations

Required data	Definition	Suggested dataset
PM 2.5 concentration	<p>Fine particulate matter (PM_{2.5}) is an air pollutant that is a concern for people's health when levels in air are high. PM_{2.5} are tiny particles in the air that reduce visibility and cause the air to appear hazy when levels are elevated. Outdoor PM_{2.5} levels are most likely to be elevated on days with little or no wind or air mixing. The New York State Departments of Health (DOH) and Environmental Conservation (DEC) alert the public by issuing a PM_{2.5} Health Advisory when PM_{2.5} concentrations in outdoor air are expected to be unhealthy for sensitive groups.</p>	New York City Department of Health and Mental Hygiene, U.S. EPA

Regions: New York City

11H: Number of vacant tax lots presumed to be contaminated

Calculation: None required; direct count

Required data	Definition	Suggested dataset
Number of vacant tax lots presumed to be contaminated		New York City Mayor's Office of Environmental Remediation

Regions: New York City

11I: Number of tax lots remediated in NYC annually through the Brownfield Cleanup Program

Calculation: None required; direct count

Required data	Definition	Suggested dataset
Number of tax lots remediated in NYC annually through the Brownfield Cleanup Program		New York City Mayor's Office of Environmental Remediation

Regions: New York City

11J: Increase in new housing units since January 2007

Calculation: None required; direct count

Required data	Definition	Suggested dataset
Number of new housing units constructed since January 2007		New York City Department of City Planning

Regions: New York City

11K: Total units of housing in NYC

Calculation: None required; direct count

Required data	Definition	Suggested dataset
Total units of housing in NYC		New York City Department of City Planning

Regions: New York City

11L: Vacancy rate of least expensive rental apartments

Calculation: None required; direct count

Required data	Definition	Suggested dataset
Vacancy rate of least expensive rental apartments	Least expensive is defined as <\$700/month rent	New York City Department of Housing Preservation and Development

Regions: New York City