



# Electronic Manufacturing Services & Original Design Manufacturing

SIC<sup>™</sup> #TC0101

Prepared by the  
Sustainability Accounting Standards Board ®

October 2013  
Exposure Draft for Public Comment

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# Electronic Manufacturing Services & Original Design Manufacturing Sustainability Accounting Standard

## About SASB

The Sustainability Accounting Standards Board (SASB) provides sustainability accounting standards for use by publicly-listed corporations in the U.S. in disclosing material sustainability issues for the benefit of investors and the public. SASB standards are designed for disclosure in mandatory filings to the Securities and Exchange Commission (SEC), such as the Form 10-K and 20-F. SASB is an independent 501(c)3 non-profit organization and is accredited to set standards by the American National Standards Institute (ANSI).

SASB is developing standards for more than 80 industries in 10 sectors. SASB's standards-setting process includes evidence-based analysis with in-depth industry research and engagement with a broad range of stakeholders. The end result of this process is the creation of a complete, industry-specific accounting standard which accurately reflects the material issues for each industry.

## About this Standard

This Standard is an exposure draft presented for public review and comment. This version is not intended for implementation.

The public comment period lasts for 90 days beginning Wednesday, October 2, 2013 and ending Thursday, January 2, 2014. This Standard is subject to change thereafter.

For instructions on providing comments to SASB please [click here](#).

For an introduction to SASB Standards please [click here](#).

## Sustainability Accounting Standards Board

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# SASB Sustainability Accounting Standard

## Electronic Manufacturing Services & Original Design Manufacturing (TC0101)

### Industry Description

*The Electronics Manufacturing Services (EMS) & Original Design Manufacturing (ODM) industry consists of two main segments. EMS companies provide assembly, logistics, and after-market services for original equipment manufacturers. The ODM segment of the industry provides engineering and design services for original equipment manufacturers, and may own significant intellectual property. Although EMS & ODM companies produce equipment for a variety of sectors, the industry is closely associated with the technology Hardware industry.*

**Table 1. Material Sustainability Topics & Accounting Metrics**

Topic	Code	Accounting Metric
<b>Energy Management in Manufacturing</b>	TC0101-01	Total annual energy consumed (gigajoules); percentage from purchased grid electricity. Percentage of non-grid energy from fossil fuels and renewables (e.g., wind, biomass, solar).
	TC0101-02	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.
<b>Water and Waste Management in Manufacturing</b>	TC0101-03	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, treated, incinerated, and landfilled; and the weighted average cost (\$) per ton for each disposal method.
	TC0101-04	Percentage of facilities with third-party certification of health and safety systems to the OHSAS 18001 Standard or equivalent.
<b>Fair Labor Practices</b>	TC0101-05	Description of legal and regulatory fines and settlements associated with unfair labor practices and health and safety violations. Include dollar amount of fines and settlements and a description of corrective actions implemented in response to events.
	TC0101-06	Percent of facilities with third-party certification of fair labor conditions (socially acceptable workplace practices), such as SA8000 certification or equivalent
	TC0101-07	Percentage of products (by revenue) that meet the requirements of the European Union's Restriction of Hazardous Substances (RoHS) Directive.
<b>Product Lifecycle Management</b>	TC0101-08	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.
	TC0101-09	Percentage of eligible products (by revenue) certified to a recognized voluntary, environmentally-focused certification standard.

Topic	Code	Accounting Metric
	TC0101-10	Percentage of products (by revenue) with environmentally focused principles incorporated into the designs, including a description of the design principles or criteria.
	TC0101-11	Amount (weight) of products recovered through take-back programs. 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 recycled through entities with Basel e-Stewards certification.
<b>Supply Chain Management and Materials Sourcing</b>	TC0101-12	Discuss existing or projected constraints with obtaining raw materials (or components), including those related to political situations, local labor conditions, natural disasters, climate change, geography, regulations, or restricted/limited availability. Discuss any production shortfall resulting from materials supply; indicate the cause and the relative impact on production.
	TC0101-13	Number of sole-source Tier 1 suppliers, and percentage of critical supply base for which suppliers are sole-source. Percentage of Tier I suppliers who are EICC members and have implemented the EICC Code of Conduct. Percentage of Tier I suppliers in full compliance with the registrant's environmental and social/labor requirements.
	TC0101-14	Discuss the process for managing environmental and social risks within the supply chain including screening, codes of conduct, audits, and certifications. Indicate if audits are first party, second party, or third party.

## **Energy Management in Manufacturing**

### *Description*

*Energy production and consumption contributes to significant environmental impacts, including climate change and pollution that have the potential to indirectly, yet materially, impact the results of operation of EMS & ODM companies that are highly reliant on energy as an input for value creation, due to energy-intensive manufacturing operations. The way in which a company manages its overall energy efficiency or intensity, its reliance on different types of energy, and associated sustainability risks, and ability to access alternative source of energy, will have an increasingly material impact on costs and energy supply, due to the global regulatory focus on climate change including incentives for energy efficiency and renewable energy, the rising cost from the pricing of GHGs emissions, and risks associated with reliance on nuclear energy and its increasingly limited license to operate.*

### *Accounting Metrics*

#### **TC0101-01. Total annual energy consumed (gigajoules); percentage from purchased grid electricity. Percentage of non-grid energy from fossil fuels and renewables (e.g., wind, biomass, solar).**

- .01 The registrant shall convert the amount of electricity it consumed from kilowatt hours (kWh) to gigajoules (GJ).
- .02 The registrant shall disclose fossil fuel consumption in terms of its energy content, using higher heating values (HHV), also known as gross calorific values (GCV), and which are directly measured or taken from the Intergovernmental Panel on Climate Change (IPCC), the U.S. Department of Energy (DOE), or the U.S. Energy Information Administration (EIA).
- .03 The registrant shall disclose renewable energy consumption as a percentage of its overall energy consumption, in terms of its energy content. For biofuels, the registrant shall use HHVs from the sources mentioned above. For solar or wind energy consumption, the registrant shall convert from electricity production (kWh) to gigajoules (GJ).
- .04 The registrant shall disclose renewable energy data for renewable energy it directly produces, or which it purchases through renewable energy certificates (RECs) that are certified (i.e., through Green-e), or renewable power purchase agreements (PPAs). It shall not disclose the renewable portion of the energy drawn from electricity grids.

### *Notes*

#### *Definitions*

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#### *Additional References*

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## **Water and Waste Management in Manufacturing**

### *Description*

*The manufacturing of computers, computer components, and other electronics is both water and waste intensive. As state, federal, and foreign environmental laws continue to emphasize resource conservation, and with increasing customer demand for stringent environmental standards in production, EMS & ODM companies that are able to manage this issue and reduce the associated costs will be well positioned to protect shareholder value.*

### *Accounting Metrics*

**TC0101-02. 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.**

- .05 Water withdrawn is the total amount of water removed from freshwater sources for use in operations. Water withdrawals shall be disclosed in terms of cubic meters (m<sup>3</sup>).
- .06 The registrant shall disclose the total amount of water by volume (m<sup>3</sup>) that was returned to the watershed during the fiscal year. This figure shall include the amount discharged directly to the environment or by way of a local wastewater treatment plant.
- .07 The registrant shall disclose the total amount of water by volume (m<sup>3</sup>) that was recycled during the fiscal year. This figure shall include the amount recycled in closed-loop and open-loop systems. Water recycled for purposes other than manufacturing operations (e.g., grey water reuse) shall not be included in this figure.
- .08 Using the World Resources Institute's (WRI) Water Risk Atlas tool, Aqueduct (publicly available online [here](#)), the registrant shall analyze all of its manufacturing facilities for water risks and identify facilities that are in a location with High (40–80%) or Extremely High (>80%) Baseline Water Stress. Water withdrawn, returned, or recycled in locations with High or Extremely High Baseline Water Risk shall be indicated as a percentage of the total water withdrawn, returned, or recycled, respectively.

**TC0101-03. 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, treated, incinerated, and landfilled; and the weighted average cost (\$) per ton for each disposal method.**

	<b>Hazardous</b>	<b>Non-Hazardous</b>	<b>E-waste</b>
<b>Total Waste</b>	tons	tons	tons
<b>Recycled</b>	(%)(%)	(%)(%)	(%)(Basel)(%)
<b>Treated</b>	(%)(%)	(%)(%)	(%)(%)
<b>Incinerated</b>	(%)(%)	(%)(%)	(%)(%)
<b>Landfilled</b>	(%)(%)	(%)(%)	(%)(%)

- .09 The registrant shall disclose the total amount of waste, measured in tons, for each of the following waste types: (1) hazardous waste, (2) non-hazardous waste, and (3) electronic waste from manufacturing processes.
- .10 The registrant shall indicate the percent of each waste type handled by each of the following end-of-life disposal methods: recycling, treating, incinerating, or landfilling.
- .11 For each waste type and method of waste disposal, the registrant shall indicate the weighted average cost for disposal.
- .12 For electronic waste from manufacturing processes, indicate the amount (weight) of electronic waste recycled through entities with Basel e-Stewards certification; amount (weight) of electronic waste disposed of through other entities. This disclosure excludes products returned through take-back programs.

