OP 1: Greenhouse Gas Emissions

10 points available

A. Credit Rationale

This credit recognizes institutions that have inventoried their greenhouse gas (GHG) emissions and that have reduced their adjusted net Scope 1 and Scope 2 GHG emissions.

B. Criteria

Part 1

Institution has conducted a publicly available greenhouse gas (GHG) emissions inventory that includes, at minimum, Scope 1 and Scope 2 GHG emissions and may also include Scope 3 GHG emissions. The inventory may be validated internally by campus personnel who are independent of the GHG accounting and reporting process and/or verified by an independent, external third party.

Part 2

Institution reduced its adjusted net Scope 1 and Scope 2 GHG emissions per weighted campus user compared to a baseline.

Part 3

Institution's annual adjusted net Scope 1 and Scope 2 GHG emissions are less than the minimum performance threshold of 0.02 metric tons of carbon dioxide equivalent ($MtCO_2e$) per gross square foot (0.002 $MtCO_2e$ per gross square metre) of floor area.

Performance for Part 3 of this credit is assessed using EUI-adjusted floor area, a figure that accounts for significant differences in energy use intensity (EUI) between types of building space.

For this credit, the following carbon offsets may be counted:

1) Institution-catalyzed carbon offsets (popularly known as "local offsets")
2) Carbon sequestration due to land that the institution manages specifically for sequestration (as documented in policies, land management plans or the equivalent)
3) Carbon storage from on-site composting
4) Third-party verified purchased carbon offsets

Purchased Renewable Energy Certificates (RECs) that are either Green-e Energy certified or meet Green-e Energy's technical requirements and are verified as such by a third party may be counted as zero emissions energy for purposes of Scope 2 GHG accounting.

Purchased carbon offsets and RECs that have not been third-party verified do not count.

Institutions that have sold or transferred emissions reductions, e.g. in the form of verified emissions reductions (VERs), may not count those reductions toward this credit.

C. Applicability

This credit applies to all institutions.

D. Scoring

Each part is scored independently. Points earned are calculated according to the formulas below. Please note that users do not have to calculate the number of points earned themselves; points will be calculated automatically when the data listed under *Section E: Reporting Fields* is entered in the online Reporting Tool.

Scoring for Part 2 and Part 3 of this credit are based on adjusted net Scope 1 and 2 GHG emissions, a measure of an institution's overall climate impact (emissions minus carbon offsets generated). STARS calculates the figure according to the following formula:

$$\text{Adjusted net Scope 1 and 2 GHG emissions} = \{ [A + B] - (C + D + E + F) \}$$

A = Scope 1 GHG emissions ($MtCO_2e$)
B = Scope 2 GHG emissions ($MtCO_2e$)
C= Institution-catalyzed carbon offsets generated ($MtCO_2e$)
D = Carbon sequestration ($MtCO_2e$)
E = Carbon storage from on-site composting ($MtCO_2e$)
F = Third-party verified carbon offsets purchased ($MtCO_2e$)

Part 1

An institution earns the maximum of 2 points available for Part 1 of this credit when its publicly available GHG emissions inventory has been validated or verified (internally or by a third party) and covers Scope 1 and Scope 2 GHG emissions and emissions from 6 categories of Scope 3 GHG emissions (see table below). Partial points are available based on the categories of emissions included in the inventory and whether or not the inventory has been verified. Points are awarded as follows:

Components of the GHG Inventory	**Points Available**	**Points Earned**
Scope 1 and Scope 2 GHG emissions	0.75	
Scope 3 GHG emissions from: • Business travel • Commuting • Purchased goods and services • Capital goods • Fuel- and energy-related activities • Waste generated in operations • Other sources	0.167 each	(Up to 1 available)
Validation or verification (internal and/or third-party)	0.25	
Total Points Earned →		(Up to 2 available)

Scoring Example: Greenhouse Gas Emissions (Part 1)

Example University has completed an inventory of its greenhouse gas emissions. The inventory covers Scope 1 and Scope 2 GHG emissions and is publicly available on the institution's website. The inventory also includes Scope 3 GHG emissions from the following categories:

- Business travel
- Commuting
- Paper purchases
- Transmission and distribution (T&D) losses from purchased electricity

The inventory has not been validated or verified by personnel who are independent of the GHG accounting and reporting process (internally or externally).

