



**Sustainability Accounting Standards Board: Comments on Exposure Draft for Technology Sector**

1. Disclosure Topics	
Disclosure topics in the Standards that may not be material to a reasonable investor, including an explanation	Disclosure topics not included in the Standards that may be material to a reasonable investor, including evidence supporting your assertion
<b>None identified</b>	
	<p>1. <b>Brand management and reputation risk:</b> consider inclusion of processes and measurement criteria as a material issue</p> <p><b>Technological failure</b> is a big risk to the reputation of an organisation.</p>
	<p><b>TC0101-14, TC0103-15</b></p> <p><b>Managing Environmental and Social Risks</b></p>
	<p><b>1.Regulator Compliance and Quality Control:</b></p> <p>Consider including issues arising from regulatory compliance and quality control audits and how the mechanism in place to address them</p>
	<b>Governance</b>
	<p>1. Most corporate failures have been due to poor governance: consider disclosures of governance structure/mechanism, evaluating performance for instance compliance with governance codes, and how non-compliance is dealt with. <b>IT Governance</b> is crucial for the success of organizations today with the high</p>



	dependence on IT in business and public organizations.
	<p><b>2. Stakeholder Engagement</b></p> <p>Stakeholder engagement is crucial as IT being an enabler supports nearly all organisations. Feedback from stakeholders is required on a regular basis to determine whether their concerns are being addressed, as IT support is widely required in many organizations and sectors and there are varied risks and exposures and requiring specialised solutions. Thus consider disclosure of the level and frequency of stakeholder engagement.</p>
	<p><b>Security Breaches</b></p> <p>1. Consider disclosure for existence of Know Your Customer (KYC) programs and how monitored, especially with <b>interconnectedness</b> of systems with <b>suppliers, customers and trading partners</b>.</p>
	<p><b>TC0102-18 Delivering Sustainable Solutions</b></p> <p>There are emerging IT risks as technology and operating environment changes and the need for R&amp;D should be emphasized. Consider Mandatory contribution to R&amp;D, possibly through the regulators, in addition to own company or organization allocation to R&amp;D</p>
<b>2. Accounting Metrics</b>	



Provide comments to correct, improve, or add to accounting metrics in the standards.	Suggest additional or alternate accounting metrics to measure performance with respect to a disclosure topic
<p><b>TCO301-15 Telecomm - Managing Systemic Risks from Technological Disruptions</b></p> <p>With wide usage of technology consumer and user education for sustainability. Organisations should have systems and policies to ensure there is continuous education especially with rapid technological changes and systemic risks and this needs to be disclosed.</p>	
<p><b>TCO 301 - 08 Data security and cyber crimes</b></p> <p>With increased use of technology for money transfers data security is paramount. There is need to disclose incidents of violations and how dealt with as a deterrent for further crimes.</p>	
<p><b>TCO401-18 Internet and Media Usage</b></p> <p>There is wide use of internet and media in business today and there are also increased risks and exposures. Cyber crimes and cross border risks are prevalent in many organizations, but some may be unknown to the business, due to interconnectedness with suppliers, customers and trading partners.</p> <p>There is need for disclosure on how these risks are identified and addressed, including intellectual property violations and how addressed.</p>	



<b>TCO401 – 16</b>	
1. Measurement of employee level of engagement: consider extending to include level of engagement and contribution to growth and profitability	
<b>3. Cost Effectiveness</b>	
How costly would it be for companies to collect, analyze, and report information required for the proposed accounting metrics?	Do you anticipate this cost to be a barrier to reporting, adoption, or usage of the proposed accounting metrics?
<b>In the first year non-financial information is difficult to collect, analyze and report but in subsequent years would become easier. How costly depends on the current status of information available and systems in use</b>	<b>Yes it would be a barrier in the initial stage, but can be perfected over time, possibly encourage reporting in phases for fist time reporters so that they are able to fix their systems where necessary and make subsequent reporting smoother</b>
What aspects of reporting, if any, would you foresee being most costly for reporting organizations?	
<b>1. Measurement of performance of HR and other functions not directly contributing to profitability including executives</b> <b>2. Given the technical nature of IT there is heavy reliance on few who have the expertise and sometimes external parties which poses additional risks in terms of data integrity thus reliability. These are hidden risks which will be difficult to measure and report.</b>	

**Note:** Most of these issues are applicable for the various Technological Services

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(FKA)

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**Date:** 8th January 2014

January 10, 2014

TO: SASB [REDACTED]

RE: Technology & Communications Sector Sustainability Accounting Standards - 90-Day Period of Public Comment

Electronic Manufacturing Services & Original Design Manufacturing  
Software & IT Services  
Hardware  
Semiconductors  
Telecommunications  
Internet Media & Services

My comments are included below:

1. Electronic Manufacturing Services & Original Design Manufacturing  
Energy Management in Manufacturing  
TC0101-01  
Comment: There is no required disclosure for total GHG emissions from this category. This is a material result of energy consumption and not requiring a company to report this is a gap, as it will be challenging to produce this with the requested data. CDP, GRI Core, etc. requires this and it makes sense to include as a roll up material figure herein as well.
2. Electronic Manufacturing Services & Original Design Manufacturing  
Product Lifecycle Management  
TC0101-10. Percentage of products (by revenue) with environmentally focused principles incorporated into the designs, including a description of the design principles or criteria.  
Comment: The criteria defined in .38 & .39 is fairly open ended, and without more rigor may not provide an accurate or meaningful estimation of how progressive / focused a company is at incorporating DfE into its products.
3. Software & IT Services  
Environmental Footprint of Data Center and Office Hardware  
TC0102-01 a) Total annual energy consumed (gigajoules), indicate percentage purchased grid electricity, percentage non-grid renewable (e.g., wind, biomass, solar), and the weighted average carbon intensity of total energy usage.  
Comment: There is no required disclosure for total GHG emissions from this category. GHG intensity is material but so is aggregated total emissions to determine relative size. This is a material result of energy consumption and not requiring a company to report this is a gap, as it will be challenging to produce this with the requested data separately. CDP, GRI Core, etc. requires this and it makes sense to include as a roll up material figure herein as well.
4. Software & IT Services  
Environmental Footprint of Data Center and Office Hardware  
TC0102-01 (b) Total annual energy consumption of data centers, including colocation equipment (aggregate in gigajoules).

Comment: Additional guidance and methodology will be required to enable companies to report accurately their colocation equipment (owned, operated) that is in other data centers (i.e. retail cloud or managed hosting providers) as these 3<sup>rd</sup> parties are not yet likely able to, or willing to report this information. Under reporting the energy footprints of this sector is a huge problem presently, in particular for the multi-tenant data center, colocation and managed hosting data center providers. In some cases, the equipment operated in colo environments represent a large, under-reported Scope 2 emissions category, let alone business risk related to D&R and continuity planning. This is less of a challenge for public hyperscale cloud providers who own and operate most or all of their data centers. This is definitely a material issue, but my recommendation is that further guidance from organizations like The Green Grid and others will be need to drive actual reporting of this metric.

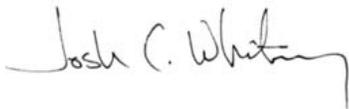
5. Software & IT Services

Environmental Footprint of Data Center and Office Hardware

TC0102-02. Weighted Average Power Usage Effectiveness (PUE) for all owned data centers.

Comment: Suggest that the word “operated” is added to the definition of this metric. And potentially that these two categories are broken out While many coporates operate their own data centers, colocation and cloud computing is driving many to outsource this as a service, however these providers most often do not provide any operational metrics, such as environmental and energy performance. In many instances, companies are using wholesale or retail colocation services where their owned hardware is placed in a data center which is operated by a 3<sup>rd</sup> party, with infrastructure cooling management responsibility. This determines the significant portion of the PUE factor. Presently, this segment is operating with the lowest PUE’s reported, and while the 2013 Uptime Institute cited an average PUE of 1.65 today from their 1,000 company survey, another from Digital Realty Trust (which operates/ sells many colo environments) cited 2.9, with only 20% below 2.0.

Best,



Josh Whitney  
Partner



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Dear Sir/Madam

### **BSR Comments on Technology and Communications Sector Exposure Draft**

Please find below comments from BSR on the Sustainability Accounting Standards Board (SASB) Technology and Communications Sector Exposure Draft.

The Technology and Communications Sector is characterized by convergence and overlap between different sub-industries. For this reason, we have merged together BSR's comments on all the industries within that sector: Electronic Manufacturing Services; Software and IT Services; Hardware; Semiconductors; Telecommunications; and Internet Media & Services. We have also organized our comments according to the categories suggested by SASB by covering Disclosure Topics, Accounting Metrics, and Cost Effectiveness.

Our headline feedback is this: the Exposure Draft effectively identifies the right Disclosure Topics for the sector, but proposes Accounting Metrics that we believe raise a number of significant challenges for reporting companies, especially given existing metrics provided by the Global Reporting Initiative (GRI) Sustainability Reporting Guidelines.

### **About BSR and the Technology and Communications Sector**

BSR is a global non-profit business network organization with a mission to work with business to create a just and sustainable world. We envision a world in which everyone can lead a prosperous and dignified life within the boundaries of the Earth's natural resources.

With more than 100 employees in eight offices across Asia, Europe, and North and South America, we drive social and environmental impact through a membership of more than 250 of the world's most influential companies, one-to-one engagements with companies, collaborative and multi-stakeholder initiatives, and partnerships among business and grant-funders.