### *Notes*

#### *Definitions*

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*Additional References*

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## **Fair Labor Practices**

### *Description*

*EMS & ODM companies operate in a highly competitive environment based on cost, and therefore they rely heavily on securing low-cost and contract labor. Furthermore, the industry faces increased scrutiny over labor standards after numerous highly publicized examples of poor working conditions and unrest at industry facilities. Companies that manage labor issues will be better positioned to retain customers with stricter supplier standards, and therefore protect shareholder value. Companies that have historically relied on below-market wages could face additional costs as workers demand higher compensation.*

### *Accounting Metrics*

#### **TC0101-04. Percentage of facilities with third-party certification of health and safety systems to the OHSAS 18001 Standard or equivalent.**

- .13 The registrant shall disclose the percent of facilities achieving a third-party certification of health and safety systems in accordance with the OHSAS 18001 Standard, or an equivalent standard. If certifying to another standard, the registrant shall indicate which standard it is using and how it is equivalent to the OHSAS 18001 Standard.
- .14 Third-party certification is performed by independent organizations such as registrars, certification bodies, or regulators.
- .15 Facilities discussed shall be those recognized by the registrant as physical assets under Property, Plant, and Equipment (Topic 360).

#### **TC0101-05. Description of legal and regulatory fines and settlements associated with unfair labor practices and health and safety violations. Include dollar amount of fines and settlements and a description of corrective actions implemented in response to events.**

- .16 The registrant shall briefly describe the nature and context of fines and settlements associated with unfair labor practices and health and safety violations, including civil actions (e.g., civil judgment, settlements, or regulatory penalties) and criminal actions (e.g., criminal judgment, penalties, or restitutions) taken by any entity (government, businesses, or individuals).
- .17 The registrant shall disclose the amount of any fine or settlement associated with each incident, not including legal fees.
- .18 The registrant shall describe any corrective actions it has implemented as a result of each incident. This may include, but is not limited to, specific changes in operations, management, processes, products, business partners, training, or technology.
- .19 If relevant, the registrant should discuss other implications associated with the fine or settlement, including any limitations on contracting with government or other institutional clients.

#### **TC0101-06. Percent of facilities with third-party certification of fair labor conditions (socially acceptable workplace practices), such as SA8000 certification or equivalent.**

- .20 The registrant shall disclose the percent of facilities achieving a third-party certification of fair labor conditions (socially acceptable workplace practices), such as SA8000 certification, or an equivalent standard. If certifying to another standard, the registrant shall indicate which standard it is using and how it is equivalent to the SA8000 certification.
- .21 Third-party certification is performed by independent organizations such as registrars, certification bodies, or regulators.
- .22 Facilities discussed shall be those recognized by the registrant as physical assets under Property, Plant, and Equipment (Topic 360).

### *Notes*

#### *Definitions*

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#### *Additional References*

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# **Product Lifecycle Management**

## *Description*

*EMS & ODM companies must address the environmental externalities associated with material inputs, product use efficiency, and disposal. Furthermore, these firms are exposed to the issue of planned obsolescence, which contributes to their growth, but also increases the aforementioned negative externalities. EMS & ODM companies that comply with existing regulations, while working in advance of future regulations concerning product design and lifecycle, will be better positioned to protect shareholder value. Increasing public concern over environmental issues is driving demand towards products with reduced environmental footprint, impacting industry revenues.*

## *Accounting Metrics*

### **TC0101-07. Percentage of products (by revenue) that meet the requirements of the European Union's Restriction of Hazardous Substances (RoHS) Directive.**

- .23 A product shall be considered to conform to RoHS (directive 2002/95/EC) requirements if all constituent components have been tested and/or documented to conform with RoHS maximum concentration value requirements for lead, mercury, cadmium, hexavalent chromium and polybrominated flame retardants.
- .24 The registrant shall disclose RoHS conformance with respect to all of its products, regardless of their location of manufacture, export status, and/or location of sale.
- .25 The percentage shall be calculated as:  $100\% * (\text{revenue from covered products that meet RoHS requirements} / \text{revenue from all covered products})$ .
- .26 "Covered products" are defined as those that, as referenced in RoHS, are category 1-7 and category 10 products in Annex 1A of Waste Electrical and Electronic Equipment (WEEE) Directive (2002/96/EC):
  1. Large household appliances
  2. Small household appliances
  3. IT and telecommunications equipment
  4. Consumer equipment
  5. Lighting equipment
  6. Electrical and electronic tools (except large-scale stationary and industrial tools)
  7. Toys, leisure and sports equipment
  10. Automatic dispensers
- .27 Products exempt from the scope of RoHS shall be considered exempt from the scope of this disclosure calculation (e.g. mercury in certain fluorescent lights and lead in certain soldering applications).

### **TC0101-08. 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.**

- .28 The registrant shall discuss its approach to managing the use of substances that appear on the ECHA's Member State Committee (MSC) [Candidate List of Substances of Very High Concern for Authorisation](#) or on the Consumer Electronics Association's (CEA) Declarable Substance List.
- .29 The registrant shall describe how its operational processes incorporate these lists and/or how it takes into consideration the chemicals on these lists.
- .30 Relevant operational processes may include, but are not limited to, product design, materials and parts procurement, product safety testing, product labeling, and product declarations (e.g. material safety data sheets).
- .31 Relevant actions to discuss may include the exclusion of substances (e.g. banned substances lists), use of material substitution assessments, product labeling, or any other methods considering usage of substances from these lists.
- .32 If the registrant assesses and manages the impact of known or potentially toxic substances with reference to other regulations, industry norms or accepted chemical lists it may identify those practices, and it shall describe the degree of overlap with REACH SVHC and JIG Declarable Substances.

**TC0101-09. Percentage of eligible products (by revenue) certified to a recognized voluntary, environmentally-focused certification standard.**

- .33 Eligible products are defined as products that are within the scope of certification of a recognized voluntary, environmentally-focused certification program for electronics products including EPEAT®, ENERGY STAR, Taiwan Green Mark, TCO Certified, Japan PC Green, EU Ecolabel (“EU Flower”), EcoLogo®, and e-Standby Program (Korea).
- .34 If the registrant’s products are certified to other environmentally-focused standards or eco-labeling programs, it shall describe the basis for recognition of the standard (e.g. ratified national standard, accepted industry association standard, ISO standard, etc.).
- .35 The registrant shall calculate the percentage of certified products as:  $100 * (\text{revenue from certified products}) / (\text{total revenue from eligible products})$ , where revenue is US dollars.
- .36 The registrant should identify which products or product lines are certified and to which standard(s).

**TC0101-10. Percentage of products (by revenue) with environmentally focused principles incorporated into the designs, including a description of the design principles or criteria.**

- .37 The registrant shall calculate the revenue (in US dollars) from products designed according to environmentally focused principles or criteria as percentage of total product revenue.
- .38 Relevant considerations to discuss include elimination of toxic substances, use of recycled materials, reduction of packaging, design for consolidated shipping, design of low energy consumption products, design for product take-back, labeling for recycling, and the elimination or replacement of materials that are subject to resource scarcity (e.g. cobalt, rare earth elements, etc.).
- .39 Design shall be considered to incorporate environmentally focused principles or criteria if it can be demonstrated to follow an established standard such as the criteria of Environmentally Conscious Design (IEC-62075), through participation in the U.S. EPA’s Design for Environment (DfE) programs or projects, or by demonstrating that multiple environmental considerations (e.g. from 0.38 above) are made during product design stages.
- .40 Products shall be considered within the scope of this disclosure regardless of the date of their original design (i.e. if it originally occurred prior to the fiscal year) assuming the product continues to meet best practices used by the registrant in regards to environmentally focused design.

**TC0101-11. Amount (weight) of products recovered through take-back programs. 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 recycled though entities with Basel e-Stewards certification.**

	Recovered Product	E-waste
<b>Total Product from Take Back</b>	tons	tons
<b>Reused</b>	(%)	(%)
<b>Remanufactured</b>	(%)	(%)
<b>Recycled</b>	(%)	(%)(% thru Basel)
<b>Landfilled</b>	(%)	(%)

- .41 The registrant shall disclose the total amount of product recovered through product take back programs, measured in tons.
- .42 The registrant shall indicate the percent of product handled by each of the following end-of-life waste handling methods: reuse, remanufacture, recycling, or landfilling.
- .43 The registrant shall indicate the amount of total recovered product that is classified as electronic waste, measured in tons.
- .44 For electronic waste, indicate the percent of electronic waste recycled though entities with Basel e-Stewards certification.
- .45 The registrant shall include both materials physically handled by registrant and those handled by direct partners.

*Notes*

*Definitions*

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*Additional References*

Registration, Evaluation, Authorisation and Restriction of Chemical (REACH) Regulation (EC) No 1907/2006

Candidate List of Substances of Very High Concern (SVHC) for Authorisation is published in accordance with Article 59(10) of the REACH Regulation).

Joint Industry Guide - Material Composition Declaration for Electrotechnical Products [Joint Industry Guide \(JIG\) 101 ed. 4.1.](#),

Declarable Substance List is Table A. of JIG 101 ed. 4.1.