The reported emissions from paper purchases and T&D losses are both included under "Other sources" since they do not represent a complete accounting of Scope 3 emissions from purchased goods and services or fuel- and energy-related activities, respectively (as outlined in WRI guidance).

Components of the GHG Inventory	Points Available	Points Earned
Scope 1 and Scope 2 GHG emissions	0.75	0.75
Scope 3 GHG emissions from: • Business travel • Commuting • Purchased goods and services • Capital goods • Fuel- and energy-related activities • Waste generated in operations • Other sources	0.167 each	0.5
Validation or verification (internal and/or third-party)	0.25	0
Total Points Earned →		**1.25**

Part 2

Institutions earn the maximum of 4 points available for Part 2 of this credit by achieving zero adjusted net Scope 1 and 2 GHG emissions. Incremental points are awarded for reducing adjusted net Scope 1 and 2 GHG emissions per weighted campus user compared to a baseline. For example, an institution that reduced its adjusted net GHG emissions per weighted campus user by 50 percent would earn 2 points (half of the points available for Part 2).

STARS awards only positive points; points will not be deducted if adjusted net GHG emissions per weighted campus user increased rather than decreased during the time period. Points for Part 2 of this credit are earned according to the following formula:

$$\text{Points Earned} = 4 \times \{ [(A/B) - (C/D)] / (A/B) \}$$

A = Adjusted net Scope 1 and 2 greenhouse gas emissions, baseline year ($MtCO_2e$)

B = Weighted campus users, baseline year

C= Adjusted net Scope 1 and 2 greenhouse gas emissions, performance year ($MtCO_2e$)

D= Weighted campus users, performance year

Part 3

Institutions earn the maximum of 4 points available for Part 3 of this credit by achieving zero adjusted net Scope 1 and 2 GHG emissions. Incremental points are awarded based on an institution's performance between the minimum performance threshold of 0.02 $MtCO_2e$ per gross square foot (0.002 $MtCO_2e$ per gross square metre) of floor area and zero. For example, an institution with annual adjusted net Scope 1 and 2 GHG emissions of 0.01 $MtCO_2e$ per gross square foot of floor area would earn 2 points (half of the points available for Part 3).

Scoring for Part 3 of this credit is based on an EUI-adjusted floor area figure that accounts for significant differences in energy use intensity (EUI) between types of building space. Points for Part 3 of this credit are earned according to the following formula:

$$\text{Points Earned} = 4 \times \{ [A - (B/C)] / A \}$$

A = Minimum performance threshold ($MtCO_2e$ per gross square foot/metre)

B = Adjusted net Scope 1 and 2 greenhouse gas emissions, performance year ($MtCO_2e$)

C = EUI-adjusted floor area, performance year (square feet/metres)

Scoring Example: Greenhouse Gas Emissions (Part 2)

The following data describe Example University:

A. Adjusted Net Scope 1 and 2 Greenhouse Gas Emissions, Baseline Year:

- Metric tons of Scope 1 gross GHG emissions = 48,195
- Metric tons of Scope 2 gross GHG emissions = 11,475
- Metric tons of institution-catalyzed carbon offsets generated = 650

Baseline Adjusted Net Scope 1 and 2 Greenhouse Gas Emissions
= (48,195 + 11,475) - (650)
= 59,670 – 650
= **59,020** $MtCO_2e$

B. Weighted Campus Users, Baseline Year:

a. Number of residential students = 5,800
b. Number of residential employees = 200
c. Number of in-patient hospital beds = 0
d. Full-time equivalent enrollment = 6,750
e. Full-time equivalent of employees = 1,200
f. Full-time equivalent of distance education students = 250

Baseline Weighted Campus Users = (a + b + c) + 0.75 [(d - a) + (e - b) – f]