BSR's ICT practice membership encompasses 35-40 ICT companies, including a range of internet, software, semiconductor, telecommunications, consumer electronics and equipment manufacturing companies. This currently includes Adobe, Alcatel-Lucent, AMD, Amdocs, Apple, AT&T, Autodesk, Best Buy, BlackBerry, Cisco, CTIA, Dell, eBay, Facebook, Google, HP, IBM, Intel, Jabil, Microsoft, Panasonic, Qualcomm, Salesforce, Samsung, SAP, Seagate, Sony, Symantec, Telenor, TE Connectivity, Telefonica, Tellabs, T-Mobile USA, Toshiba, Verizon, Xerox and Yahoo.

In addition, BSR has significant experience in sustainability reporting, through participation in various international guideline and standards setting processes (such as the Global Reporting Initiative and International Integrated Reporting Council) and through the creation of sustainability reports with member companies (such as with GE, IBM, Seagate, Panasonic, TE Connectivity, China Mobile and AT&T).

However, it is important to note that BSR maintains a strict policy of not acting as a representative of its membership, nor does it endorse specific policies or standards. The views expressed in this submission are those of BSR and do not necessarily reflect those of BSR members.

## Disclosure Topics

BSR notes SASB's intention to identify sustainability topics at an industry level which **may be material**—depending on a company's specific operating context—to a company within that industry.

We feel that the list of sustainability topics in the exposure draft generally pass the test of “may be material”, though we note that a company's specific operating context will be critical to this determination and we expect many companies to reach a shorter list of material issues than the exposure draft.

However, we would like to make to key additional points.

- » There are a number of proposed Disclosure Topics and Accounting Metrics in the SASB Exposure Draft that we believe are increasingly material to the sector, but which are notably absent from other reporting guidelines and standards, such those provided by the GRI. These include **Data Privacy and Freedom of Expression** (especially accounting metrics TC0102-07, TC0301-06 and TC0401-08 on law enforcement requests, TC0102-08 and TC0401-09 on content restrictions) and **Data Security** (especially accounting metrics TC0102-10, TC0102-11, TC-0103-04, TC0301-08, TC0401-10, TC0401-11, TC0401-12).

We welcome the inclusion of these topics and metrics in SASB's Exposure Draft, and emphasize the experimental and emerging nature of these metrics. However, we strongly urge SASB to proactively communicate with other organizations (such as the Global Network Initiative and the Berkman Center at Harvard) that are leading efforts to research the effectiveness of emerging company metrics on these issues and develop reporting protocols for companies to use. BSR has noted that these organizations seem unaware of the SASB consultation process, and we have not witnessed SASB participation in these initiatives—greater engagement with relevant stakeholders on these material issues would be highly beneficial.

- » There are some proposed Disclosure Topics / Accounting Metrics that seem only mildly related to sustainability issues and could usefully be removed from the standard. These especially include **Managing Systemic Risks from Technology Disruptions** (TC0102-19, TC0102-20, TC0102-21, TC0301-13, TC0301-14, TC0301-15). Alternatively, the sustainability related aspects of these Disclosure Topics / Accounting Metrics (such as climate change and extreme weather events) could be more clearly called out.

## Accounting Metrics

While we largely agree with the selection of Disclosure Topics, by contrast we believe the proposed Accounting Metrics will be much more problematic for companies using the standard.

First, there seems to be significant inconsistency between the Accounting Metrics contained in the Exposure Draft and commonly used Accounting Metrics found in other widely used reporting guidelines, especially the GRI. We believe this inconsistency will lead to increased implementation costs for business, frustration with unnecessarily duplicative reporting processes, and a significantly lower adoption of the standard.

We have compiled here an illustrative list of duplications where we believe **SASB could adopt GRI guidance/protocols**, or at least work towards greater consistency of terminology.

GRI Standard Disclosure	Equivalent SASB Accounting Metrics
G4-EN3 Energy Consumption in the Organization	TC0101-01; TC0102-01; TC0103-01; TC0201-04; TC0301-01; TC0401-01
G4-EN15 Direct Greenhouse Gas Emissions	TC0201-01
G4-EN21 NOX SOX & Other Significant Emissions	TC0201-03
G4-EN8 Total Water Withdrawal by Source G4-EN9 Water Sources Significantly Affected by Withdrawal of Water G4-EN10 Percentage and Total Volume of Water Recycled and Re-used	TC0101-02; TC0102-03; TC0103-02 TC0201-05; TC0401-03
G4-EN23 Total Weight of Waste by Type and Disposal Method	TC0101-03; TC0103-03; TC0201-07
G4-LA1 Employee Turnover by Age Group, Gender and Region	TC0102-16; TC0401-17
G4-LA12 Breakdown of Employees per Employee Category, According to Gender, Age Group, Minority Group Membership, and other Indicators of Diversity	TC0102-17; TC0103-07; TC0401-15
G4-EN28 Percentage of Products Sold...That are Reclaimed by Category	TC0103-12; TC0301-11

Second, there are a number of Accounting Metrics that cover important and potentially very material sustainability issues, but which are far too detailed and specific in the way they are written. These Accounting Metrics seek to make precise issues that in reality are imprecise, and we believe this will significantly deter their uptake by companies. For example, in the Technology and Communications sector it is extremely difficult to draw clear boundaries around product and service categories, especially in the age of convergence. We recommend much looser Accounting Metrics for these issues, and greater experimentation over the next decade or so, with clearer definitions being adopted if evidence from company implementation supports that. For example, these include:

- » TC0102-18: Delivering Sustainability Solutions for Customers—“Provide total addressable market and the segmented addressable market for current or new products or services specifically addressing such customer demands. Provide target 3-year share of the market, and total current share of the market”.
- » TC0201-19: Product Design and Lifecycle Management—“Description of products tailored to address sustainability-related applications, such as smart grid and healthcare; provide current revenue, total addressable market and the segmented addressable market for current or new products specifically addressing these applications. Provide target 3-year share of the market, and total current share of the market”.
- » TC0301-12 – Delivering Sustainability Solutions for Customers—“Provide total addressable market and the segmented addressable market for current or new products or services specifically addressing such customer demands. Provide target 3-year share of the market, and total current share of the market”.

### Cost Effectiveness

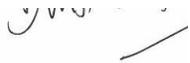
BSR’s comments on cost effectiveness are closely related to our comments on Accounting Metrics. Specifically, we do believe that the level of detail proposed in the metrics and their inconsistency with existing metrics provided by the GRI could become a significant barrier to adoption of the SASB standards by companies.

## Conclusion

BSR welcomes the attempt to bring greater clarity on the reporting of material sustainability issues to investor audiences. We especially welcome the attempt to create new Accounting Metrics on critical issues (such as privacy and freedom of expression) that are currently under-emphasized in other reporting frameworks. However, we are concerned at the significant inconsistencies between the Accounting Metrics in the Exposure Draft and widely adopted disclosures provided by the Global Reporting Initiative. Without a systemic and proactive attempt at consistency, we fear that the SASB standards will not be widely adopted by companies already using other reputable global sustainability reporting guidelines.

We are happy to discuss these comments in more depth and answer any questions you may have.

Best regards



Dunstan Allison-Hope  
Managing Director, Advisory Services

[REDACTED]  
United Kingdom

10 January 2014

**Re: SASB consultation submission**

Dear Andrew,

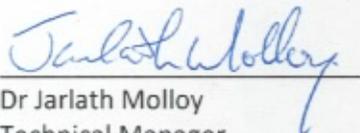
We are grateful for the opportunity to formally respond to your consultation dealing with the Financials and the Technology & Communications sectors. Our comments follow below.

CDSB's mission is to promote and advance climate change, forests/commodities and water related (i.e. natural capital) disclosure in mainstream reports through the development of a global framework for corporate reporting on non financial information. As such, we welcome the publication of draft standards in the Financials and Technology & Communications sectors. The provisions contained within the draft standards represent significant progress in establishing the basis for non financial reporting.

We would like to highlight the synergy between CDSB and SASB and emphasise the complimentary nature of our activities, while recognising our different geographical and sector-related focus. We recognise the language, provisions and substance of the draft standards and endeavour to ensure consistency in our updated Framework. We suggest SASB likewise reference the work of CDSB, as appropriate.

If we can be of any further assistance, please don't hesitate to get in touch.

Kind regards,



Dr Jarlath Molloy  
Technical Manager.



- a. Percentage of products (by revenue) that meet the requirements of the European Union’s Restriction of Hazardous Substances (RoHS) Directive. [This is included in SASB TC0101-07, TC0103-08, and TC0201-14.]
- b. Discussion of usage of Registration, Evaluation, Authorisation and Restriction of Chemical (REACH) substances of very high concern (SVHC) and chemicals listed in Joint Industry Guide (JIG) 101 ed. 4.1., Table A. Declarable Substance List. [This is included in SASB TC0101-08, TC0103-09, and TC0201-15.]

**But these two criteria are both too limited in scope to effectively address the problem.** Most manufacturers are already meeting ROHS Directive, which addresses only six hazardous substances, with their global production. (So meeting this criterion is not an example of leadership in this industry.)

