

This document includes PwC’s responses submitted to the Greenhouse Gas Protocol Scope 2 Guidance survey (the Scope 2 survey). It should be read in conjunction with our [summary letter](#), responses to the [Corporate Accounting and Reporting survey](#) and [Scope 3 Standard and Scope 3 Calculation Guidance survey](#) and supplemental proposals on (1) [governance matters](#); (2) [consistency with financial reporting](#); and (3) [tracking emissions over time](#).

Also, note that the Scope 2 survey contains a combination of required and optional questions. This document includes only those questions to which we provided responses. Please refer to the Greenhouse Gas Protocol website for the complete [Scope 2 survey](#).

## Scope 2 Guidance survey

### DATA AND PRIVACY ACKNOWLEDGEMENT

1. *In order to proceed to the survey, please click yes below to acknowledge that you have reviewed the information in the Process Memo and Scope 2 Survey Memo and that you consent to the data disclosure agreements outlined in the Process Memo.*

- Yes**  
 No

### RESPONDENT INFORMATION

2. *Name*

Henry Daubeney

3. *Organization*

PricewaterhouseCoopers

4. *Country*

“PricewaterhouseCoopers” refers to the network of member firms of PricewaterhouseCoopers International Limited (PwCIL), each of which is a separate and independent legal entity. With offices in 152 countries and almost 328,000 people, PwCIL is among the leading professional services networks in the world. Following consultation with members of the PricewaterhouseCoopers network of firms, our survey response summarizes the views of those member firms that commented on the survey.

5. *Email address*

henry.daubeney@pwc.com

6. *Would you like to receive email updates from GHG Protocol?*

- Yes**  
 No

7. *Does your company/organization have a greenhouse gas inventory?*

- Yes  
 No  
 **Other (please specify)**

PwC's corporate sustainability group prepares a greenhouse gas inventory in accordance with the Greenhouse Gas Protocol and issues a climate report on behalf of the global firm. In addition, many of our firms issue climate reports in line with their jurisdictional requirements. Our responses to the survey, however, are primarily informed by our interactions with clients and investors as well as our history of engagement and proactive thought leadership on ESG matters.

We have also prepared a [summary letter](#) to highlight our most significant recommendations.

8. *Are you involved in developing your company/organization's greenhouse gas inventory?*

- Yes
- No
- Not applicable
- Other (please specify)**

Please refer to our response to question 7.

9. *What is your organization type?*

- Academia/research
- Company
- Consultant supporting organizations with GHG inventories/strategies
- GHG reporting program or initiative
- Government institution
- International agency
- Electric Grid Operator
- Industry group
- Non-profit organization/NGO/civil society
- Provider of data or product related to GHG inventories
- Other (please specify)**

Please refer to our response to question 7.

10. *What is your company's sector?*

- Agriculture
- Apparel
- Biotech, health care and pharmaceutical
- Chemicals
- Construction
- Consumer goods
- Education
- Energy
- Finance
- Food and beverage
- Forest products
- Forestry
- Fossil fuels
- Hospitality
- Information and communication technology
- Infrastructure

- Insurance
- Manufacturing
- Materials
- Mining
- Power generation
- Professional, scientific, and technical services**
- Real estate
- Retail
- Services
- Transportation
- Utilities (water, gas, electricity)
- Waste management
- Other (please specify)

### QUESTIONS ON THE SCOPE 2 GUIDANCE

11. *Does your organization use the Greenhouse Gas Protocol Scope 2 Guidance to develop and report its greenhouse gas inventory?*

- Yes
- No
- Not sure
- Not applicable (my company/organization does not have a greenhouse gas inventory)
- Other**

Please refer to our response to question 7.

12. *How satisfied are you with the current GHG Protocol Scope 2 Guidance?*

- 1 - Very satisfied
- 2 - Somewhat satisfied
- 3 - Neither satisfied nor dissatisfied**
- 4 - Somewhat dissatisfied
- 5 - Very dissatisfied
- Not applicable (I don't use it)

13. *Do you think there is a need to update the GHG Protocol Scope 2 Guidance?*

- No (no update needed)
- Minor update (limited updates, clarifications, additional guidance, or refresh needed)
- Major update (major changes or revisions needed)**
- No opinion/Not sure

14. *Please explain your selection. You may enter brief comments here or submit a more detailed proposal using the proposal template.*

As noted in our response to question 7, we prepared a [summary letter](#) which highlights our most significant recommendations in response to the surveys issued by the Greenhouse Gas Protocol. These recommendations include comments related to the GHG Protocol's purpose, governance, organization of the reporting standards, interoperability, and enhanced data quality. These recommendations are applicable broadly to all of the GHG Protocol's standards, including its

guidance related to scope 3. Please also see question 14 in our response to the [Corporate Accounting and Reporting Standard survey](#) where we have also included these recommendations.