## **Supply Chain Management and Materials Sourcing**

### *Description*

*The EMS & ODM industry's reliance on scarce or rare minerals and metals has become a focus of attention due to the concentration of deposits in only a few countries and their low substitution ratio. Furthermore, companies face regulations related to their use of conflict minerals, which can lead to increased costs associated with new reporting requirements. Companies that establish strong supply chain management related to scarce, rare, and conflict minerals and metals will be better positioned to protect shareholder value in light of scarcity – related to physical availability and to economic and geopolitical supply risks, which can create the need for reconfiguring existing supply chains – and increasing regulatory and public concerns.*

### *Accounting Metrics*

**TC0101-12. Discuss existing or projected constraints with obtaining raw materials (or components), including those related to political situations, local labor conditions, natural disasters, climate change, geography, regulations, or restricted/limited availability. Discuss any production shortfall resulting from materials supply; indicate the cause and the relative impact on production.**

- .46 The registrant shall discuss existing constraints or risks of future constraints (both actual and potential) that directly affect its access to raw materials or components or that indirectly affect it through impacts on its suppliers.
- .47 Actual constraints include those that affected the registrant during the fiscal year, are currently affecting the registrant, or have a very high likelihood of affecting the registrant in the near term (e.g., those for which the registrant currently has inventoried material but has already enacted a contingency plan).
- .48 Potential constraints include, but are not limited to, physical limits to natural resources globally, constraints due to regulatory efforts such as the Dodd-Frank Section 1502, requirements related to conflict minerals, rare earth minerals, supply chain disruptions due to increased frequency and severity of natural disasters and other effects of climate change, and labor risks particular to geographic areas in which the registrant conducts business.
- .49 The registrant shall discuss shortfalls in production that were caused by constraints in the supply chain. This includes any deviation of actual production versus planned production that directly resulted from materials constraints.
- .50 The registrant shall indicate the cause for the shortfall, and the relative impact of the reduced production capacity as a percent of total annual production.

**TC0101-13. Number of sole-source Tier 1 suppliers, and percentage of critical supply base for which suppliers are sole-source. Percentage of Tier I suppliers who are EICC members and have implemented the EICC Code of Conduct. Percentage of Tier I suppliers in full compliance with the registrant's environmental and social/labor requirements.**

- .51 The registrant shall indicate the number of Tier 1 suppliers that are based on a sole-source supplier relationship.
- .52 Tier 1 suppliers are those that transact directly with the registrant.
- .53 The registrant shall indicate the percentage of the critical supply base that is based on a sole-source supplier relationship.
- .54 "Sole-source suppliers" refers to a situation where there is only one supplier for a specific material or product.
- .55 "Critical supply base" refers to materials or equipment and software products that are essential to primary business operations, including the design process, or hardware manufacturing (where the registrant is not fully vertically integrated).
- .56 The registrant shall disclose the percentage of its Tier I suppliers who are EICC members and have implemented the EICC Code of Conduct. The registrant may limit its disclosure to those suppliers that in aggregate account for greater than or equal to 90% of its supplier spending (in dollars).

**TC0101-14. Discuss the process for managing environmental and social risks within the supply chain including screening, codes of conduct, audits, and certifications. Indicate if audits are first party, second party, or third party.**

- .57 The registrant shall discuss management approach to identifying and reducing supply chain risk. The management approach may include screening, codes of conduct, audits, and/or certifications.
- .58 The registrant shall indicate whether supply chain audits are first-party, second-party, or third-party, where:

- “First-party audits” are internal audits used by organizations to audit themselves; these are generally intended to confirm or improve the effectiveness of management systems. First-party audits can be used to declare that an organization complies with an ISO standard; this is called a self-declaration.
- “Second-party audits” are external audits performed by any external party that has a formal interest in the audited organization. Second-party audits are generally performed by an organization’s customers or by others on their behalf.
- “Third-party audits” are external audits performed by independent organizations such as registrars, certification bodies, or regulators.

## *Notes*

### *Definitions*

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### *Additional References*

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# Software & IT Services

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# SASB Sustainability Accounting Standard

## Software and IT Services (TC0102)

### Industry Description

The Software and Information Technology (IT) Services industry includes companies involved in the development and sales of applications software, infrastructure software, and middleware. The industry also includes IT Services companies delivering specialized IT functions, including consulting and outsourced services. Some industry trends creating new sustainability risks and opportunities include cloud computing, software as a service, virtualization, machine-to-machine communication, big data analysis, and machine learning.

**Table 1. Material Sustainability Topics & Accounting Metrics**

Topic	Code	Accounting Metric
<b>Environmental Footprint of Data Center and Office Hardware</b>	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.  (b) Total annual energy consumption of data centers, including colocation equipment (aggregate in gigajoules).
	TC0102-02	Weighted Average Power Usage Effectiveness (PUE) for all owned data centers.
	TC0102-03	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.
	TC0102-04	Description of current environmental criteria for determining the location of new data centers, including factors affecting energy and water consumption (e.g., humidity, average temperature, water availability, regional- or state-level carbon legislation or pricing, or carbon intensity of grid electricity); indicate which environmental criteria are key decision drivers. Discuss how the environmental criteria were factored into the final outcome for past data center location decisions.
<b>Data Privacy and Freedom of Expression</b>	TC0102-05	Revenue derived from SaaS or other offerings that require hosting of or access to customer content and non-content data. Describe how data is used outside of the primary intended use (e.g., selling targeted ads, selling information to a third party, improving own product and service offerings), including discrete revenue derived from such uses. Describe policy to notify customers, or obtain their consent for the use of personal and business-sensitive data for such purposes.
	TC0102-06	Description of legal and regulatory fines and settlements associated with customer privacy including, but not limited to, violations of the Children's Online Privacy Protection Act, Directive 2002/58/EC (ePrivacy Directive), and Federal Trade Commission Act. Include dollar amount of fines and settlements, implications of the legal findings, and a description of corrective actions implemented in response to events.



Topic	Code	Accounting Metric
	TC0102-07	Number of government or law enforcement requests received and number resulting in disclosure of (a) customer content and (b) non-content data. Discuss policy regarding the provision of personal data to government or law enforcement agencies and notification to customers about such requests.
	TC0102-08	List of countries where core products or services are monitored, blocked, or subject to content filtering or censorship, even if required by local law. For each country, indicate the number and type of products and services that were subject to the action and the duration of the effect. Indicate percent of customers affected.
<b>Data Security</b>	TC0102-09	Number and description of data security breaches that resulted in the actual outcomes of a business process deviating from the expected outcomes with respect to confidentiality, integrity, and availability. Include a discussion of: (a) The impact of the incident, such as loss of information, compromise of data, litigation, regulatory fines, loss of revenue, lost time, damage to reputation (qualitative measure of severity). (b) Corrective actions taken in response to the incident and associated costs, such as remediation costs or increased costs for additional security measures.
	TC0102-10	Discussion of management approach to identifying and addressing risk from the U.S. Department of Commerce National Institute of Standards and Technology (NIST)-defined cyber vulnerabilities and threats, including: external/removable media, attrition (e.g., a DDoS or brute force attack), web, email, improper usage, and loss/theft of equipment.
	TC0102-11	Discuss the integration of data privacy and security features into product design. Where relevant include revenue from specific security-related products.
<b>Recruiting and Managing a Global Skilled Workforce</b>	TC0102-12	Percentage of employees that are (a) foreign nationals, and (b) located offshore. Describe potential risks of recruiting foreign nationals and/or offshore employees, and management approach to addressing these risks.
	TC0102-13	Percent (by spending) of research and development activities, data processing, data storage, or other core activities that are located offshore, which are (a) owned, or (b) outsourced. Describe potential risks to the integrity of such work, including intellectual property theft, or breach of data privacy and security, and management approach to addressing these risks.
	TC0102-14	Discuss constraints on local hiring of technical staff due to difficulty in finding qualified personnel; include median length of vacancies for technical positions. Indicate number of new domestic technical staff hired through company-funded or company-facilitated programs to develop domestic workforce. Describe management approach to restructuring domestic workforce as a result of offshoring activities.
<b>Employee Inclusion and Performance</b>	TC0102-15	Employee engagement as a percentage or an index, including a description of methodology employed.
	TC0102-16	Employee turnover by voluntary and involuntary for all employees. Ratio of "Pivotal Employees Leaving" to "All Employees Leaving" by gender, ethnic group, and employee category.
	TC0102-17	Number of total employees and number by gender and ethnic group in each of the following two employee categories: Executive/Sr. Manager and Non-Executive.

Topic	Code	Accounting Metric
<b>Delivering Sustainability Solutions for Customers</b>	TC0102-18	Describe significant environmental and social trends affecting key customer segments and their impact on demand for registrant’s products or services. 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 market. Provide percent of total R&D spending allocated to these products or services.
<b>Managing Systemic Risks from Technology Disruptions</b>	TC0102-19	Average Interruption Frequency and Average Interruption Duration, for cloud services (such as SaaS, IaaS, PaaS) of both owned and outsourced operations.
	TC0102-20	For all significant performance issues and/or service disruptions, describe the type (e.g., network outage, technical disruption), extent (number of users/accounts affected), duration (number of days), root cause (e.g., weather-related, human error, etc.), and corrective actions.
	TC0102-21	Discussion of business continuity risks related to disruptions affecting operations such as those caused by technical failures, programming errors, weather events, or natural disasters at hosting facilities; and, measures to address those risks. Discussion should cover estimated amount of potential loss, probability of that loss, and the associated timeframe, with a focus on cloud services (such as SaaS, IaaS, PaaS) of both owned and outsourced operations.
<b>Intellectual Property Protection and Competitive Behavior</b>	TC0102-22	Description of legal and regulatory fines and settlements associated with anti-competitive practices and market manipulation, including Intellectual Property (IP) violations and IP practices to unfairly restrict competition. Include dollar amount of fines, implications of the legal findings, and settlements and a description of corrective actions implemented in response to events.