The other two lists are also far too limited: The REACH candidate list of substances of very high concern is currently only 151 chemicals, only some of which are relevant for electronics. The CEA JIG list is no longer maintained as such (it’s been incorporated into [IEC Standard 62474](#)) but it mostly represents the chemicals that are already being regulated.

Both of these lists include hazardous materials that have been in use for a very long time, long enough for their hazardous properties to become known (via lab testing or exposure-related illnesses). So they are important to include. **But these two measures alone fall far short of addressing the issue of hazardous chemicals in electronic products.**

A good example how why we must look beyond these lists is the emerging research showing that Indium is hazardous. Indium is in many electronic devices. One way it’s used, in the form of indium tin oxide, as a conductor in LCD displays and touchscreens, in TVs, phones, laptops, and other devices. This compound is not on the ROHS list, REACH candidate list or the JIG list. But research suggests that indium workers are developing a new occupational disease that’s now being called [Indium Lung Disease](#).

**Brands should know whether their products contain hazardous materials**

This industry is well aware that materials receive very little toxicological testing before they are introduced into commerce, so that we often learn about hazardous properties much later - after production or recycling workers or nearby communities have developed exposure-related illnesses. So simply asking suppliers about the chemicals on the JIG list and the REACH list, is not at all the same as asking them whether there are any hazardous chemicals in their products. If anything, this “check the box if you are using these chemicals” approach to supplier chemical declaration simply encourages suppliers to check the “no” box, whether or not that is accurate.

Instead the Brands should want to know, “Are there hazardous chemicals in my products?” If so, they could have financial exposure for harm caused by those hazardous materials. Brand owners must be more pro-active in their approach to hazardous chemicals. First they need to find out what are ALL the chemicals used in their products, and then determine which ones are hazardous.

**Start with “Know your chemicals”**

It’s shocking that most electronics brand owners don’t actually know all the chemicals in their products. This would not be tolerated in many other sectors. But that’s the current state of this industry with very complex supply chains with thousands of suppliers. There are a few companies, [like Seagate](#) and [Microsoft](#), who DO ask their suppliers to give them full chemical inventory on all their parts. Other brands are in the process of implementing this strategy.

Therefore, sustainability standards should allow investors to identify the brands who are:

1. Asking their suppliers for full material inventory, down to the part level, of their products
2. Getting full material inventory disclosure from their suppliers
3. Systematically substituting hazardous chemicals with safer chemicals

Recommended additional criterion

We recommend the addition of the following criterion:

Percentage of products (by revenue) for which registrant has

- a) Sought from all suppliers the full inventory of chemicals in the product
- b) Obtained from all suppliers the full inventory of chemicals in the product

**Employee Health and Safety**

As discussed above, the issue of hazardous materials is also important in the manufacturing process. In the draft standard for semiconductor manufacturers, you have included the following criterion:

*TC0201-12: Discussion of efforts to assess, monitor, and reduce exposure of employees to human health hazards. Describe management approach to both short-term (acute) and long-term (chronic) health risks.*

We have two recommendations for changes to this criterion:

1. Don't limit it just to the semiconductor manufacturers. This is an issue for all electronics manufacturing. Therefore, it should be in all the standards related to manufacturing.
2. Ask for more specifics about the exposure monitoring and human health monitoring being done for specific hazardous materials used in manufacturing. Because the chemical and material manufacturers don't do adequate hazard testing, manufacturers using those materials can't really know if they are safe or not. Therefore, they should institute exposure and health monitoring to detect exposures and identify symptoms of harm that workers develop from using these materials. Too often, companies don't start paying attention until many workers develop serious health problems and cancers. But often, warning signs existed much earlier – like skin irritations, coughing, pain, headaches – which could have alerted authorities if they had been paying attention. Therefore, we suggest adding the language (in blue) below:

*Discussion of efforts to assess, monitor, and reduce exposure of employees to human health hazards. Describe management approach to both short-term (acute) and long-term (chronic) health risks. For exposure monitoring and for human health monitoring: How many chemicals are monitored? What percent of total chemicals used are monitored? What are the detection limits? How frequently are they monitored? How is health monitoring data reviewed and used to identify potential occupational illnesses?*

**Comments on other sections of the standard**

We suggest the addition of the language in blue below. See comments for further explanation.

<b>Water and waste management in manufacturing</b>	
TC0101-02 TC0103-02 TC0201-05	<b>Water Withdrawal</b> <i>Total water withdrawn (m<sup>3</sup>), returned to watershed (m<sup>3</sup>), internally recycled (m<sup>3</sup>); and for each indicate the percentage in water-stressed regions, defined as High or Extremely High Baseline Water Stress as defined by the WRI Water Risk Atlas. For the portion returned to the watershed, what percent has been treated adequately to meet drinking water standards?</i>
	Comment: Just because water has been treated and returned to the watershed, it doesn't

	mean that it's clean. There are MANY polluting manufacturers whose treated water is still polluted. The point is whether they clean it up enough to drink it.
TC0201-06	<b>Ultrapure water production</b> <i>Total ultrapure water (UPW) production and gallons produced per chip start.</i>
	Comment: Investors will want to know not just total water used, but also how efficient the semiconductor manufacturing is in its water use. Therefore, the reporting should be related to chip manufacturing data.
TC0101-03 TC0103-03 TC0201-07	<b>Waste reporting</b> <i>Amount of waste (tons) broken down by the following waste types: (1) Hazardous; (2) Non-hazardous; (3) Electronic waste (e-waste). For each waste type, indicate the percentage that is recycled, <del>treated</del>, incinerated, and landfilled, <i>applied to land, emitted to air, discharged to water or placed in storage</i>; and the weighted average cost (\$) per ton for each disposal method. <i>For volumes of hazardous waste that <del>was</del> were landfilled, indicate what percent of went to a special hazardous waste landfill, vs the percent that went to "regular" landfills. For hazardous waste applied to land, emitted to air, discharged to water, or placed in storage, describe treatments performed prior to final disposition.</i></i>
	<p>Comments:</p> <ul style="list-style-type: none"> <li>• "Final disposition." We suggest striking out the word "treated" here. Ultimately, what's most useful is to understand the final disposition of waste: recycling, incineration, landfill, emission, storage. Treatment could occur before any of those steps, so it doesn't help clarify ultimate disposition and would only confuse the reporting. (See more on this below.) Asking for reporting on ultimate disposition has the desirable benefit of requiring the reporting company to know what ultimately happens to their wastes. For example, it's not useful to report a volume as "recycled" if you merely sold it to a recycler, when in fact the ultimate disposition might be that only a small percent of what the recycler received was recycled, and the rest was incinerated or landfilled. With e-waste, collectors will often sell whole products to companies claiming to be recyclers, but who are really just selling it to the highest bidders, no matter what they do with it.</li> <li>• Treatment. We do think it's relevant to find out what kind of treatment is performed on hazardous waste prior to ultimate destination, so we've added "describe treatments performed prior to final disposition" above. It's important for investors to know whether the process is generating a kind of hazardous waste (including electronic waste) for which there is no adequate recycling or treatment infrastructure in that country/region.</li> </ul> <p>Other clarifications for the guidance document: This standard would benefit from some more specificity to make sure that companies are reporting similar information:</p> <ul style="list-style-type: none"> <li>• The term "electronic waste" is defined to mean off-spec or otherwise substandard products or parts generated by the manufacturing process.</li> <li>• Document should explain which definition of "hazardous waste" will be used here. They are not the same in each country. The US definitions are particularly weak and should not be the benchmark.</li> </ul>

<p>Draft applies this to TC0201-08 only</p> <p>Add this to TC 101 TC 103 also</p>	<p><b>Legal and regulatory fines</b></p> <p>Description of <a href="#">notices of violations</a>, legal and regulatory fines and settlements associated with federal, state, and local environmental protection laws covering water, waste, or cleanup. Include dollar amount of fines and settlements and a description of corrective actions implemented in response to events.</p> <p>Comments: This criteria should be included in all three standards (101 and 103 in addition to 201). There are <u>many</u> incidents of pollution from electronics manufacturing outside of the semiconductor industry. This should also include notices of violations even if fines were not imposed. Some countries will rarely impose fines even for serious violations. So it's important to capture information on the incidents, even if fines are not paid.</p>
<p><b>Product Lifecycle Management</b></p>	
<p>TC0101-11 TC0103-12</p>	<p>Amount (weight) of products recovered through take-back programs, <a href="#">broken down by the following return streams</a>:</p> <ul style="list-style-type: none"> <li>• <a href="#">Asset recovery program</a></li> <li>• <a href="#">Public takeback and recycling programs</a></li> <li>• <a href="#">Lease returns</a></li> <li>• <a href="#">Trade in programs</a></li> <li>• <a href="#">Other</a></li> </ul> <p>Percentage of recovered products (by weight) that are (a) reused, (b) remanufactured, (c) recycled, and (d) landfilled. Percent of total classified as electronic waste (e-waste), percentage of e-waste <a href="#">and products going into reuse recycled through managed by entities certified to with Basel e-Stewards certification the e-Stewards Standard for Responsible Recycling and Reuse of Electronic Equipment, by independent certification bodies accredited by an International Accreditation Forum (IAF) member accreditation body to certify to that standard.</a></p>
	<p>Comments:</p> <p>1. Why break down the take back volume?</p> <p>The term "Take-back programs" means different things to different companies. Some will include just their recycling programs, others will include their leased equipment returns (which we believe is not the intent of the question).</p> <p>2. Certification. We applaud the reference to e-Stewards in this standard, as it is the highest standard in the recycling industry. Why all that extra language? What we want to see is an independent, 3<sup>rd</sup> party audit, performed by someone who actually knows how to audit to that standard.</p> <p>Notes for guidance document:</p> <ul style="list-style-type: none"> <li>• Figure for reuse should include the weight of the parts or whole products actually reused, not the full weight of a product from which only some parts are reused. (This is a common problem in reporting on reuse.)</li> <li>• ADD A DEFINITION. You need to define e-waste or you will get apples and oranges here.</li> </ul>