= (5,800 + 200 + 0) + 0.75 [(6,750 – 5,800) + (1,200 – 200) – (250)]
= 6,000 + 0.75 (950 + 1,000 – 250)
= 6,000 + 0.75 (1,700)
= **7,275**

C. Adjusted Net Scope 1 and 2 Greenhouse Gas Emissions, Performance Year:

- Metric tons of Scope 1 gross GHG emissions = 42,133
- Metric tons of Scope 2 gross GHG emissions = 11,599
- Metric tons of institution-catalyzed carbon offsets generated = 4,400

Performance Year Adjusted Net Scope 1 and 2 Greenhouse Gas Emissions
= (42,133 + 11,599) – 4,400
= 53,732 – 4,400
= **49,332** $MtCO_2e$

Scoring Example: Greenhouse Gas Emissions (Part 2, cont'd)

D. Weighted Campus Users, Performance Year:

a. Number of residential students = 6,000
b. Number of residential employees = 180
c. Number of in-patient hospital beds = 0
d. Full-time equivalent enrollment = 7,000
e. Full-time equivalent of employees = 1,200
f. Full-time equivalent of distance education students = 350

Performance Year Weighted Campus Users = (a + b + c) + 0.75 [(d - a) + (e - b) – f]

= (6,000 + 180 + 0) + 0.75 [(7,000 – 6,000) + (1,200 – 180) – (350)]
= 6,180 + 0.75 (1,000 + 1,020 – 350)
= 6,180 + 0.75 (1,670)
= **7,432.5**

Calculating Points Earned

Points Earned = 4 × { [(A/B) – (C/D)] / (A/B) }

= 4 × { [(59,020 / 7,275) – (49,332 / 7,432.5)] / (59,020 / 7,275) }
= 4 × { [8.11 – 6.64] / 8.11 }
= 4 × { 1.47 / 8.11 }
= 4 × 0.182
= **0.73** points

Scoring Example: Greenhouse Gas Emissions (Part 3)

The following data describe Example University:

EUI-Adjusted Floor Area

A. Gross floor area of building space = 4,000,000 ft^2
B. Floor area of laboratory space = 80,000 ft^2
C. Floor area of healthcare space = 0 ft^2
D. Floor area of other energy intensive space = 24,000 ft^2

EUI-adjusted floor area = { A + [2 × (B + C)] + D }
= { 4,000,000 + [2 × (80,000 + 0)] + 24,000 }
= 4,000,000 + [2 × 80,000) + 24,000
= 4,000,000 + 184,000
= **4,184,000**

Calculating Points Earned

A. Minimum performance threshold = **0.02** $MtCO_2e/ ft^2$
B. Adjusted net Scope 1 and 2 greenhouse gas emissions, performance year = **49,332** Mt CO_2e
C. EUI-adjusted floor area, performance year = **4,184,000** ft^2

Points Earned = 4 × { [A - (B/C)] / A}
= 4 × { [0.02 - (49,332/4,184,000)] / 0.02}
= 4 × { [0.02 - (.0118)] / 0.02}
= 4 × { 0.0082 / 0.02}
= 4 × 0.41
= **1.64** points