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

### *Description*

*With the industry providing an increasing number of cloud services, which require them to own, operate, or rent data centers and other hardware, managing the energy and water use associated with the IT hardware infrastructure is becoming important to shareholder value. Despite the increasing efficiency of data centers, their growing importance in the economy and to the industry's operations requires companies to focus on energy efficiency. Companies face a tradeoff between energy and water consumption due to data center cooling needs, and decisions about data center locations and sources of energy are important for managing costs, obtaining reliable supply of energy and water, and lowering reputational risks, particularly with an increasing global regulatory focus on climate change, and innovations in energy efficiency and renewable energy.*

### *Accounting Metrics*

**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. (b) Total annual energy consumption of data centers, including colocation equipment (aggregate in gigajoules).**

- .01 The registrant shall convert the amount of electricity it consumed from kilowatt hours (kWh) to gigajoules (GJ).
- .02 The registrant shall disclose purchased grid electricity consumption as a percentage of its overall energy consumption.
- .03 The registrant shall disclose non-grid renewable energy consumption as a percentage of its overall energy consumption, in terms of its energy content. For biofuels, the registrant shall use higher heating values (HHV), also known as gross calorific values (GCV), and which are directly measured or taken from the Intergovernmental Panel on Climate Change (IPCC), the U.S. Department of Energy (DOE), or the U.S. Energy Information Administration (EIA). For solar or wind energy consumption, the registrant shall convert from electricity production (kWh) to gigajoules (GJ).
- .04 Non-grid renewable refers to the renewable energy the registrant either directly produces, or purchases through renewable energy certificates (RECs) that are certified (i.e., through Green-e) or through renewable power purchase agreements (PPAs). It shall not disclose the renewable portion of the energy that is drawn from electricity grids.
- .05 The registrant shall report the weighted average carbon intensity of its energy consumption. The weighted average is calculated by taking the total GHG inventory of energy consumption (in metric Tons CO<sub>2</sub>e) and dividing by the total energy use (in GJ).
- .06 The GHG inventory of energy consumption reflects the CO<sub>2</sub>e emissions associated with Scope 1 direct emissions from owned energy generation, as well as the Scope 2 indirect emissions from purchased electricity. The CO<sub>2</sub>e calculation shall include emissions of CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O, 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.
- .07 While total energy use characterizes the effect of demand-side initiatives directly, the carbon intensity metric further accounts for efforts to reduce energy-related carbon emissions through supply-side strategies such as: generating renewable or lower emissions energy on-site, purchasing renewable energy through Renewable Energy Credits (RECs) or Power Purchase Agreements (PPAs), and locating data centers in regions where grid electricity is less carbon intensive, among others.
- .08 The registrant shall disclose the portion of total energy consumption (in GJ) associated with owned data centers, including energy consumption from data center colocation services provided by the registrant, if any.

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

- .09 The registrant shall report a trailing twelve-month (TTM) weighted average power usage effectiveness (PUE) for all owned data centers, where:
  - 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).
- .10 The weighted average 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.
- .11 Energy use in the data center facility shall include electricity purchased from the grid as well as non-grid sources of energy.
- .12 PUE for a dedicated building or PUE for a mixed-use facility are the preferred metrics; however, if data availability is limited a partial PUE (pPUE) can be reported and should be noted as such. 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.

**TC0102-03. 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.**

- .13 Water withdrawn is the total amount of water removed from freshwater sources for use in operations. Water withdrawals shall be disclosed in terms of cubic meters (m<sup>3</sup>).
- .14 The registrant shall disclose the total amount of water by volume (m<sup>3</sup>) that was returned to the watershed during the fiscal year. This figure shall include the amount discharged directly to the environment or by way of a local wastewater treatment plant.
- .15 The registrant shall disclose the total amount of water by volume (m<sup>3</sup>) that was recycled during the fiscal year. This figure shall include the amount recycled in closed-loop and open-loop systems. Water recycled for purposes other than data center operation (e.g., grey water reuse) shall not be included in this figure.
- .16 Using the World Resources Institute's (WRI) Water Risk Atlas tool, Aqueduct (publicly available online [here](#)), the registrant shall analyze all of its data center facilities for water risks and identify facilities that are in a location with High (40–80%) or Extremely High (>80%) Baseline Water Stress. Water withdrawn, returned, or recycled in locations with High or Extremely High Baseline Water Risk shall be indicated as a percentage of the total water withdrawn, returned, or recycled, respectively.

**TC0102-04. Description of current environmental criteria for determining the location of new data centers, including factors affecting energy and water consumption (e.g., humidity, average temperature, water availability, regional- or state-level carbon legislation or pricing, or carbon intensity of grid electricity); indicate which environmental criteria are key decision drivers. Discuss how the environmental criteria were factored into the final outcome for past data center location decisions.**

- .17 The registrant shall disclose decision criteria based on strategic environmental considerations for locating new data centers.
- .18 The registrant shall indicate which of the environmental criteria are key decision drivers, defined as those environmental criteria that might override a pure cost-based decision to locate in a certain region.
- .19 The registrant shall disclose decisions for new data center locations made during the reporting year, and indicate how the environmental criteria were incorporated (e.g., which environmental risks were mitigated or how the environmental criteria drove improved performance).

## *Notes*

### *Definitions:*

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### *Additional References:*

**The Green Grid. White Paper #49-PUE: A Comprehensive Examination of the Metric.** See more at: <http://www.thegreengrid.org/en/Global/Content/white-papers/WP49-PUEAComprehensiveExaminationoftheMetric#sthash.bs74EgC4.dpuf> .

Uptime Institute. 2009. **Opinion of the Institute, Green Computing.** "Lean Clean & Green, The Global Energy Future of Enterprise IT & the Data Center Energy—The New Disruptive Technology."

Uptime Institute. 2009. **Opinion of the Institute, Lean Computing.** "Lean Clean & Green, The Global Energy Future of Enterprise IT & the Data Center Energy—The New Disruptive Technology."

## Data Privacy and Freedom of Expression

### *Description*

*As software and IT services companies increasingly deliver products and services over the Internet and through mobile devices, they must carefully manage two separate and often conflicting priorities. On the one hand, companies use customer data to innovate and provide customers with new products and services, and to generate revenues. On the other hand, there are privacy concerns associated with companies having access to a wide range of customer data, including sensitive personal and confidential business information, leading to increasing regulatory scrutiny in the U.S. and abroad. The delivery of software over the Internet also raises concerns about potential access to user data by governments that may use it for limiting the freedoms of citizens. Managing these issues is important to lower regulatory and reputational risks, and they can affect profitability.*

### *Accounting Metrics*

**TC0102-05. Revenue derived from SaaS or other offerings that require hosting of or access to customer content and non-content data. Describe how data is used outside of the primary intended use (e.g., selling targeted ads, selling information to a third party, improving own product and service offerings), including discrete revenue derived from such uses. Describe policy to notify customers, or obtain their consent for the use of personal and business-sensitive data for such purposes.**

- .20 The registrant shall indicate the percent of total annual revenue derived from its own use of customer data, outside of the primary intended use. Primary intended use is defined as the reasonable expectation of a customer regarding use of his/her personal or business data. The activities measured here comprise secondary uses of customer data, where secondary use is intentional by the registrant (i.e., not a breach of security), but is outside of the primary intended use expected by the customer.
- .21 Customer content includes customer-generated information such as email text, while non-content data includes information such as an email address, a person's name, country of residence, or gender, or system-generated data such as IP addresses and traffic data.
- .22 Indicate each type of secondary use of customer data, and the revenue derived from such uses. Incremental revenue from improving primary product and service offerings through the use of customer data shall be excluded.
- .23 Indicate the type of customer consent obtained for each secondary use.

**TC0102-06. Description of legal and regulatory fines and settlements associated with customer privacy including, but not limited to, violations of the Children's Online Privacy Protection Act, Directive 2002/58/EC (ePrivacy Directive), and Federal Trade Commission Act. Include dollar amount of fines and settlements, implications of the legal findings, and a description of corrective actions implemented in response to events.**

- .24 The registrant shall briefly describe the nature and context of fines and settlements associated with customer privacy, including civil actions (e.g., civil judgment, settlements, or regulatory penalties) and criminal actions (e.g., criminal judgment, penalties, or restitutions) taken by any entity (government, businesses, or individuals).
- .25 The registrant shall disclose the amount of any fine or settlement associated with each incident, not including legal fees.
- .26 If relevant, the registrant shall discuss other implications associated with the fine or settlement, including any limitations on contracting with government or other institutional clients.
- .27 The registrant shall describe any corrective actions it has implemented as a result of each incident. This may include, but is not limited to, specific changes in operations, management, processes, products, business partners, training, or technology.

**TC0102-07. Number of government or law enforcement requests received and number resulting in disclosure of (a) customer content and (b) non-content data. Discuss policy regarding the provision of personal data to government or law enforcement agencies and notification to customers about such requests.**

- .28 The registrant shall disclose the number of requests received from government or law enforcement agencies during the reporting year and the number of requests with which it complied, for each type of data: customer content and non-content.
- .29 Customer content includes customer-generated information such as email text, while non-content data includes information such as an email address, a person's name, country of residence, or gender, or system-generated data such as IP addresses and traffic data.

- .30 The registrant shall describe its policy for determining whether to comply with a request for customer data, including the level of management approval required to release customer information; specifically, under what conditions will the registrant release customer data, and what requirements must be met in the request. The registrant shall also describe its policy for notifying customers about such requests, including timing of notification.