	We suggest this definition: “E-waste means non-working or untested used products, parts, or materials derived from them, whether or not they have commodity value.”
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Thank you for considering our comments on the standard. If you would like any further details from us on our comments, please don't hesitate to contact me at [REDACTED] or [REDACTED]

Sincerely,



Barbara Kyle  
Electronics TakeBack Coalition

These comments are submitted in behalf of Flextronics, a diversified \$24 billion EMS/ODM headquartered in San Jose, California. Flextronics operates in 30 countries and employs nearly 200,000 individuals. Our products and services span several sectors: Aerospace & Defense, Automotive, Medical, Energy, Consumer Digital, Computing, Mobile, Home and Business Access, Industrial, Communications and Networking. See [http://www.flextronics.com/about\\_us/default.aspx](http://www.flextronics.com/about_us/default.aspx) for more information.

Contact: Bruce Klafter, Sr. Director, Corporate Social and Environmental Responsibility (CSER);  
[REDACTED]

- **Industry Standard - Electronic Manufacturing Services and Original Design Manufacturing**
  
- **Disclosure Topic** Water and Waste Management
- **Accounting metric code** TC0101-02
- **Line of disclosure** 0.5
- **Comment:** Water withdrawn from “freshwater” sources is unclear and should be clarified. Does this refer only to water *directly* withdrawn, e.g. via a well or pumped from a body of water or does it also include water purchased from a local water purveyor? If the latter is included, please define freshwater so that reporting entities do not need to undertake due diligence with each and every one of their purveyors.
- **Accounting Metric Code** TC0101-03
- **Line of Disclosure** .11
- **Comment:** Disclosing the average weighted cost of disposal for each type of waste and method of disposal will likely be difficult and costly to calculate and thus will be a barrier to reporting. In our case, we operate over 100 factories worldwide and a number of other facilities that generate more modest amounts of waste. Each of the factories has multiple waste streams and multiple disposal methods and vendors. Calculating the costs at one location is somewhat involved and attempting to do so for the entire company is impractical. We do not presently attempt to make this calculation and the business value (which is unclear) is outweighed by the burden. Lines .09 and .10 are probably the limit of disclosure for most companies.
- **Accounting Metric Code** TC0101-10
- **Line of Disclosure** .39
- **Comment:** I would anticipate some difficulty on the part of reporters in interpreting whether their standards “incorporate environmentally focused principles” and thus meet this criterion. EMS and ODM companies consider their design standards to be a mix of regulatory prescriptions, detailed customer specifications and internal company policies. It is unclear whether a product must simply “consider” the relevant principles or whether final designs must incorporate one or more environmentally superior features. In design for environment evaluations, there is also a question of benchmarks, i.e. is the design compared to a prior generation of the product (if one exists), to the “best” product on the marketplace (if that can be discerned) or to some other standard (e.g. EPEAT). In short, this is a highly complex and multifaceted topic and the proposed disclosure will lead to some confusion, may produce unnecessarily long or convoluted disclosures or may deter reporters altogether.
- **Accounting Metric Code** TC0101-11
- **Line of Disclosure** .44
- **Comment:** There is still a difference of opinion in industry in terms of the relative merits of e-Stewards and R2. This metric indicates a bias for e-Stewards without a stated justification; if this is the only “acceptable” standard that should be explained. The reality is that many partners, i.e. the disposal facilities, may have elected to use one or the

other standard. Our operation in a particular location may only be able to partner with a R2 facility as opposed to e-Stewards. For disclosure purposes, companies should be able to state the percentage of material recycled through various types of facilities and indicate the standard to which they are certified.

- **Accounting Metric Code** TC0101-12
- **Lines of Disclosure** .46-.50
- **Comment:** These proposed disclosures are not legitimately denominated as a “metric”. Only line .50 even contemplates a metric. The bigger issue is that the disclosures contemplate an extraordinarily broad discussion of risk assessment and management. The proposal looks both unwieldy and in line .48 seems rather speculative. There is no distinction in this metric between major and minor “constraints”, “shortfalls” and “reductions in production capacity” and it seems to encourage disclosure of even nonmaterial information. The other factor left out of the metric is a company’s recovery plan. Production can be pushed out or rescheduled, materials might be substituted, idled capacity can be reassigned to other products, etc. For the same reasons, it difficult to calculate a percentage of reduced production capacity as proposed in .50 I think it unlikely that many companies will elect to make this disclosure; the exception would be catastrophic events with obvious material impacts, e.g. the major floods in Thailand that disrupted disk drive manufacture and products incorporating such drives.
- **Accounting Metric Code** TC0101-13
- **Lines of Disclosure** .51-.54
- **Comment:** Reporters will consider the percentage of suppliers who are “sole source” or “critical” to be proprietary information. Moreover, there is no guidance as to how this percentage is calculated, i.e. out of the total number of suppliers, by overall spend, by spend per type of component, etc.
- **Line of Disclosure** .56
- **Comment:** There is no indication of what is meant by “implementation” of the EICC code in the supply base. Does that refer to suppliers who have adopted the code or does it refer to some other measure of actual implementation. The former could be reported much more easily than the latter measure.

**From:** Mark Schiller <[REDACTED]>  
**Sent:** Wednesday, January 15, 2014 12:48 PM  
**To:** Comments @ SASB  
**Cc:** [REDACTED]  
**Subject:** Re: Notice of Extended Deadline: Public Comment for Tech & Communications Standards

Dear SASB Representatives,

The Green Grid offers the following feedback regarding SASB publications for comment “Software & IT Services, SICS #TC0102” and the equivalent sections in “Internet Media & Services, SICS TC0401”. We apologize that our feedback has been submitted beyond the formal deadline, and appreciate your consideration.

PUE is best used as a tool to measure improvement in a specific data center over time. It is appropriate to discuss where and how it is implemented within an organization, but TGG has, for many years, discouraged the use of PUE as a comparison between different data centers.

There are many factors that can affect PUE and not all of these are under a given’s organization’s or facility’s control. Using PUE as a blanket metric to assess ‘aggregate goodness’ across multiple facilities will result in some organizations being inappropriately labeled as superior, while others, which may actually be run in a more responsible manner, are labeled as inferior.

All this being said, The Green Grid does believe that an organization that does not measure its impact, cannot manage its impact. The commitment to measure and manage accurately and on a regular basis is the best indicator of an organization’s commitment to data center energy efficiency, more so than its actual performance numbers.

As a result, we would caution the SASB to reconsider their basic approach to this question.

More appropriate questions would be those that enable an organization to communicate the depth to which it is measuring PUE across its data centers. We suggest “percent of data centers for which PUE is measured on a continuous basis” or “percent of data centers for which PUE is measured at least daily” as more indicative and information alternatives.

If SASB decides to retain the notion of a “weighted average PUE”, we are concerned that the term “weighted average” PUE would be confusing to implementers, and should be more precisely named and specified as “Enterprise-wide PUE”. Further we ask that the calculation method for “Enterprise-wide” PUE be specified as noted below, in our suggestions for alternative language for the current sections .09 to .12:

.9 The registrant shall report a trailing twelve-month (TTM) Enterprise-wide power usage effectiveness (PUE) for all owned data centers, where:

- These metrics shall be reported according to the methodologies outlined in The Green Grid White Paper #49. The Green Grid-recommended best practice is automated, real-time monitoring with data captured every 15 minutes or less. When reporting a PUE value, data center owners should use the average PUE measured over a one-year period. For data centers without real-time monitoring, PUE data should be collected at least monthly. Level 3 PUE is preferred; however, if Level 1 or 2 PUE are used the data should be noted as such.
- PUE reflects the ratio of “total amount of power used by a computer data center facility,” to “power delivered to computing equipment.” PUE measures how efficiently a computer data center uses its power; specifically, how much of the power is actually used by the computing equipment (in contrast to cooling and other overhead).

- The enterprise-wide PUE is calculated as all energy use in data center facilities, divided by the data center energy use that directly powers computing equipment. Disclosure reflects a 12-month rolling average to account for seasonal variation.

.10 Energy use in the data center facility shall include electricity purchased from the grid as well as non-grid sources of energy.

In addition, we further caution SASB to ensure that these types of questions are addressed in the correct standards. It is very possible today that an Internet Media and Services company has outsourced most of its IT, leaving it with only marginal IT environmental footprint. On the other hand, a neighboring financial institution may be managing all of its IT in-house, with a substantially larger footprint both in terms of units of equipment and overall resource consumption.

Whether or not an organization should answer questions about PUE, therefore, is not a function of the sector they are in, but is, instead, a function of the size of their IT population.

Please also note that with the exception of “Internet Companies” the largest resource use impacts from companies will typically originate with their customers’ data centers, rather than those used for their internal IT.