Our comments and recommendations specific to scope 2 are discussed in our responses to this survey.

15. *Do you think there is a need for updates related to the scope 2 location-based method?*

- No (no update needed)
- Minor update (clarifications or additional guidance needed)**
- Major update (major changes or revisions needed)
- No opinion/Not sure

16. *Please explain your selection. You may enter brief comments here or submit a more detailed proposal using the proposal template.*

Newer technologies and techniques that advance decarbonization (e.g., energy storage, hydrogen as an “energy carrier”) introduce challenges in calculating scope 2 emissions, including how to reflect the emissions profile of these technologies in the calculation of more accurate emission factors. Advanced metering systems and evolutions in demand-side load management may drive access to more time-granular and geographically-granular grid emission data. The ability to access and use disaggregated information for calculating scope 2 emissions would, in our view, better reflect management actions that impact scope 2 emissions. For example, a reporting entity may achieve lower scope 2 emissions by shifting more production hours to periods when a higher proportion of renewable resources supplies the grid.

Calculation methodologies that reflect the current stages of market developments require a collaborative effort with stakeholders. We believe this is critical to ensuring that the location-based method can progress in line with the state of electricity markets. Therefore, we recommend that GHG Protocol establish formal processes to consider the impact that new technologies and evolutions in access to information may have on its standards and guidance.

17. *Do you think there is a need for updates related to the scope 2 market-based method?*

- No (no update needed)
- Minor update (clarifications or additional guidance needed)
- Major update (major changes or revisions needed)**
- No opinion/Not sure

18. *Please explain your selection. You may enter brief comments here or submit a more detailed proposal using the proposal template.*

As discussed in our response to question 16, we believe that the guidance for calculating and reporting scope 2 emissions must keep pace with the market and technological developments.

Further, GHG Protocol should revise the current guidance to address application challenges. For one, the dual reporting requirement is onerous for some reporting entities and, as further discussed in our response to question 20, we believe that the location-based method is more representational, meaningful, and actionable by users of the information. In this case, we believe the guidance would benefit from allowing flexibility that does not compromise the ability to report decision-useful information.

Secondly, we believe that the energy attribute certificate (EAC) quality criteria currently offer too much flexibility that has led to notable diversity in practice, compromising the usefulness of this information. Our specific recommendations related to the dual reporting requirement and quality criteria are included in responses to question 20 and questions 38-40, respectively.

19. Do you think there is a need for updates related to the dual reporting requirement, i.e., to report scope 2 emissions using both the location-based method and market-based method?

- No (no update needed)
- Minor update (clarifications or additional guidance needed)
- Major update (major changes or revisions needed)**
- No opinion/Not sure

20. Please explain your selection. You may enter brief comments here or submit a more detailed proposal using the proposal template.

GHG Protocol Scope 2 Guidance requires dual reporting, which involves calculating and reporting scope 2 emissions using the location-based method and the market-based method (when product or supplier-specific data in the form of contractual instruments is available). The market-based method does not always reflect the underlying physical emissions, however, and reporting different emissions for the same activity may be confusing for users of the information.

The location-based method determines scope 2 emissions based on an entity's actual electricity consumption, using emission factors that incorporate the electricity fuel sources used to power the grid where the consumption physically occurs. Reporting entities operating in electricity markets where the electricity grid relies primarily on coal power plants, for example, will have significantly higher location-based scope 2 emissions when compared to those in a location where electricity is provided by more renewable power sources (e.g., wind). In contrast, the market-based method incorporates the impact of contractual arrangements and EACs to arrive at a proxy for emissions based on electricity sources the reporting entity has chosen.

We strongly recommend that GHG Protocol prioritize reporting of scope 2 emissions using the location-based method — that is, based on the physical location of the consumption and the actual electricity grid generating the power — because it is more representational, meaningful, and actionable by users of the information. To this end, we recommend using the location-based method as the primary metric for calculating and reporting scope 2 emissions. Further, we believe that GHG Protocol should continue to evaluate methods to refine reporting of location-based information as reporting techniques continue to evolve. For example, time of day power usage information, calculations based on daily rather than monthly information, more localized reporting, and other techniques may further enhance the value of the information reported.

We recognize, however, that the market-based approach is commonly referred to and provides reporting entities with a means to demonstrate specific actions and the impact of contractual arrangements, which may be essential information for tracking performance against scope 2 emissions reduction targets calculated using the market-based method. Accordingly, we recommend that GHG Protocol amend the Scope 2 Guidance to allow reporting entities the flexibility to calculate and report scope 2 emissions using either:

- the dual reporting requirement or,
- the location-based method along with separate disclosure of energy attribute certificates purchased and retired by the reporting entity during the reporting period, if any. This disclosure should include details about how the EAC was acquired (for example, purchased directly or obtained through contractual power purchase arrangements with renewable energy facilities) as well as information about the generator and location of the underlying facility.