**TC0102-08. List of countries where core products or services are monitored, blocked, or subject to content filtering or censorship, even if required by local law. For each country, indicate the number and type of products and services that were subject to the action and the duration of the effect. Indicate percent of customers affected.**

- .31 The registrant shall describe the implications for user privacy from government or law enforcement monitoring of data gathered through use of registrants' products or services; specifically, indicate the countries where this monitoring is occurring, and the extent of its reach across product or service line. Indicate percent of customers affected.
- .32 The registrant shall describe the implications for freedom of expression from blocking of registrant's products or services, or filtering or censoring of content generated through the use of registrant's products or services due to government, judicial, or law enforcement requests or requirements; specifically, indicate the countries where this blocking or censorship is occurring and the extent of its reach across product or service line. Indicate percent of customers affected.
- .33 "Monitoring" occurs when government or law enforcement has routine access to content or non-content data of specific users or of all users of a particular product or service.
- .34 "Blocking" occurs when the registrant is prohibited by law or government authority from providing some or all of the registrant's products or services in a country.
- .35 "Subject to content filtering or censorship" occurs when government or other authority prohibits or removes open access to, or display of, certain types of content of specific users or of all users of a particular product or service. Examples include content that is considered politically or culturally sensitive.

## *Notes*

### *Definitions:*

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### *Additional References*

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## **Data Security**

### *Description*

*Increasing cyber security threats create both risks and opportunities for this industry. Companies need to tackle data security threats both for their own and their customers' data through adequate prevention, detection, and remedial actions. Concerns about data security can also serve as revenue generating opportunities for this industry, through provision of security software and services. This issue can affect customer acquisition and retention, as well as creating increased regulatory compliance costs for companies.*

### *Accounting Metrics*

**TC0102-09. Number and description of data security breaches that resulted in the actual outcomes of a business process deviating from the expected outcomes with respect to confidentiality, integrity, and availability. Include a discussion of: (a) The impact of the incident, such as loss of information, compromise of data, litigation, regulatory fines, loss of revenue, lost time, damage to reputation (qualitative measure of severity). (b) Corrective actions taken in response to the incident and associated costs, such as remediation costs or increased costs for additional security measures.**

- .36 The registrant shall disclose significant data security breaches that have affected business outcomes or have resulted in a deviation from a reasonable customer expectation of data security, including but not limited to violations of California's Information Practices Act. These breaches may be due to deficiencies or failures of people, process, or technology.
- .37 A data security breach is considered significant if it is disruptive to a large number of customers or fundamental business operations in a manner that affects time to market, revenue capture, or other material parameters.
- .38 The registrant shall describe the impact of the security breach including business implications as well as impacts to customers.
- .39 The registrant shall describe the corrective actions taken and the cost of those actions. The costs should include cost for new systems or training, legal fees, reimbursements or reparations, or any other cost directly associated with correcting the impact of the security breach.

**TC0102-10. Discussion of management approach to identifying and addressing risk from the U.S. Department of Commerce National Institute of Standards and Technology (NIST)-defined cyber vulnerabilities and threats, including: external/removable media, attrition (e.g., a DDoS or brute force attack), web, email, improper usage, and loss/theft of equipment.**

- .40 The registrant shall describe the risk posed by the cyber vulnerabilities and threats, using NIST Special Publication 800-33 definitions and concepts, where:
  - "Vulnerability" is a weakness in system security procedures, design, implementation, internal controls, etc., that could be accidentally triggered or intentionally exploited and result in a violation of the system's security policy.
  - "Threat-source" is either (1) intent and method targeted at the intentional exploitation of a vulnerability or (2) the situation and method that may accidentally trigger a vulnerability.
  - "Threat" is the potential for a "threat source" to exploit (intentional) or trigger (accidental) a specific vulnerability.
  - "Risk" is the net mission/business impact (probability of occurrence combined with impact) from a particular threat source exploiting, or triggering, a particular information technology vulnerability. IT related-risks arise from legal liability or mission/business loss due to:
    - Unauthorized (malicious, non-malicious, or accidental) disclosure, modification, or destruction of information.
    - Non-malicious errors and omissions.
    - IT disruptions due to natural or man-made disasters.
    - Failure to exercise due care and diligence in IT implementation and operation
- .41 The registrant shall describe its approach to evaluating and managing cyber security vulnerabilities, threats, and risks.
- .42 The registrant may choose to structure this response consistent with the Cybersecurity Framework outlined in the "Discussion Draft of the Preliminary Cybersecurity Framework August 28, 2013," provided by the National Institute of Standards and Technology (NIST) in advance of the Fourth Cybersecurity Framework workshop on Sept.11-13, 2013, at the University of Texas at Dallas. Available on-line at: [http://www.nist.gov/itl/upload/discussion-draft\\_preliminary-cybersecurity-framework-082813.pdf](http://www.nist.gov/itl/upload/discussion-draft_preliminary-cybersecurity-framework-082813.pdf)

TC0102-11. **Discuss the management approach to integration of data security considerations into software programming; indicate specific products affected and rationale for the feature.**

- .43 The registrant shall discuss the integration of data security considerations into software programming decisions. Describe specific products on which the data security features were integrated. Indicate the rationale for including these features, such as, for access to new market segment, to mitigate risk, etc.

### *Notes*

#### *Definitions*

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#### *Additional References*

Discussion Draft of the Preliminary Cybersecurity Framework August 28, 2013. Draft is provided by the National Institute of Standards and Technology (NIST) in advance of the Fourth Cybersecurity Framework workshop on Sept.11-13, 2013, at the University of Texas at Dallas. (Available on-line at: [http://www.nist.gov/itl/upload/discussion-draft\\_preliminary-cybersecurity-framework-082813.pdf](http://www.nist.gov/itl/upload/discussion-draft_preliminary-cybersecurity-framework-082813.pdf) )

The NIST 800 Series is a set of documents that describe United States federal government computer security policies, procedures and guidelines. [NIST](http://www.nist.gov) (National Institute of Standards and Technology) is a unit of the U.S. Commerce Department. The documents are available free of charge, and can be useful to businesses and educational institutions, as well as to government agencies. (Available on-line at: <http://csrc.nist.gov/publications/PubsSPs.html>)



## **Recruiting and Managing a Global Skilled Workforce**

### *Description*

*While the number of job openings in the Software and IT Services industry is growing, companies are finding it difficult to recruit qualified employees to fill these positions. Intense competition in the industry to acquire highly-skilled employees has resulted in significant monetary and non-monetary compensation being offered. Companies are vulnerable to immigration policy changes as they try to recruit foreign nationals with the necessary skills to meet the shortage in skilled domestic employees. Companies increasingly seeking to offshore operations to countries with available skilled labor or in order to lower employee costs may be affected not only by social tensions, and protectionist tax or trade policies, but also by difficulties in recruiting and leveraging a global workforce with the right skills, and minimizing the risks from such a workforce. These risks, which could affect profitability or brand value, include intellectual property theft, or potential data privacy breaches by offshore employees (or outsourced companies or their employees in the case of outsourced job functions). Offshoring or outsourcing can also cause restructuring in the home market, with potential to harm employee relationships. Some companies are contributing to relevant education and training to expand the availability of domestic skilled employees, in order to lower offshoring risks and address local labor market constraints.*

### *Accounting Metrics*

**TC0102-12. Percentage of employees that are (a) foreign nationals, and (b) located offshore. Describe potential risks of recruiting foreign nationals and/or offshore employees, and management approach to addressing these risks.**

- .44 The registrant shall disclose the percent of employees that are foreign nationals. Foreign Nationals are defined as anyone requiring a visa for work in the country in which they are employed.
- .45 The registrant shall indicate the percent of employees that are located offshore from the registrant's country of domicile, by region.
- .46 The registrant shall describe potential risks from recruiting foreign nationals and/or offshore employees, which may arise from immigration, tax or trade policies, or cultural or political sensitivities. The registrant shall describe management's approach to addressing the risks identified.

**TC0102-13. Percent (by spending) of research and development activities, data processing, data storage, or other core activities that are located offshore, which are (a) owned, or (b) outsourced. Describe potential risks to the integrity of such work, including intellectual property theft, or breach of data privacy and security, and management approach to addressing these risks.**

- .47 The registrant shall indicate the percent of research and development activities, data processing, data storage, or other core work conducted by internal staff outside of the registrant's country of domicile.
- .48 The registrant shall indicate the percent of research and development activities, data processing, data storage, or other core work outsourced to another company outside of the registrant's country of domicile.
- .49 The registrant shall describe potential risks to the integrity of core work, which may arise from theft of intellectual property, data privacy, or security breaches given the varied nature of governing oversight in different countries. The registrant shall describe management's approach to address the risks identified, with a specific focus on personnel or processes; security of systems is disclosed in the Data Security issue area of this standard.

**TC0102-14. Discuss constraints on local hiring of technical staff due to difficulty in finding qualified personnel; include median length of vacancies for technical positions. Indicate number of new domestic technical staff hired through company-funded or company-facilitated programs to develop domestic workforce. Describe management approach to restructuring domestic workforce as a result of offshoring activities.**

- .50 The registrant shall discuss constraints on hiring domestic technical staff due to limited pool of qualified personnel, where technical staff includes researchers, developers, engineers, and other similar positions.
- .51 The registrant shall disclose the median length of open job vacancies for technical positions.
- .52 The registrant shall disclose the number of new hires recruited through or trained through company-funded or company-facilitated programs to develop domestic workforce. This includes community outreach programs, university partnerships, or other engagement programs.