For questions or further discussion regarding this feedback, please contact The Green Grid via email using:

[REDACTED]\_and [REDACTED].

Best Regards,

**Mark Schiller**

**The Green Grid – Executive Director**

[REDACTED]

Phone: + [REDACTED] | Fax: + [REDACTED]

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Email: [REDACTED] | Website: [www.thegreengrid.org](http://www.thegreengrid.org)

January 2, 2014

Sustainability Accounting Standards Board  
75 Broadway, Suite 202  
San Francisco, CA 94111

Dear Sirs:

Please find attached my review of TC0102, Environmental Footprint of Data Center and Office Hardware. I summarize my findings and recommendations here. The details are in the attachment.

I have 3 overriding concerns:

1. GHG and waste reporting requirements are missing.
2. Energy reporting requirements and contain a number of errors with regard to Renewable Energy Certificates (RECs)
3. Too many reporting requirements have nothing to do with sustainability according to the SASB published definition of sustainability.

Two omissions are troubling. There is no requirement to report greenhouse gas (GHG) emissions or waste. GHG emissions, water and waste are data fundamental to environmental reporting.

Renewable energy certificates or credits (RECs) are often misunderstood and the draft suggests gaps in understanding the definition of RECs and environmental consequences of purchasing RECs.

When I see the number of draft reporting requirements that have nothing to do with sustainability according to your definition, I predict this standard will fail. The preponderance of what the draft is requesting has no standing in relation to the reasons for soliciting this data. Further, this draft is burdensome and is justification for reasonable business people to choose not to participate in reporting.

Good, robust design of any product, including a standard, is more about doing a few things very well. Omissions, errors and bloat represent failure. Please fix this draft. I would like to see SASB be successful and a correct, elegant standard as your product.

I am available to discuss these comments if that would be helpful.

Sincerely,

Don M. Bain, P.E.



enclosure

## Review of *Environmental Footprint of Data Center and Office Hardware*

Reference:

SASB Software & IT Services  
SICS™ #TC0102

Prepared by the  
Sustainability Accounting Standards Board ®  
October 2013  
Exposure Draft for Public Comment

Disclosure Topic: Environmental Footprint of Data Center and Office Hardware

### Omissions

TC102-01 omits GHG reporting. The following should be added: “The registrant shall report the Scope 1 and Scope 2 GHG emissions associated with its data centers in accordance with the GHG Protocol Corporate Standard.” Note that data centers employ refrigeration and fire suppression systems which contain HFCs and PFCs, and produce CO<sub>2</sub>e from fugitive emissions that may be substantial (given the high GWPs of these gases).

The proposed standard omits any requirement to report waste. While the volume or mass of waste produced by data centers is not large relative to other facilities, the composition of the waste is material.

### Problems

TC102-01 line 01 does not specify a time period for the energy consumed. Use the same 12 month period as you do for TC102-02 line 01 for consistency

TC102-01 line 02 seems without purpose and is ambiguous in its use of “overall energy consumption.” What are you attempting to determine? Overall energy consumption includes fuels used for example in heating, on-site generation, etc. Are you asking for the energy consumption of the company, a single data center, a partial-use data center located in an office building, ...? You need to tighten this up if you want to get any numbers for comparison, such as a reasonable investor might want.

TC102-01 line 03 is ambiguous because it does not define “non-grid renewable energy consumption” and “overall energy consumption.”

TC102-01 line 04 is flawed because it states “Non-grid renewable refers to the **renewable energy** the registrant ... **purchases** through **renewable energy certificates (RECs)**...” A REC is not energy and to add or subtract it with any quantity of energy consumed is incorrect and misleading.

TC102-01 line 05 is flawed because it depends on definitions in TC102-01 line 06 that are ambiguous..

TC102-01 line 06 is clumsy in use of the phrases “GHG inventory of energy consumption” and “*total* GHG inventory of energy consumption.” These phrases are not defined in any standards and lack an explicit definition of the boundary to be used in the calculation.

Before I go into attempting to repair this wording, I have to ask what are you attempting to accomplish with this metric? Investors invest in companies, not data centers.

If you feel there is merit in the GHG intensity of the energy consumed *in the data center* then the following wording should be inserted:

Given a boundary as defined in Figure 2 of the Green Grid White Paper #49-*PUE: A Comprehensive Examination of the Metric* found at <http://www.thegreengrid.org/en/Global/Content/white-papers/WP49-PUEAComprehensiveExaminationoftheMetric> calculate the total of Scope 1 direct GHG emissions and Scope 2 indirect GHG emissions and divide the total by the total energy consumed within the boundary during the same period. The GHG emissions calculated shall be in units of t CO<sub>2</sub>e, shall include emissions of CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O, and shall be calculated in accordance with the World Resources Institute/World Business Council on Sustainable Development’s (WRI/WBCSD) Greenhouse Gas Reporting Protocol-Corporate Standard, or equivalent.

Note that data centers often contain refrigerant and fire suppression systems which leak, producing fugitive emissions of GHGs. These should be included in Scope 1.

TC102-01 line 07 is incorrect and misleading because it says “accounts for efforts to reduce energy-related emissions through ... purchasing renewable energy through Renewable Energy Credits (RECs)...” As stated previously, purchasing a REC is not purchasing energy. Further, RECs do not reduce the emissions released to the atmosphere as a result of consuming power at data centers.

TC102-02 line 10: There are many sources of variability in addition to seasons. Remove the word “rolling” and replace with “weighted” to remain consistent with TC102-02-09. If you are requiring monthly reporting of the 12 month trailing weighted average, then say that. However, such a requirement is burdensome and should not be made.

TC0102-04 lines 17 and 18 address intent with regard to decisions or acts that have not happened and should be removed. If you mean to require respondents to have and disclose a policy for these future decisions or acts, then say that.

## **Content Not Related to Sustainability**

From <http://www.sasb.org/sasb/vision-mission/> , “SASB defines sustainability as environmental, social and governance factors that have the potential to affect long-term value creation and/or are in the public’s interest.” The following do not address issues related to SASB’s definition of sustainability and should be removed from the proposed standard:

TC0102-02, TC0102-05, TC0102-06, TC0102-07, TC0102-08, TC0102-09,  
TC0102-10, TC0102-11, TC0102-12, TC0102-13, TC0102-14, TC0102-15,  
TC0102-16, TC0102-17, TC0102-18, TC0102-19, TC0102-20, TC0102-21,  
TC0102-22;

Lines 09 -- 12 inclusive; and  
Lines 20 – 83 inclusive.

## **Miscellaneous**

“Office Hardware” does not appear in the body of the document and should be removed from the title.



CRS

center for  
resource  
solutions

January 2, 2014

Submitted electronically via: [REDACTED]

**Regarding: Center for Resource Solutions Comments on Sustainability Accounting Standards Board (SASB) Program for Technology & Communications Sector**

*Background*

Center for Resource Solutions (CRS) appreciates the opportunity to submit comments on the proposed revisions to TC0101, TC0102, TC0103, TC0201, TC0301 and TC0401. CRS is [REDACTED] prof [REDACTED] creates policy and market solutions to advance sustainable energy, in part through the Green-e Energy consumer protection program. Green-e Energy certifies sales of high-quality renewable electricity and RECs to customers throughout the US and Canada. Nearly three quarters of US retail voluntary renewable electricity and Renewable Energy Certificate (REC) purchases are certified through Green-e Energy. We appreciate SASB's effort to include renewable energy in disclosure guidance and accounting standards and for referencing Green-e.

As background to our comments, only through the purchase and use of RECs can any electricity user in the US and Canada accurately claim to be using renewable electricity. A REC represents the non-electricity attributes, including all the environmental attributes, of one megawatt-hour of renewable electricity generation. RECs are the means to track generation and consumption of renewable electricity, because the sources of electricity put onto the grid cannot physically be tracked through individual electrons; some form of contractual accounting must be used for such tracking, and this is accomplished through RECs.

RECs may be bought and sold independent of electricity, or bundled with electricity purchased through a renewable power purchase agreement (PPAs) or voluntary renewable electricity program offered by an electric service provider or utility. Likewise, on-site generation facilities generate electricity and RECs. In all cases, the REC is the way to track and account for the fact that the electricity generation was renewable, and also make the claim of using renewable electricity from the generating facility.

Our comments are applicable to all SASB standards that reference renewable energy use by reporting entities, and we hope that SASB will consider these comments and issues during the development and revision of all SASB standards.

*Renewable PPAs and On-Site Generation Must Include RECs*

In order for SASB's rules to encourage and facilitate use of renewable electricity, the guidance language should be clear throughout SASB standard accounting metrics that all renewable power purchase agreements (PPAs) should also explicitly include and convey Renewable Energy Certificates (RECs) as part of those agreements. Likewise, RECs from any renewable electricity generated on-site must be retained and not sold in order for the registrant to accurately claim to be using the renewable electricity from that generator. We feel that this is in line with the intent of the draft language but that the language would be more easily understood and used with these clarifications. If RECs are not included as part of a PPA or on-site generation use, it allows for the possibility of multiple parties claiming the same environmental benefits of a unique MWh of renewable electricity generation, because the REC buyer would make the same claim that the purchaser of the electricity without the REC would attempt to make.