We also recommend that GHG Protocol clarify and strengthen the quality criteria applied to reported EACs. The existing quality criteria, in some cases, provide an excessive amount of flexibility, leading to different interpretations and diversity in application, resulting in reduced comparability. Please see our specific recommendations in question 38 - 40.

*Questions 21 - 27 omitted*

28. *New grid-connected technologies and/or their increased deployment may require further clarification or changes to the Scope 2 Guidance to better address accounting of emissions associated with these resources. Please select from the potential options below any technologies which would benefit from updates or additional guidance. Please also include any additional technologies outside of this list which should be considered. Any specific suggestions related to these technologies should be submitted in the Scope 2 proposal section.*

- Advanced Metering Infrastructure (“AMI”)
- Demand-side load management (e.g., demand response, load shifting, etc.)
- Electric vehicle charging and grid integration
- Energy storage technology
- Hydrogen as an “energy carrier” similar to electricity, steam, chilled water, etc.
- More geographically granular electric grid emission data (e.g., emissions associated with electricity at specific locations)
- More time-granular electric grid emission data (e.g., monthly, hourly, etc. emission factors in addition to annual values)
- Other**

Please refer to our response to question 16.

29. *Are there existing resources, tools, or databases developed by other organizations that you would suggest that GHG Protocol consider to support organizations in applying the Scope 2 Guidance?*

We do not recommend that GHG Protocol make reference to any resources, tools, or databases developed by other organizations. We believe it is critical that the GHG Protocol’s standards stand alone to provide a complete source of guidance on greenhouse gas emissions reporting.

Further, to be the premier standard setter for greenhouse gas emissions reporting, we believe it is important for GHG Protocol to control the development of its standards, thus avoiding potential bias that may be inherent in standards developed by industry groups or others interested in promulgating a specific viewpoint. Ensuring all standards governing emissions reported in accordance with the GHG Protocol’s standards and guidance are subject to its own due process would ensure that its suite of standards are robust, independent, and fit for purpose across a broad spectrum of users.

30. *Are there new resources, tools, or databases that you think need to be developed to support organizations in applying the Scope 2 Guidance?*

One of the challenges we observe in applying the GHG Protocol is difficulty in determining the applicable requirements and understanding how the various standards and guidance interact with each other. We believe that restructuring the full suite of standards and guidance to enhance their usefulness and effectiveness should be one of the GHG Protocol’s highest priorities. Please refer to the “Organization of the reporting standards” section of our response to question 4 in the related [governance matters template](#), for our detailed recommendations.

31. *Are there challenges in complying with the GHG Protocol Scope 2 Guidance requirements? If yes, please briefly describe the challenges as well as any potential solutions, industry-specific guidance, etc. that could address these challenges. You may enter brief comments here or submit a more detailed proposal using the proposal template.*

Our responses to this survey highlight the key challenges in applying the GHG Protocol Scope 2 Guidance and our recommendations to address them.

32. *GHG inventory reporting can overlap and/or interact with regulatory policy mandates, state and federal subsidies, emission reporting or target-setting programs, etc. (e.g., see Scope 2 Guidance, Chapter 8.2 Reporting on the relationship between voluntary purchases and regulatory policies). Are there clarifications or changes in the Scope 2 Guidance that would simplify and harmonize*

*complying with the Scope 2 Guidance and better align with regulatory policy mandates, programs, etc.? If so, please identify such interactions and share any potential solutions.*

We recommend that GHG Protocol work with other regulators and ESG standard setters to ensure key elements that support high quality GHG emissions accounting are more formally incorporated into the maintenance and ongoing development of the GHG Protocol's standards.

## **QUESTIONS FOR PROGRAMS/POLICYMAKERS**

This section is intended for programs, initiatives, policymakers, or regulators using the GHG Protocol Scope 2 Guidance.

33. *Please identify your program, policy, initiative, etc. which uses the GHG Protocol Scope 2 Guidance.*

Not applicable.

34. *How are you applying the Scope 2 Guidance in the context of your program?*

Not applicable.

35. *What is your experience applying the standard? Does your program implement all the requirements of the standard? If not, why not? Are there any gaps or problems you have faced in implementing the standard? Are changes to the standard and/or support on the use of the standard needed from a programmatic perspective?*

Not applicable.