.53 The registrant shall discuss management’s approach to restructuring the domestic workforce as a result of offshoring activities, such as re-training or re-assigning the domestic staff or offering outplacement services following layoffs.

*Notes*

*Definitions:*

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*Additional References:*

[Society of Human Resources Management, Executive Brief: Tracking Trends in Employee Turnover](#)

## **Employee Inclusion and Performance**

### *Description*

*Employees are key contributors to value creation in the Software & IT Services industry, and employee costs are a major proportion of operating expenses. The industry also experiences high employee turnover rates. Companies offer significant monetary and non-monetary benefits in order to improve employee engagement, and therefore retention and productivity, both of which affect profitability. Workers in the industry are said to experience lower separation between 'work' and 'life' than more traditional occupations, with implications for job satisfaction. Flexibility in working practices might influence the recruitment and retention of a more diverse workforce. While constrained by low diversity in education and training related to the skills needed in the industry, companies would benefit from recruiting a more diverse workforce, providing adequate support to traditionally under-represented employees, and discouraging implicit biases in promotions. Greater workforce diversity is important for innovation, and helps companies understand the needs of their diverse and global customer base, and communicate with customers effectively.*

### *Accounting Metrics*

#### **TC0102-15. Employee engagement as a percentage or an index, including a description of methodology employed.**

- .54 The registrant shall disclose employee engagement as a percentage (i.e. percentage of employees deemed "engaged") or as an index (e.g. strength of employee agreement with a survey statement).
- .55 The disclosure shall be calculated based on the results of an employee engagement survey or research study conducted by the registrant, an external entity contracted to perform such a study by the registrant, or an independent third party.
- .56 The registrant shall briefly describe the:
- Source of its survey (e.g. third-party survey or registrant's own),
  - Methodology used to calculate the index (e.g. a simple average of individual employee survey responses, with a numerical value assigned to the strength of agreement or disagreement with a survey statement),
  - Possible range of the index, and
  - Summary of questions or statements included in the survey or study (e.g. those related to goal setting, support to achieve goals, training and development, work processes, and commitment to the organization).
- .57 Where the survey methodology has changed compared to previous reporting years, the registrant shall indicate results based on both the old and new methods in the year in which the change is made.
- .58 If results are limited to a subsection of employees, the registrant shall include the percentage of employees included in the study or survey, and the representativeness of the sample.

#### **TC0102-16. Employee turnover by voluntary and involuntary for all employees. Ratio of "Pivotal Employees Leaving" to "All Employees Leaving" by gender, ethnic group, and employee category.**

- .59 The registrant shall calculate monthly voluntary turnover as = total number of employee-initiated voluntary separations (such as resignation, retirement, etc.) for each month divided by the average number of employees for the month (the sum of the employees on the registrant's payroll at each pay period / number of pay periods). The registrant shall disclose its annual voluntary turnover rate which is calculated by adding the 12 monthly turnover figures together and multiplying by 100 to arrive at a percentage.
- .60 The registrant shall calculate monthly involuntary turnover as = total number of registrant-initiated separation (such as dismissal, downsizing, redundancy, expiry of contract, etc.) for each month divided by the average number of employees for the month (the sum of the employees on the registrant's payroll at each pay period / number of pay periods). The registrant shall disclose its annual involuntary turnover rate, which is calculated by adding the 12 monthly turnover figures together and multiplying them by 100 to arrive at a percentage.
- .61 The registrant shall disclose the ratio of "Pivotal Employees Leaving" to "All Employees Leaving" by gender, ethnic group, and employee category, where:
- "Ethnic groups" are defined as: Asian (including Pacific Islander), Hispanic, White, Black, and Other.
  - "Employee categories" are defined as: Executives/Sr. Managers, Mid-level Managers, Professionals, and All others (EEO-1 categories technicians, sales, admin support, and service workers).
- .62 "Pivotal Employees" represent a company's critical talent; identified as the top quartile pay progressors (i.e., the top 25% of individuals who received the largest percentage pay increases over the past two fiscal years).

.63 The registrant shall classify all employees according to the [U.S. Equal Employment Opportunity Commission EEO-1 Job Classification Guide](#) and record the number of employees employed at any time during the fiscal year in each classification.

TC0102-17. **Number of total employees and number by gender and ethnic group in each of the following two employee categories: Executive/Sr. Manager and Non-Executive.**

Number	Executive/ Sr. Manager	Non-Executive
<b>Total Employees</b>		
<b>Woman</b>		
<b>Asian (incl. Pacific Islander)</b>		
<b>Hispanic</b>		
<b>Caucasian</b>		
<b>African-American</b>		
<b>Other</b>		

.64 The registrant shall disclose the total number of employees and the number by gender and ethnic group in each employee category, where

- "Ethnic groups" are defined as Asian (including Pacific Islander), Hispanic, White, Black, and Other.
- "Non-Executive" employees include Mid-level Managers, Professionals, and All others (EEO-1 categories technicians, sales, admin support, and service workers).

### *Notes*

The ratio of "Pivotal Employees Leaving" to "All Employees Leaving" is a simplified version of a metric known as Talent Quotient™ as described in "An Economic View of the Impact of Human Capital on Firm Performance and Valuation." Mark C. Ubelhart, Hewitt Associates, 2009.

#### *Definitions:*

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#### *Additional References:*

[Society of Human Resources Management, Executive Brief: Tracking Trends in Employee Turnover](#)

## Delivering Sustainability Solutions for Customers

### *Description*

*As companies in the industry look to expand their offerings, provide more high-value services, and acquire customers in emerging markets, where sustainability challenges may be more acute, sustainability-related IT solutions for customers are becoming important drivers of long-term value creation. Business, government, and retail customers of software and IT services companies all face growing Environmental, Social, and Governance challenges in varying forms and degrees, including those related to operational risk management, product safety, and sustainable supply chains, sustainability analytics and reporting, and energy and environmental resource management, among others, depending on the industry being served. Through intelligent IT services that leverage the trends of cloud computing, data analytics, machine learning, and machine-to-machine communication to enable customers to address their sustainability concerns, companies in the industry will be able to meet evolving customer needs and expectations, differentiate their offerings, increase brand value, and expand their addressable market.*

### *Accounting Metrics*

**TC0102-18. Describe significant environmental and social trends affecting key customer segments and their impact on demand for registrant's products or services. 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 market. Provide percent of total R&D spending allocated to these products or services.**

- .65 The registrant shall identify key customer segments. Customer segments include (a) government agencies, indicate level of government and service area (e.g., Federal - Department of Defense, State – Department of Transportation, Local –Public Utilities Commission, etc.); (b) corporations and organizations, indicate industry type (e.g., Healthcare, etc); and individual consumers collectively. A key customer segment represents more than 5% of total revenue.
- .66 Examples of customer needs emerging from social trends include software and IT services for safety and security (including cyber security, and workplace health and safety), and specialized software and IT services for the healthcare, education, and financial services industries to improve quality, access and/or affordability. The registrant shall indicate how the product or service meets customer expectations or needs related to the social trend.
- .67 Examples of customer needs emerging from environmental trends include product safety and stewardship solutions (for sustainable products and supply chains), sustainability reporting and analytics solutions, and energy and environmental resource management solutions. The registrant shall indicate how the product or service meets customer expectations or needs related to the environmental trend.
- .68 The registrant shall disclose the total addressable market, and segmented or serviceable addressable market associated with the potential market opportunity for each of these products or services, where
  - Total addressable market is defined for this purpose as revenues (in U.S. dollars) the registrant would earn were the registrant able to capture 100 percent of the global market share for the category of product or service being discussed (e.g. global market for supply chain management software). The total addressable market provides a broader context for the segmented addressable market.
  - Segmented or serviceable addressable market is defined for this purpose as revenues (in U.S. dollars) that the registrant would earn based on the customers that the registrant could reach with existing or planned capabilities, sales channels, or products. It is a subset of the total addressable market (e.g. market for supply chain management software in the U.S. focused on sustainable supply chains).
- .69 The registrant shall discuss the source of the dollar values for the total and serviceable markets (e.g. third party study or registrant's own calculations). Indicate key assumptions or parameters used in calculating these values, including: time period, geographic regions, and product definitions or categories. Total addressable and serviceable addressable market values may be based on bottom-up calculations of total competitive sales of the product or service by existing suppliers in the market; top-down calculations of competitive sales based on market research reports, industry reports or other studies; or end-user purchases of the product or service during the period being discussed.
- .70 The registrant shall disclose the target 3-year share of market and current share of market, as a measure of targeted growth, where:

- Target 3-year share of market is the percentage of the serviceable addressable market that the registrant plans to address over a three-year time horizon.
- .71 The registrant shall disclose total current share of market based on total annual revenue generated from products or services that directly address these key customer needs around environmental or social trends. A general product or service that may—or may not—be used to address an environmental or social concern shall not be included in this disclosure.
- .72 The registrant shall identify percent of research and development expenditures allocated to the development of these products or services.