#### *Add Reference to Voluntary Renewable Electricity Programs*

In addition to PPAs, standalone REC purchases, and on-site generation, renewable electricity can also often be bought through a voluntary renewable electricity option offered by an electric utility or other electric service provider. If Green-e Energy certified, these options offer renewable electricity that the customer would not have received through default electricity service. SASB's provision of not allowing disclosure of "the renewable portion of the energy drawn from electricity grids" (.04 in TC0101, TC0102, TC0103, TC0301 and TC0401, and .15 in TC0201) as a way to encourage registrants to proactively purchase renewable electricity beyond what they would get through their default electricity service.

#### *Distinguish between Electricity and Energy,*

We suggest further clarification as to what is meant by the use of the term "renewable energy" in .04 in TC0101, TC0102, TC0103, TC0301 and TC0401, and .15 in TC020. If this term is meant to include both electricity and other forms of energy (such as thermal) we would encourage clarification that is consistent with the definition of "renewable energy". If only electricity is meant to be included here, we would recommend the term "renewable electricity" to be used throughout the section for clarity. Where RECs are mentioned, we encourage SASB to state that they are only to be associated with electricity.

Along these lines, we recommend that all disclosures and accounting involving RECs should be applied prior to conversion from kilowatt-hours to gigajoules. This is because RECs are linked to electricity that is measured in MWh, and so the registrants' calculations will be simplified with this clarification.

#### *Distinguish between Renewable and Non-renewable Electricity Sources*

The current guidance is not clear on how and whether to report electricity purchases that are not specifically from renewable sources. Most electricity purchased and used by companies adopting SASB's accounting standards will be the default electricity service provided by their electric utility. Such electricity is sourced from a variety of resource types, and will have emissions associated with its generation. Registrants should report such emissions resulting from the generation of the electricity they purchase that is not specifically renewable.

#### *Appropriate Reference to Green-e Energy Certification*

Regarding the use of "i.e." (that is) as opposed to "e.g." (for example) when stating that "RECs that are certified (i.e., through Green-e)", Green-e Energy is prominent in the US and Canada, but should only be a SASB requirement if registrants are based in these two countries. If SASB's intent is for its standards to be used outside of these countries, "e.g." may be more appropriate; however, under certain circumstances Green-e Energy certification may be possible outside of North America.

#### *Suggested Language*

Taking all of these recommendations together, we suggest the following general language for any SASB standard that includes energy consumption, assuming that the original language is meant to apply only to electricity use: "The registrant shall disclose renewable electricity data for renewable electricity it directly produces on-site and consumes, or which it purchases through certified (i.e., through Green-e Energy) voluntary renewable electricity programs offered by electric service providers or utilities or through certified renewable energy certificates (RECs), or purchases through renewable power purchase agreements (PPAs). Registrant shall not disclose the renewable portion of the electricity purchased through its default electricity service." If electricity is included as only one type of "renewable energy" in this specific section, the term "electricity" in the above language could be changed to "energy" and the following language can be added prior to the last sentence: "For all renewable energy consumed as electricity through any of the means listed above, RECs must be retired on behalf of all renewable electricity reporting by registrant."



CRS

center for  
resource  
solutions

*RECs Should Be Applied to Scope 2 Emissions Only*

Finally, CRS supports the inclusion of emissions from purchased electricity use (scope 2 emissions) to the proposed disclosure for the Environmental Footprint of Data Center and Office Hardware (TC0401), and would also support inclusion of scope 2 emissions reporting to the proposed disclosure guidance in all applicable SASB standards. It is possible to achieve zero emissions use in most cases by consuming 100% renewable electricity; however, we acknowledge that some fuel sources commonly considered renewable (e.g. biomass) may not be recognized as zero emissions fuel sources by all reporting guidelines and standards.

Please feel free to contact us with any questions you may have on these comments or if we can be of any further assistance to you on electricity and greenhouse gas accounting in SASB standards. We have worked closely with the US Green Building Council on the renewable electricity and carbon offset portions of their LEED standards, and have provided support to other standards such as Cradle to Cradle and Green Seal around the same issues, and we would be happy to assist SASB as well. We can be reached at [REDACTED] and [REDACTED]

Thank you,

Michael Leschke  
Green-e Energy Associate  
Center for Resource Solutions



December 31, 2013

We would like to thank SASB for the opportunity to review the Exposure Draft for Public Comment for the Technology Sector, **Hardware** (SISC #TC0103) and **Software & IT Services** (SISC #TC0102).

We applaud the mission of SASB, and agree that sustainability performance is fundamentally material to the generation of long-term shareholder value and to the well-being of our society and our planet.

In the tables of comments below, we seek to address the questions asked by SASB. Table 1 contains comments on Hardware, Table 2 on Software and IT Services.

This draft shows extensive research and interaction with a few key stakeholders; we encourage SASB to continue to broaden the stakeholder community providing input. For example, we do believe that the issues faced by enterprise, B2B technology companies may differ from those producing consumer electronics, yet they are not differentiated in the standard. In particular, the granularity of accounting for goods produced may be quite different. Please see comment on TC0103-08 for an example below. Similarly, companies will differ by the extent of manufacturing that is performed in-house – this context is required for the proposed accounting metrics to have value for the audience (just as “gross margin” requires an understanding of whether a company is selling commodities or high-value goods, is in a mature or emerging market, etc., so too do these metrics require context). Another example is the difference between companies that provide hardware or software as a product, and those that provide public cloud services – the materiality of the data center impact is minor in the first case and substantial in the second.

We would be happy to discuss these and other questions of interest by SASB, interactively and with other stakeholders. The IT industry has many years of experience reporting, engaging directly with stakeholders, and understanding the relationships between sustainability factors and business; we hope that SASB will avail itself of this knowledge for the best possible result.

With best wishes for the progress of SASB in 2014,

A handwritten signature in black ink, appearing to read "Kathrin Winkler".

Kathrin Winkler  
SVP, Corporate Sustainability  
EMC Corporation

**Table 1: Hardware**

Disclosure Topic	Accounting Metric Code	Line of Disclosure	Comment
<b>Energy Management in Manufacturing</b>	TC0103-01		Materiality: Data centers, labs, and office buildings are a substantial source of energy consumption that are not accounted for in this metric. The description refers to “energy-intensive manufacturing operations”, but some companies have no owned-and-operated manufacturing at all (as it has been outsourced).
<b>Energy Management in Manufacturing</b>	TC0103-01	.01	Clarification: is this for manufacturing facilities only, or for the entire operations of the company? Note that companies have very variable models as to the extent of the manufacturing supply chain that is outsourced versus occurs in-house, and thus will have very different contexts.
<b>Energy Management in Manufacturing</b>	TC0103-01	.02-.03	No other reporting scheme requires expression of energy consumption using energy content expressed as Higher Heating Value (HHV) or Gross Calorific Value (GCV). What is the benefit from the extra reporting requirement?
<b>Water and Waste Management in Manufacturing</b>	TC0103-02		Clarification: presumably this is for manufacturing facilities only, or at least owned-and-operated facilities only, as extensive office environments (e.g., sales) tend to be leased or sub-leased, making these data extremely difficult or impossible to ascertain.
		.12	We believe it is inappropriate for SASB to choose a particular certification scheme (e-Stewards). There are legitimate, complex and subtle factors that may lead a company to choose the other existing standard and new schemes may yet emerge. The disclosure should require the % through each type of certification used by the company, but SASB should not be dictating technical preferences. Please see comment on section TC0103-12.44
<b>Water and Waste Management in Manufacturing</b>	TC0103-03	.09	See TC0103-01: we request the same clarification as to scope of applicability.
<b>Data Security Products</b>	TC0103-04	.13	Many companies, such as EMC, consider security as a factor in every product. Identifying the rationale for doing so on a product-by-product basis would be repetitive and add little value.
<b>Data Security Products</b>	TC0103-04	.14	Disclosure of revenue from security products may reveal competitively sensitive information, and may not be an indicator of the impact of the products.

		.15	<p>Disclosure of revenue from products that have incorporated security features may be difficult to tease out from the whole, or may represent 100% of revenue if it is a core principle of design for the reporting company.</p> <p>Publishing an upgrade to a product to protect against a discovered vulnerability has the potential to put customers who have not yet upgraded at risk.</p>
<b>Employee Recruitment and Inclusion</b>	TC0103-06	.21	It is often extremely difficult to isolate a single recruitment program as having been responsible for particular hiring. Is this intended to be itemized for every country in which the company operates?
		.22	We note that these categories are very US-centric.
<b>Product Lifecycle Management</b>	TC0103-08		Scope: Companies that produce large-scale, highly configurable enterprise products track RoHS by part, rather than by product. In other words, a “product” is a highly customized collection of many parts that has been assembled for a particular customer.
		.24	Why report on the percentage of RoHS products sold in the United States and other jurisdictions where that law does not apply? Please note that companies often do not track that information.
<b>Product Lifecycle Management</b>	TC0103-10	.35	Most voluntary schemes, including ENERGY STAR, do not certify products but rather specific product configurations. Reporting by revenue would require tracking revenue at the granularity of product configuration, which would be costly and time-consuming. This is particularly so for highly configurable, enterprise products (in which every product sales is basically unique, and would have to be checked against multiple qualification parameters to determine eligibility). We recommend a simpler scheme that tracks revenue of products at least one configuration of which has qualified (numerator) or is eligible (denominator).
		.36	Note that specifying revenue in U.S. dollars is meaningless as the units cancel.
<b>Product Lifecycle Management</b>	TC0103-11	.38	We recommend adding “Design for Disassembly” as a relevant consideration