## **QUESTIONS ON SCOPE 2 GUIDANCE AGGREGATIONAL THEORY OF CHANGE**

*Questions 36 and 37 omitted*

## **QUESTIONS ON SCOPE 2 GUIDANCE ATTRIBUTE QUALITY CRITERIA**

*The Scope 2 Guidance Quality Criteria requirements were developed to represent the minimum features necessary to implement a market-based method of scope 2 GHG accounting using Energy Attribute Certificates (EACs). As designed, the market-based accounting method allows organizations to report in their inventory an immediate GHG emission reduction without necessarily needing to demonstrate a corresponding immediate and equivalent reduction in emissions to the atmosphere. This outcome is consistent with the supply/demand aggregational theory of change described above. (Note, please see questions 20-21 evaluating this topic.) However, the current EAC quality criteria required to claim the zero-emission attributes of a grid resource enables a range of EAC procurement options representing a broad spectrum of outcomes a reporting organization can take responsibility for in their inventory. Narrowly in the context of scope 2 inventory accounting, so long as the minimum quality criteria are fulfilled, all procurement options, strategies, etc. are treated equivalently.*

*Chapter 7, Criteria 4 "Vintage" states all contractual instruments shall "Be issued and redeemed as close as possible to the period of energy consumption to which the instrument is applied." Common practice today is for an organization to match some amount of their annual electric consumption load with Energy Attribute Certificates (EACs) produced in the same reporting year.*

38. *What are the trade-offs between continuing this practice as compared to introducing a more specific quality criteria than "as close as possible"? Should this quality criteria be made more specific (e.g., to specify it must be within the same year, month, hour, etc.) or remain unchanged? Please briefly explain or use the proposal template for a detailed reply.*

Disconnects between the timing of the generation of scope 2 emissions and an EAC used to reduce

those emissions significantly diminishes the substance of the transaction as well as the quality and usefulness of the related emissions reporting. Therefore, we recommend that the vintage requirements transition to a significantly smaller increment (e.g., within the month of generation or comparable billing cycle). To facilitate implementation, we recommend allowing a transition period — with additional time for reporting entities operating in less developed EAC markets — before requiring adoption of revised vintage criteria.

In addition, consistent with our response to question 16, we believe that the vintage requirements should continue to evolve as additional and more accurate reporting becomes available

*Chapter 7, Criteria 5 “Market Boundaries” states all contractual instruments shall “Be sourced from the same market in which the reporting entity’s electricity-consuming operations are located and to which the instrument is applied.” Currently certificate market-boundaries encompass broad geographic regions such as entire continents and span multiple physical grid boundaries (i.e., see Scope 2 Guidance, page 64: “...markets for unbundled certificates have often been less constrained than those for electricity itself”).*

39. *What are the trade-offs between continuing this practice as compared to introducing more specific guidance on the Market Boundary quality criteria? Please briefly explain or use the proposal template for a detailed reply.*

As discussed in the Scope 2 Guidance, a market boundary currently could be an area as large as a country, group of countries, or based on regulatory restrictions on the use of an instrument. A reporting entity is, therefore, not precluded from using an EAC acquired and retired in a market where it has no operations and with no direct physical connection to where the scope 2 emissions are generated. Further, GHG Protocol provides limited guidance on how to conclude that an EAC is not suitable for reducing scope 2 emissions under this quality criteria.

We recommend that GHG Protocol strengthen the market boundary quality criteria to limit use of EAC instruments solely to reduce scope 2 emissions in the same control area as where the purchased electricity is consumed. Recognizing that markets vary in maturity and availability of renewable resources, GHG Protocol should establish a reasonable transition period for reporting entities operating in less developed markets. During this period, reporting entities should disclose details about the source of the scope 2 emissions and quality of EACs acquired and retired to reduce them.

40. *Please provide any additional considerations related to any of these criteria and/or potential additional criteria that could improve the application of location-based and/or market-based Scope 2 reporting (see Scope 2 Guidance, Chapter 4 for additional detail on how these methods contribute to GHG reductions in the electricity sector). Please briefly explain or use the proposal template for a detailed reply.*

We believe the quality of reporting would be strengthened by updating the EAC retirement criterion. We recommend that the guidance be aligned with financial reporting such that only those instruments retired during the reporting period would be included in the disclosure. When a reporting entity is permitted by a registry or regulatory body to retire EACs in the current period but reflect the retirement in a prior reporting period, a reporting entity:

- should consider the need to include a subsequent event disclosure regarding new information available about emissions reported during the reporting period, and
- consider a separate disclosure reconciling reported emissions to those reported to regulators/reflected in the registry for the reporting period.



**ADDITIONAL FEEDBACK ON THE SCOPE 2 GUIDANCE**

41. *Please provide any additional considerations or context related to new clarifications or guidance in scope 2, maintaining the existing Scope 2 Guidance without changes, changes in the current location-based and/or market-based methods, or new methodological options that account for indirect reductions and meet GHG Protocol decision criteria (for more information on the decision criteria, please see the annex of the proposal template)? You may enter brief comments here or submit a more detailed proposal using the proposal template.*

Please refer to our responses to the earlier questions in this survey as well as our general recommendations included in our responses to the [Corporate Accounting and Reporting survey](#).