## *Notes*

### *Definitions*

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### *Additional References*

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## **Managing Systemic Risks from Technology Disruptions**

### *Description*

*With cloud computing and Software as a Service (SaaS) trends, software and IT service providers need to ensure they have robust infrastructure and policies in place to minimize disruptions to their services. Disruptions such as programming errors or server downtime have the potential to generate systemic risks, with computing and data storage moving from individual company servers in various industries to data centers of cloud computing service providers, including software and IT services companies, particularly if the affected customers are in sensitive sectors, for example, financial institutions or utilities, considered as critical national infrastructure. Companies' investments in improving the reliability and quality of their IT infrastructure and services are likely to affect their ability to attract and retain customers, and they may face additional costs in the absence of such efforts.*

### *Accounting Metrics*

**TC0102-19. Average Interruption Frequency and Average Interruption Duration, for cloud services (such as SaaS, IaaS, PaaS) of both owned and outsourced operations.**

- .73 The Average Interruption Frequency is the total number of "customer interruptions" divided by the total number of "customers served;" and the Average Interruption Duration is the total "customer interruption duration" divided by the total number of "customers served," where:
- "Customer interruptions" are the number of incidents creating a disruption in service, multiplied by the number of customer accounts affected.
  - "Customer interruption duration" is the sum for all interruptions of the total downtime of the interruption, multiplied by the number of customer accounts affected.
  - "Customers served" is the number of unique accounts serviced during the fiscal year.
- .74 Interruptions disclosed here are qualified as those that are disruptive to a large number of customers or fundamental business operations in a manner that affected time to market, revenue capture, or other material effect.

**TC0102-20. For all significant performance issues and/or service disruptions, describe the type (e.g., network outage, technical disruption), extent (number of users/accounts affected), duration (number of days), root cause (e.g., weather-related, human error, etc.), and corrective actions.**

- .75 For each significant performance issue or service disruption, the registrant shall disclose the type of disruption, the extent of impact, the duration of the disruption, the cause, as well as any corrective actions taken to prevent future disruptions.
- .76 A performance issue or service disruption is considered significant if it is disruptive to a large number of customers or fundamental business operations in a manner that affects time to market, revenue capture, or other material parameters.

**TC0102-21. Discussion of business continuity risks related to disruptions affecting operations such as those caused by technical failures, programming errors, weather events, or natural disasters at hosting facilities; and, measures to address those risks. Discussion should cover estimated amount of potential loss, probability of that loss, and the associated timeframe, with a focus on cloud services (such as SaaS, IaaS, PaaS) of both owned and outsourced operations.**

- .77 The registrant shall discuss potential business continuity risks associated with technology disruptions, including an identification of critical business operations and redundancies or other measures implemented to enhance resilience of the system or to reduce impact, including insurance against loss.
- .78 The registrant shall discuss estimated amount of potential loss, probability of that loss, and the associated timeframe. These estimates may be based on insurance figures or other third-party or internal assessments of potential loss.
- .79 The registrant shall identify which critical business operations support cloud-based services, and shall further note whether those operations are owned or outsourced.

## Notes

### Definitions

The following are definitions from the National Institute of Standards and Technology (NIST), of the U.S. Department of Commerce (Available on-line at: <http://csrc.nist.gov/publications/nistpubs/800-145/SP800-145.pdf>).

**Cloud computing:** Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

**SaaS – Software as a Service:** The capability provided to the consumer is to use the provider’s applications running on a cloud infrastructure.<sup>1</sup> The applications are accessible from various client devices through either a thin client interface, such as a web browser (e.g., web-based email), or a program interface. The consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems, storage, or even individual application capabilities, with the possible exception of limited user-specific application configuration settings.

**PaaS – Platform as a Service (PaaS):** The capability provided to the consumer is to deploy onto the cloud infrastructure consumer-created or acquired applications created using programming languages, libraries, services, and tools supported by the provider.<sup>2</sup> The consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems, or storage, but has control over the deployed applications and possibly configuration settings for the application-hosting environment.

**IaaS – Infrastructure as a Service:** The capability provided to the consumer is to provision processing, storage, networks, and other fundamental computing resources where the consumer is able to deploy and run arbitrary software, which can include operating systems and applications. The consumer does not manage or control the underlying cloud infrastructure but has control over operating systems, storage, and deployed applications; and possibly limited control of select networking components (e.g., host firewalls).

### Additional References

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<sup>1</sup> A cloud infrastructure is the collection of hardware and software that enables the five essential characteristics of cloud computing. The cloud infrastructure can be viewed as containing both a physical layer and an abstraction layer. The physical layer consists of the hardware resources that are necessary to support the cloud services being provided, and typically includes server, storage and network components. The abstraction layer consists of the software deployed across the physical layer, which manifests the essential cloud characteristics. Conceptually the abstraction layer sits above the physical layer.

<sup>2</sup> This capability does not necessarily preclude the use of compatible programming languages, libraries, services, and tools from other sources.



## Intellectual Property Protection and Competitive Behavior

### *Description*

*Intellectual Property (IP) protection is an important driver of innovation; however, it can be used to restrict access to the benefits from innovation, particularly when companies are dominant market players benefiting from network effects. Acquisition of patents and other IP protection can sometimes be used as a strategy to restrict competition. Management of the interconnection between IP and anti-competitive business practices is an important governance issue with potential material impact for software companies due to monetary fines and restrictions of activities resulting from legal and regulatory actions.*

### *Accounting Metrics*

**TC0102-22. Description of legal and regulatory fines and settlements associated with anti-competitive practices and market manipulation, including Intellectual Property (IP) violations and IP practices to unfairly restrict competition. Include dollar amount of fines, implications of the legal findings, and settlements and a description of corrective actions implemented in response to events.**

- .80 The registrant shall briefly describe the nature and context of fines and settlements associated with anti-competitive practices and market manipulation, including civil actions (e.g., civil judgment, settlements, or regulatory penalties) and criminal actions (e.g., criminal judgment, penalties, or restitutions) taken by any entity (government, businesses, or individuals).
- .81 The registrant shall disclose the amount of any fine or settlement associated with each incident, not including legal fees.
- .82 The registrant shall describe any corrective actions it has implemented as a result of each incident. This may include, but is not limited to, specific changes in operations, management, processes, products, business partners, training, or technology.
- .83 If relevant, the registrant should discuss other implications associated with the fine or settlement, including any limitations on contracting with government or other institutional clients.

### *Notes*

#### *Definitions*

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#### *Additional References*

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# Hardware

SICST™ #TC0103

Prepared by the  
Sustainability Accounting Standards Board ®

October 2013  
Exposure Draft for Public Comment

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# Hardware

## Sustainability Accounting Standard

### About SASB

The Sustainability Accounting Standards Board (SASB) provides sustainability accounting standards for use by publicly-listed corporations in the U.S. in disclosing material sustainability issues for the benefit of investors and the public. SASB standards are designed for disclosure in mandatory filings to the Securities and Exchange Commission (SEC), such as the Form 10-K and 20-F. SASB is an independent 501(c)3 non-profit organization and is accredited to set standards by the American National Standards Institute (ANSI).

SASB is developing standards for more than 80 industries in 10 sectors. SASB's standards-setting process includes evidence-based analysis with in-depth industry research and engagement with a broad range of stakeholders. The end result of this process is the creation of a complete, industry-specific accounting standard which accurately reflects the material issues for each industry.

### About this Standard

This Standard is an exposure draft presented for public review and comment. This version is not intended for implementation.

The public comment period lasts for 90 days beginning Wednesday, October 2, 2013 and ending Thursday, January 2, 2014. This Standard is subject to change thereafter.

For instructions on providing comments to SASB please [click here](#).

For an introduction to SASB Standards please [click here](#).

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# SASB Sustainability Accounting Standard

## Hardware (TC0103)

### Industry Description

The Hardware industry consists of companies that design, assemble, and manufacture computers, computer hardware, servers, and computer peripherals. The industry relies heavily on the Electronic Manufacturing Services (EMS) and Original Design Manufacturing (ODM) industry for both design and manufacturing services.

Note: Select companies in the Hardware industry are also engaged in activities of the Software and IT Services industry. SASB standards for such activities are outlined in the Software and IT Services industry standards.

**Table 1. Material Sustainability Topics & Accounting Metrics**

Topic	Code	Accounting Metric
<b>Energy Management in Manufacturing</b>	TC0103-01	Total annual energy consumed (gigajoules); percentage from purchased grid electricity. Percentage of non-grid energy from fossil fuels and renewables (e.g., wind, biomass, solar).
<b>Water and Waste Management in Manufacturing</b>	TC0103-02	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.
	TC0103-03	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, treated, incinerated, and landfilled; and the weighted average cost (\$) per ton for each disposal method.
<b>Data Security Products</b>	TC0103-04	Discussion of the integration of data security features into product design and new product development to improve cyber security for customers. Where relevant, include revenue from specific security-related products.
<b>Employee Recruitment and Inclusion</b>	TC0103-05	Percentage of employees that are foreign nationals. Describe potential risks of recruiting foreign nationals, and the management approach to addressing these risks.
	TC0103-06	Discuss constraints on local hiring of technical staff due to difficulty in finding qualified personnel; include median length of vacancies for technical positions. Indicate number of new domestic technical staff hired through company-funded or company-facilitated programs to develop domestic workforce.
	TC0103-07	Number of total employees and number by gender and ethnic group in each of the following two employee categories: Executive/Sr. Manager and Non-Executive.
<b>Product Lifecycle Management</b>	TC0103-08	Percentage of products (by revenue) that meet the requirements of the European Union's Restriction of Hazardous Substances (RoHS) Directive.
	TC0103-09	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.