		.41	Specify <i>metric</i> tons and apply this to all sections.
		.42	Change the “Landfill” designation to “landfill/incinerate.” Often scrap dealers say they do not landfill when, in fact, they incinerate, which is just as bad. Add a designation for “waste to energy.”
		.43	It is not necessary to report the amount of “electronic waste.” “E-waste” is a non-specific term with numerous definitions. If you know how used electronics are managed via recycling, landfilling, reuse, etc., then there is no value in an additional “electronic waste” number. Alternatively, provide a very specific definition of electronic waste (ex. Used electronics no longer able or wanted to be used for one of its primary intended purposes).
		.44	We believe it is highly inappropriate for SASB to choose a particular certification scheme (e-Stewards). There are legitimate, complex and subtle factors that may lead a company to choose one of the other existing standards (R2, RIOS, WEELABEX, etc.) and new schemes may yet emerge. The disclosure should require the % of used electronics disposed by a certified third party (optionally disclosing the certification body), but SASB should not be dictating technical preferences. This would align with The Greed Grid EDE metric. In addition, the e-Stewards standard has not been widely adopted outside of the United States, with only one international recycler currently certified. R2 and other certification standards are more widely used in the industry.
		.45	The word “partner” needs to be defined. Do you mean customer, suppliers, or recycler? Each has different implications for reporting.
<b>Supply Chain Management</b>	TC0103-13	.49-.50	This one would be very time consuming and would require some type of tracking system. There are constraints and availability issues all the time; teasing out the causes can be challenging when it is often the confluence of causes that results in a shortfall (e.g., some combination of material supply, technical error, market surprises, logistics, etc.) In other words, most companies have contingency plans to deal with single issues; it is the confluence of issues that eventually has impact. It

			<p>might be better to ask companies to describe the processes that the companies use to mitigate against shortfalls.</p>
<b>Supply Chain Management</b>	TC0103-14		<p>Note that sole source suppliers may not be as big a risk as sole location of suppliers; that is, one can diversify suppliers but have them co-located and thus vulnerable to the same major geopolitical or weather event. The IT industry experienced just this problem with the Thai floods a few years back.</p> <p>Also note that Tier 1 supplier diversity may not reflect a bottleneck in tier 2 or tier 3; the IT industry had just this problem when the Japanese tsunami revealed only two suppliers of a small component far back in the supply chain that were co-located in Japan.</p> <p>Better to have companies explain their strategy for supply chain resilience and % of critical that are high risk for sole sourcing, how many of them have mitigation plans and what type of mitigation strategy is in place.</p> <p>With regard to meeting environmental and social requirements, please note that “full compliance” is a very rare commodity; most companies will have at least a minor finding; what we seek is compliance with correction plans and constant improvement.</p>
<b>Supply Chain Management</b>	TC0103-14	.51	Publication of information about sole source suppliers could create additional risk for companies.
		.53	Calculating percentage of supply base in terms of what – weight? Cost? Number of suppliers? Number of unique parts? Number of product lines that use the supplier?
		.56	Companies can list the % of suppliers that are EICC members and stated their intent to implement the EICC code; we cannot necessarily confirm that it is fully implemented. Even if they have, an audit will typically show at least some minor findings – so the term “implemented” really needs clarification.

**Table 2: Software and IT Services**

Disclosure Topic	Accounting Metric Code	Line of Disclosure	Comment
<b>Environmental Footprint of Data Center and Office Hardware</b>	TC0102-01 through TC0102-04		<p>Materiality questionable: Many software companies do not run their own data centers. Many are also hardware companies, and the data centers (as opposed to labs) represent a small contribution to energy use or greenhouse gas emissions. We recommend separating public cloud service providers from software providers.</p> <p>The term “Office Hardware” requires clarification. Note that no other reporting scheme requires these data. Given the distributed nature of today’s IT equipment, the likelihood of being able to actually meter hardware is low and thus these numbers will be broad estimates based on gross assumptions, and are likely to be very questionable. Adding this level of granularity will place substantial burden above and beyond existing reporting schemes for environmental footprint (and note that there is a reasonable likelihood that they will not be “material” in any traditional sense, as we have learned at our company). While Section 5 of the Investor CDP ICT Module requests information related to “Office-based Activities, it is different from “Office Hardware” and allows us to report on the granularity of “office” rather than “hardware”.</p> <p>Please provide a very specific definition of “colocation equipment” as in this day and age of such offerings as “infrastructure as a service”, there is some potential ambiguity. Note that no other reporting scheme explicitly requires reporting energy consumption of colocation equipment. While we applaud the intent, there is no standard for colocation providers to allocate energy and emissions to their tenants, nor are most of them metered. Requiring that metering may significantly increase operating costs.</p>
<b>Environmental Footprint of Data</b>	TC0102-01	.03	No other reporting scheme requires expression of energy consumption using

<b>Center and Office Hardware</b>			energy content expressed as Higher Heating Value (HHV) or Gross Calorific Value (GCV) – this is additional burden with no clear benefit.
		.05	We note that our carbon accountants are pleased with the inclusion of the weighted average carbon intensity of our energy consumption.
<b>Environmental Footprint of Data Center and Office Hardware</b>	TC0102-02	.09	Changes in PUE can actually reflect partial implementation of good practices (e.g., virtualizing servers but not yet scaling the power & cooling infrastructure). This metric should include a description or rationale for changes that occurred over the previous 12 month period.
<b>Environmental Footprint of Data Center and Office Hardware</b>	TC0102-03		We assume this is meant to be for overall operations, rather than broken out by data centers, colocation equipment, and office equipment as these are highly unlikely to be separately metered.
<b>Environmental Footprint of Data Center and Office Hardware</b>	TC0102-04		We have not built a new data center in years. Many software companies will never build more than one. This metric should be limited to companies providing public cloud services.
<b>Data Privacy and Freedom of Expression</b>	TC0102-05	.21	<p>We have a robust policy and training that provides guidance on how personal data should be processed and secured.</p> <p>The term “data” here is ambiguous. Since this term is used in the context of data privacy, it should be replaced with the term “personal data” and defined as any information that could reasonably be used to identify an individual, which is the industry standard definition of such term (e.g., the new definition aligns with the EU definition of protected personal data under the EU Data Protection Directive 95/46/EC). We strongly encourage the revision to avoid inconsistent interpretation and excessive reporting burden.</p>
<b>Data Privacy and Freedom of Expression</b>	TC0102-06	.27	Public disclosure could violate confidentiality restrictions and/or lead to a compromise of security measures.
<b>Data Privacy and Freedom of Expression</b>	TC0102-08	.31	This is trickier than might first appear – a company’s “off the shelf” product may be part of a third-party solution that is performing monitoring, but the company providing the

			<p>product may not have visibility to that fact or to the specifics requested. In fact, this opacity to end use is more often the situation than not.</p> <p>What does “percent of customers affected” mean? Is it the number of customers who are using the product or services for gathering or monitoring, or the % of customers who might be monitored or have data gathered? Note that the first is difficult to answer due to comment above; companies will have no visibility to the second.</p>
<b>Data Security</b>	TC0102-09	.36	<p>Please clarify what is meant by breach of “information” or “data” – e.g., breach of “data” as defined under data breach disclosure laws in the US, which is typically sensitive personal data? Also need to define “compromise” of data.</p> <p>Public disclosure of corrective actions/remediation (if any) could violate confidentiality restrictions and/or lead to a compromise of our security measures.</p>
		.39	
<b>Data Security</b>	TC0102-10		<p>W/r/t addressing NIST-defined attack threats, this kind of disclosure could provide bad actors with information that would increase threats. It also asks about a static set of threats, so this requirement would become stale pretty quickly as new threats emerge and technology (and the way users interact with technology) changes.</p>
		.42	<p>This is new and not yet widely adopted; may be premature.</p>
<b>Employee Inclusion &amp; Performance</b>	TC0102-16	.62	<p>We would note that pay progression is not necessarily an indicator of performance; it may be due to a normalization of pay levels which – if they were to happen during a period of low increases broadly, could be completely orthogonal to individual performance.</p>
<b>Delivering Sustainability Solutions for Customers</b>	TC0102-18		<p>The entire assumption within this section is that the products that help customers address major environmental and social trends are separate and distinct from the product portfolio. It may not be feasible to separate either revenue or customer segment – e.g., Big</p>

			<p>Data Analysis is being used to help manage most major trends, while being sector-agnostic. The technology/products are the same as those used for purely financial, or even nefarious, purposes. Companies have limited line of sight to the application to which these products are being put.</p> <p>Note that this section is relevant to hardware as well as software.</p>
<b>Delivering Sustainability Solutions for Customers</b>	TC0102-18	.66-.67	<p>The IT industry serves virtually every other industry – it is nearly impossible to itemize their most material issues. Examples might make sense, but the \$\$, TAM, share of research, etc. etc. should be only “if capable of being calculated, and if not, explain why not”.</p>
		.68-.70	<p>Competitive sensitive information absolutely should not be required – companies should not be forced to reveal individual growth plans and market analyses that can be their differentiation.</p>
<b>Managing Systemic Risks</b>	TC0102-19		<p>Should specify “unplanned downtime”; planned downtime should not be counted in this metric as it has been agreed upon under legal contract</p>
<b>Managing Systemic Risks</b>	TC0102-19	.77	<p>This disclosure has very real potential to lead to greater security threats.</p>
<b>IP Protection and Competitive Behavior</b>	TC0102-22		<p>We propose that the title should reflect “Anti” Competitive Behavior rather than Competitive Behavior.</p> <p>It is important to provide clear context regarding the impact of anti-competitive behavior and IP. However to do so, it is critical to distinguish between the proper use of IP vs. anti-competitive behavior. The following is exemplary language that could be used to make this distinction: <i>“Intellectual Property (IP) rights play a vital role in the growth and success of both new and existing businesses by providing them with a means of protecting their investments in R&amp;D, technology, branding, and content. Some IP laws grant to an owner of IP assets, exclusive rights with respect to those assets. Other IP laws grant to an owner of IP assets, the right to exclude</i></p>