E. Reporting Fields

Required

- □ An indication of whether each of the following are included in the institution's GHG emissions inventory:
  - Scope 1 and 2 emissions
  - Scope 3 emissions
- □ A copy of the most recent GHG emissions inventory (upload)
- □ A brief description of the methodology and/or tool used to complete the GHG emissions inventory
- □ An indication of whether the GHG emissions inventory has been validated internally by personnel who are independent of the GHG accounting and reporting process and/or verified by an independent, external third party
- □ Scope 1 GHG emissions from stationary combustion, performance year ($MtCO_2e$)
- □ Scope 1 GHG emissions from other sources (i.e. mobile combustion, process emissions, fugitive emissions), performance year ($MtCO_2e$)
- □ Scope 2 GHG emissions from purchased electricity, performance year ($MtCO_2e$)
- □ Scope 2 GHG emissions from other sources (i.e. purchased heating, cooling and steam), performance year ($MtCO_2e$)
- □ Figures needed to determine total carbon offsets, performance year:
  - Institution-catalyzed carbon offsets generated, performance year ($MtCO_2e$)
  - Carbon sequestration due to land that the institution manages specifically for sequestration, performance year ($MtCO_2e$)
  - Carbon storage from on-site composting, performance year ($MtCO_2e$)
  - Third-party verified carbon offsets purchased, performance year ($MtCO_2e$)
- □ Figures needed to determine "Weighted Campus Users" during the performance year:
  - Number of residential students, performance year (annualized headcount)
  - Number of residential employees, performance year (annualized headcount)
  - Number of in-patient hospital beds, performance year
  - Full-time equivalent enrollment, performance year (annualized FTE)
  - Full-time equivalent of employees, performance year (annualized FTE)
  - Full-time equivalent of distance education students, performance year (annualized FTE)
- □ Gross floor area of building space, performance year (square feet/metres)
- □ Floor area of laboratory space, performance year (square feet/metres)
- □ Floor area of healthcare space, performance year (square feet/metres)

- □ Floor area of other energy intensive space, performance year (square feet/metres)
- □ Start date, performance year or 3-year period
- □ End date, performance year or 3-year period
- □ Scope 1 GHG emissions from stationary combustion, baseline year ($MtCO_2e$)
- □ Scope 1 GHG emissions from other sources (i.e. mobile combustion, process emissions, fugitive emissions), baseline year ($MtCO_2e$)
- □ Scope 2 GHG emissions from purchased electricity, baseline year ($MtCO_2e$)
- □ Scope 2 GHG emissions from other sources (i.e. purchased heating, cooling and steam), baseline year ($MtCO_2e$)
- □ Figures needed to determine total carbon offsets, baseline year:
  - Institution-catalyzed carbon offsets generated, baseline year ($MtCO_2e$)
  - Carbon sequestration due to land that the institution manages specifically for sequestration, baseline year ($MtCO_2e$)
  - Carbon storage from on-site composting, baseline year ($MtCO_2e$)
  - Third-party verified carbon offsets purchased, baseline year ($MtCO_2e$)
- □ Figures needed to determine "Weighted Campus Users" during the baseline year:
  - Number of residential students, baseline year (annualized headcount)
  - Number of residential employees, baseline year (annualized headcount)
  - Number of in-patient hospital beds, baseline year
  - Full-time equivalent enrollment, baseline year (annualized FTE)
  - Full-time equivalent of employees, baseline year (annualized FTE)
  - Full-time equivalent of distance education students, baseline year (annualized FTE)
- □ Start date, baseline year or 3-year period
- □ End date, baseline year or 3-year period
- □ An affirmation that the submitted information is accurate to the best of a responsible party's knowledge and contact information for the responsible party. The responsible party should be a staff member, faculty member, or administrator who can respond to questions regarding the data once submitted and available to the public.

Conditional

Required if the institution's GHG emissions inventory has been verified:

- A brief description of the internal and/or external verification process

Required if the institution is reporting institution-catalyzed carbon offsets, performance year:

- A brief description of the local offsets program(s)

Required if the institution is reporting carbon sequestration, performance year:

- A brief description of the carbon sequestration program and reporting protocol used

Required if the institution is reporting carbon storage from on-site composting, performance year:

- A brief description of the composting and carbon storage program

Required if the institution is reporting purchased carbon offsets, performance year:

- A brief description of the purchased carbon offsets, including third party verifier(s) and contract timeframes

Required if end date of the baseline year/period is 2004 or earlier:

- A brief description of when and why the GHG emissions baseline was adopted (e.g. in sustainability plans and policies or in the context of other reporting obligations)

Required if the institution's GHG emissions inventory includes Scope 3 GHG emissions:

- Scope 3 GHG emissions from:
  - Business travel (the transportation of employees and students for institution-related activities in vehicles owned or operated by third parties) ($MtCO_2e$)
  - Commuting (regular commuting to and from the institution by students and employees) ($MtCO_2e$)
  - Purchased goods and services (e.g. food, paper, office supplies, furniture, computers, telephones, travel services, outsourced administrative functions, consulting services, and janitorial and landscaping services) ($MtCO_2e$)
  - Capital goods (construction materials, buildings, facilities, equipment, machinery, and vehicles) ($MtCO_2e$)
  - Fuel- and energy-related activities not included in Scope 1 or Scope 2 (transmission and distribution losses from purchased electricity, upstream emissions of purchased fuels and electricity) ($MtCO_2e$)
  - Waste generated in operations (disposal/treatment of solid waste and wastewater in facilities owned or operated by third parties) ($MtCO_2e$)
  - Other categories (please specify, e.g. partial reporting of the categories outlined above, leased assets, investments, upstream transportation and distribution of purchased goods) ($MtCO_2e$)

Optional

- □ A brief description of the institution's GHG emissions reduction initiatives, including efforts made during the previous three years
- □ The website URL where the GHG emissions inventory is posted (e.g. the American College & University Presidents' Climate Commitment reporting site)
- □ Notes about the submission

F. Measurement

Timeframe

Performance Year

Report the most recent data available from the three years prior to the anticipated date of submission. Institutions may use the most recent single year for which data is available or an average from throughout the period. Institutions may choose the annual start and end dates that work best with the data they have (e.g. fiscal or calendar year), as long as data are reported from a consecutive 12-month (or 3-year) period.

Report building space and annualized population figures from the same time period as that from which GHG emissions data are drawn (e.g. the consecutive 12-month or 3-year period that most closely overlaps with the emissions performance period). Institutions may report building space using an average from throughout the period or a snapshot at a single representative point during the period.

Baseline Year

Report data from the baseline year, which may be:

- Any year from 2005 to the present
- A baseline year, 1990 to 2004, that the institution has adopted as part of its sustainability plans or policies or in the context of other reporting obligations

Recommended best practices for defining a baseline include:

- Using the average of three consecutive years to reduce the impact of outliers
- Using the same baseline year for multiple credits to reduce reporting requirements. For example, institutions using 2005 for all STARS credits that are baseline-based would only have to calculate baseline weighted campus user data once.
- Ensuring that baseline and performance year data are valid and reliable (e.g. that the data were gathered in the same manner)

Institutions without valid and reliable historical data should use performance year data for both the baseline and performance year. Following this approach, an institution would not be able to claim points during its first STARS submission, but would be able to use its newly established baseline for subsequent submissions.

Institutions may choose the start and end dates that work best with the data they have (e.g. fiscal or calendar year), as long as data are reported from a consecutive 12-month (or 3-year) period.

Report building space and annualized population figures from the same period as that from which GHG emissions data are drawn (e.g. the consecutive 12-month or 3-year period that most closely overlaps with the emissions baseline period). Institutions may report building space using an average from throughout the period or a snapshot at a single representative point during the period.

Sampling and Data Standards

To conduct a GHG emissions inventory, campuses may use Clean Air-Cool Planet's Campus Carbon Calculator or Carbon Management and Analysis Platform (CarbonMAP), or any methodology and/or calculator that is consistent with the World Resources Institute (WRI) Greenhouse Gas Protocol Corporate Standard and/or the Scope 3 calculation guidance provided by WRI.

An institution that includes Scope 3 emissions for some but not all of the activities included in each category should report those emissions under "Scope 3 emissions from other categories". For example, an institution that includes Scope 3 emissions from its paper purchases, but not from other purchased goods and services, should report that data under "Scope 3 emissions from other categories" rather than "Scope 3 emissions from purchased goods and services".

Institutions may use any commonly accepted forest sector protocol to report carbon sequestration, for example Climate Action Reserve's Forest Project Protocol, the Canadian Council of Forest Ministers' Framework for Forest Management Offset Protocols, or the Compliance Offset Protocols (COP) adopted by the California Air Resources Board (CARB). On and off-campus projects may be counted.