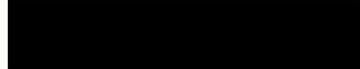
*others from using or implementing those assets. These rights, which may be constitutionally based, are not themselves anti-competitive as they are designed to encourage innovation by preventing others from unfairly benefiting from the use of assets they did not invest in developing. However, just as with any other type of asset, IP assets can be abused for anti-competitive purposes. The impact of anti-competitive behavior using IP assets is exponentially greater in the technology and software industries where products often require the implementation of numerous technologies in order to be useable by a customer. Oversight and management of any interconnection between IP and anti-competitive behavior is an important governance issue with potential material impact due to fines and other costs arising out of legal and regulatory actions.”*

**IP Protection and Competitive Behavior**    TC0102-22    .80-.83

There is a legitimate need for companies to avail themselves of the judicial system for matters related to IP. For practicing entities, litigation may be a necessary step in enforcing their IP rights and protecting innovation and investment. The proposed Accounting Metrics as drafted are broad and may capture activity that is immaterial and/or not reflective of actual findings of anti-competitive behavior. The negative impact to investor perception resulting from such disclosures (including those for which there is ultimately no finding of anti-competitive behavior) could be unnecessarily detrimental to the disclosing company. Thus, it is preferable that any suggested Accounting Metrics: (i) be very clearly tailored to capture only anti-competitive behavior, and (ii) be limited to material formal findings/determinations by the appropriate government agencies.



Nicola Peill-Moelter  
Akamai Technologies, Inc.



30 December 2013

Dear SASB

Please find enclosed commentary for the SASB standards draft for the Software & IT Services sector.

Sincerely,

A handwritten signature in black ink, appearing to be "Nicole Peill-Moelter".

Nicole Peill-Moelter  
Director of Environmental Sustainability  
Akamai Technologies, Inc.





**Software & IT Services**  
**Environmental Footprint of Data Center and Office Hardware**

**Comment:**

I found this section confusing as to what electricity and GHG are being covered. Is it the entire company's electricity generating Scope 1 and 2 GHG?

Because outsourcing of IT and data center operations has become strategic for economic and flexibility reasons it's important to have companies account for these outsourced operations where possible. These operations would include both internal and operations that support service delivery (revenue generation).

**Software & IT Services**  
**Environmental Footprint of Data Center and Office Hardware**

**TC0102-01**

**Comment:**

This section is ambiguous with respect to companies that outsource their data center and IT infrastructure (colocation, hosting, Cloud); have a split of insourcing and outsourcing; have a mix of data center infrastructure used for internal purposes and to provide service - 0.01, 0.02, 0.05. For example, does TC0102-01.01 include all company operations (office + data centers), just data center? How is office hardware defined? If a reporting company collocates its IT equipment its electricity consumption is via the third-party colocation vendor. Should this company report zero for its electricity consumption, only the electricity consumed by its IT equipment, or the electricity consumed by its IT equipment + fraction of data center infrastructure that supports its IT equipment, e.g., cooling equipment?

I recommend explicitly defining what is meant by "data centers". Does this include the IT equipment?

**Software & IT Services**  
**Environmental Footprint of Data Center and Office Hardware**

**TC0102-04**

**Comment:**

It is unclear if "determining the location of new data centers" applies also to outsourced data center services, such as, "colocation" and "hosting". If so, recommend adding language to make this clear these use cases are included.

If not, consider a clause distinguishing these data center use cases.



**Software & IT Services**

**Environmental Footprint of Data Center and Office Hardware**

**TC0102-13**

**Comment:**

This item seems to suggest by exclusion that onshore activities and infrastructure are not at risk. Given the level of sophistication of security breaches to onshore systems by offshore entities I'm not sure I understand the point of distinguishing. If offshoring is considered more vulnerable I would also recommend distinguishing between safe countries, e.g., in Europe, versus more vulnerable countries such as Nigeria, China.

Sustainability Accounting Standards Board  
 75 Broadway  
 San Francisco,  
 CA 94111

DNV GL Business Assurance  
 Sustainability Services



<b>Date:</b>	<b>Our reference:</b>	<b>Your reference:</b>
January 10 2014	N/A	Technology & Communications Public Comment

[Legal information]

## Technology & Communications Public Comments from DNV GL

### 1. Disclosure Topics

- a. Identify any disclosure topics in the Standards that may not be material to a reasonable investor, including an explanation.
- b. Suggest any disclosure topics not included in the Standards that may be material to a reasonable investor, including evidence supporting your assertion.

#### *i. DNV GL Comment:*

1. **Industry Standard: Hardware**
2. **Disclosure Topic: Fair Labor practices**
3. **Accounting metric code: TC0101-04, TC0101-05 and TC0101-06 in EMS & ODM Industry Standard**
4. **Line of disclosure, where relevant: N/A**
5. **Comment: The industry description for Hardware states that this includes companies that “design, assemble, and manufacture computers, computer hardware, servers, and computer peripherals”. It is not clear why this Standard should not include a Fair Labor Practices Disclosure Topic.**

### 2. Accounting Metrics

- a. Provide comments to correct, improve, or add to accounting metrics in the standards.

#### *i. DNV GL Comment:*

1. **Industry Standard: All applicable**
2. **Disclosure Topic: Supply Chain Management and Materials Sourcing**
3. **Accounting metric code: All applicable**
4. **Line of disclosure, where relevant: N/A**
5. **Comment: Propose to modify as follows: “Discuss the process for managing environmental and social risks within the supply chain including screening, codes of conduct, audits, *assessments* and/or certifications, *corrective and remediation plans*. Indicate if audits are first party, second party, or third party, *the applicable standard and auditor qualification requirements*.”**

#### *ii. DNV GL Comment:*

1. **Industry Standard: All applicable**

2. **Disclosure Topic: Supply Chain Management and Materials Sourcing**
  3. **Accounting metric code: All applicable**
  4. **Line of disclosure, where relevant: N/A**
  5. **Comment: Propose to modify as follows: "Number of sole-source Tier 1 suppliers, and percentage of critical supply base for which suppliers are sole-source. Percentage of Tier 1 suppliers who are EICC members and have implemented the EICC Code of Conduct. Percentage of Tier 1 suppliers in full compliance with the registrant's environmental and social/labor requirements through own corporate code of conduct and other standards (may include ISO14001, OHSAS18001, SA8000, etc.)"**
- b. Suggest additional or alternate accounting metrics to measure performance with respect to a disclosure topic.
- i. **DNV GL Comment:**
    1. **Industry Standard: All applicable**
    2. **Disclosure Topic: Supply Chain Management and Materials Sourcing**
    3. **Accounting metric code: e.g.**
    4. **Line of disclosure, where relevant: N/A**
    5. **Comment: Propose to add: "Discuss the process for managing environmental and social risks within the supply chain including screening, codes of conduct, audits, assessments and/or certifications, corrective and remediation plans. Indicate if audits are first party, second party, or third party, the applicable standard and auditor qualification requirements."**
3. SASB Request for Comment
- a. SASB specifically seeks comment on the following Disclosure Topics and Accounting Metrics:
    - i. Delivering Sustainability Solutions for Customers,
    - ii. issues related to Employee Recruitment, Inclusion and Performance,
    - iii. Energy Management (for Telecommunications), and
    - iv. Environmental Footprint of Data Center and Office Hardware (including whether hardware procurement and disposal issues are material for Software & IT Services, and Internet Media & Services).
      1. **DNV GL Comment: No comment on the above**

4. Cost Effectiveness

- a. How costly would it be for companies to collect, analyze, and report information required for the proposed accounting metrics?

*i. DNV GL Comment:*

***This is a difficult one to answer as it will be company-specific and commensurate to the company's ability to identify and measure the risk they are exposed, its risk tolerance and the return on investment, both financial and in protecting or enhancing intangibles. For some companies in the supply chain there will be clear customer-specific pressures, for others (and for specific indicators such as product environmental compliance) the cost will be the cost of doing business in certain markets.***

- b. Do you anticipate this cost to be a barrier to reporting, adoption, or usage of the proposed accounting metrics?

*i. DNV GL Comment:*

***See above***

- c. What aspects of reporting, if any, would you foresee being most costly for reporting organizations?

*i. DNV GL Comment:*

***KPIS relating to the supply chain will be more labor intensive and any consequent reporting may be initially less reliable than indicators within the company's operational boundaries.***

Sincerely

for DNV GL Sustainability Services



Tom C A Gosselin  
Divisional Sustainability Manager, Region Americas

Mobile: +