Topic	Code	Accounting Metric
	TC0103-10	Percentage of eligible products (by revenue) certified to a recognized voluntary, environmentally-focused certification standard
	TC0103-11	Percentage of products (by revenue) with environmentally focused principles incorporated into the designs, including a description of the design principles or criteria.
	TC0103-12	Amount (weight) of products recovered through take-back programs. 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 recycled through entities with Basel e-Stewards certification.
<b>Supply Chain Management and Materials Sourcing</b>	TC0103-13	Discuss existing or projected constraints with obtaining raw materials (or components), including those related to political situations, local labor conditions, natural disasters, climate change, geography, regulations, or restricted/limited availability. Discuss any production shortfall resulting from materials supply; indicate the cause and the relative impact on production.
	TC0103-14	Number of sole-source Tier 1 suppliers, and percentage of critical supply base for which suppliers are sole-source. Percentage of Tier I suppliers who are EICC members and have implemented the EICC Code of Conduct. Percentage of Tier I suppliers in full compliance with the registrant's environmental and social/labor requirements.
	TC0103-15	Discuss the process for managing environmental and social risks within the supply chain including screening, codes of conduct, audits, and certifications. Indicate if audits are first party, second party, or third party.

## **Energy Management in Manufacturing**

### *Description*

*Energy production and consumption contributes to significant environmental impacts, including climate change and pollution that have the potential to indirectly, yet materially, impact the results of operation of hardware companies that are highly reliant on energy as an input for value creation, due to energy-intensive manufacturing operations. The way in which a company manages its overall energy efficiency or intensity, its reliance on different types of energy and associated sustainability risks, and ability to access alternative source of energy, will have an increasingly material impact on costs and energy supply, due to the global regulatory focus on climate change, including incentives for energy efficiency and renewable energy, the rising cost from the pricing of GHGs emissions, and risks associated with reliance on nuclear energy and its increasingly limited license to operate.*

### *Accounting Metrics*

#### **TC0103-01. Total annual energy consumed (gigajoules); percentage from purchased grid electricity. Percentage of non-grid energy from fossil fuels and renewables (e.g., wind, biomass, solar).**

- .01 The registrant shall convert the amount of electricity it consumed from kilowatt hours (kWh) to gigajoules (GJ).
- .02 The registrant shall disclose fossil fuel consumption in terms of its energy content, using higher heating values (HHV), also known as gross calorific values (GCV), and which are directly measured or taken from the Intergovernmental Panel on Climate Change (IPCC), the U.S. Department of Energy (DOE), or the U.S. Energy Information Administration (EIA).
- .03 The registrant shall disclose renewable energy consumption as a percentage of its overall energy consumption, in terms of its energy content. For biofuels, the registrant shall use HHVs from the sources mentioned above. For solar or wind energy consumption, the registrant shall convert from electricity production (kWh) to gigajoules (GJ).
- .04 The registrant shall disclose renewable energy data for renewable energy it directly produces, or which it purchases through renewable energy certificates (RECs) that are certified (i.e., through Green-e), or renewable power purchase agreements (PPAs). It shall not disclose the renewable portion of the energy drawn from electricity grids.

### *Notes*

#### *Definitions*

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#### *Additional References*

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## Water and Waste Management in Manufacturing

### *Description*

The manufacturing of computers and other technology hardware is both water and waste intensive. As state, federal, and foreign environmental laws continue to emphasize resource conservation, hardware companies that are able to manage this issue and reduce the associated costs will be well positioned to protect shareholder value.

### *Accounting Metrics*

**TC0103-02. 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.**

- .05 Water withdrawn is the total amount of water removed from freshwater sources for use in operations. Water withdrawals shall be disclosed in terms of cubic meters (m<sup>3</sup>).
- .06 The registrant shall disclose the total amount of water by volume (m<sup>3</sup>) that was returned to the watershed during the fiscal year. This figure shall include the amount discharged directly to the environment or by way of a local wastewater treatment plant.
- .07 The registrant shall disclose the total amount of water by volume (m<sup>3</sup>) that was recycled during the fiscal year. This figure shall include the amount recycled in closed-loop and open-loop systems. Water recycled for purposes other than manufacturing operations (e.g., grey water reuse) shall not be included in this figure.
- .08 Using the World Resources Institute's (WRI) Water Risk Atlas tool, Aqueduct (publicly available online [here](#)), the registrant shall analyze all of its manufacturing facilities for water risks and identify facilities that are in a location with High (40–80%) or Extremely High (>80%) Baseline Water Stress. Water withdrawn, returned, or recycled in locations with High or Extremely High Baseline Water Risk shall be indicated as a percentage of the total water withdrawn, returned, or recycled, respectively.

**TC0103-03. 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, treated, incinerated, and landfilled; and the weighted average cost (\$) per ton for each disposal method.**

	<b>Hazardous</b>	<b>Non-Hazardous</b>	<b>E-waste</b>
<b>Total Waste</b>	tons	tons	tons
<b>Recycled</b>	(%)(%)	(%)(%)	(%)(Basel)(%)
<b>Treated</b>	(%)(%)	(%)(%)	(%)(%)
<b>Incinerated</b>	(%)(%)	(%)(%)	(%)(%)
<b>Landfilled</b>	(%)(%)	(%)(%)	(%)(%)

- .09 The registrant shall disclose the total amount of waste, measured in tons, for each of the following waste types: (1) hazardous waste, (2) non-hazardous waste, and (3) electronic waste from manufacturing processes.
- .10 The registrant shall indicate the percent of each waste type handled by each of the following end-of-life disposal methods: recycling, treating, incinerating, or landfilling.
- .11 For each waste type and method of waste disposal, the registrant shall indicate the weighted average cost for disposal.
- .12 For electronic waste from manufacturing processes, indicate the amount (weight) of electronic waste recycled through entities with Basel e-Stewards certification; amount (weight) of electronic waste disposed of through other entities. This disclosure excludes products returned through take-back programs.

### *Notes*

### *Definitions*

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*Additional References*

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## **Data Security Products**

### *Description*

*Increasing cyber security threats create both risks and opportunities for this industry. Products designed to ensure security will help companies to reduce reputational risks and enhance customer acquisition. Concerns about data security and related government actions can also serve as revenue generating opportunities for this industry through federal contracts, and the provision of security products.*

### *Accounting Metrics*

**TC0103-04. Discussion of the integration of data security features into product design and new product development to improve cyber security for customers. Where relevant, include revenue from specific security-related products.**

- .13 The registrant shall describe specific new products that enable enhanced data security or products on which new data security features were integrated. Indicate the rationale for including these features, such as accessing new market segment or mitigating customer risk.
- .14 The registrant shall disclose total annual revenue generated from new security-enabling products, or products on which new data security features were integrated.
- .15 The products described here are specifically designed or upgraded to address data security issues, including risks from U.S. Department of Commerce National Institute of Standards and Technology (NIST)-defined cyber vulnerabilities and threats, where:
  - “Vulnerability” is a weakness in system security procedures, design, implementation, internal controls, etc., that could be accidentally triggered or intentionally exploited, and result in a violation of the system’s security policy.
  - “Threat-source” is either: (1) intent and method targeted at the intentional exploitation of a vulnerability, or (2) the situation and method that may accidentally trigger a vulnerability.
  - “Threat” is the potential for a “threat source” to exploit (intentional) or trigger (accidental) a specific vulnerability.
  - “Risk” is the net mission/business impact (probability of occurrence combined with impact) from a particular threat source exploiting, or triggering, a particular information technology vulnerability. IT related-risks arise from legal liability or mission/business loss due to:
    - Unauthorized (malicious, non-malicious, or accidental) disclosure, modification, or destruction of information
    - Non-malicious errors and omissions
    - IT disruptions due to natural or man-made disasters
    - Failure to exercise due care and diligence in IT implementation and operation
- .16 Examples of security-related products include hardware-based encryption products or multi-factor authentication devices (such as security tokens or biometric scanners).

### *Notes*

#### *Definitions*

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#### *Additional References*

Discussion Draft of the Preliminary Cybersecurity Framework August 28, 2013. Draft is provided by the National Institute of Standards and Technology (NIST) in advance of the Fourth Cybersecurity Framework workshop on Sept.11-13, 2013, at the University of Texas at Dallas. (Available on-line at: [http://www.nist.gov/itl/upload/discussion-draft\\_preliminary-cybersecurity-framework-082813.pdf](http://www.nist.gov/itl/upload/discussion-draft_preliminary-cybersecurity-framework-082813.pdf))

The NIST 800 Series is a set of documents that describe United States federal government computer security policies, procedures, and guidelines. [NIST](http://www.nist.gov) (National Institute of Standards and Technology) is a unit of the Commerce Department. The documents are available free of charge, and can be useful to businesses and educational institutions, as well as to government agencies. (Available on-line at: <http://csrc.nist.gov/publications/PubsSPs.html>)

## **Employee Recruitment and Inclusion**

### *Description*

*Companies in the industry are focusing on higher value-add activities, as they increasingly outsource manufacturing. As a result, hardware companies need highly-skilled research and development, and marketing staff. Companies report intense competition for key personnel, and employee compensation, a significant cost component for the industry, is expected to increase in order to attract highly-skilled employees. Companies are vulnerable to immigration policy changes as they try to recruit foreign nationals with the necessary skills to meet the shortage in skilled domestic employees. Furthermore, while constrained by low diversity in education and training related to the skills needed in the industry, companies would benefit from recruiting a more diverse workforce, providing adequate support to traditionally under-represented employees, and discouraging implicit biases in promotions. Greater workforce diversity is important for innovation, and helps companies understand the needs of their diverse and global customer base, and communicate with customers effectively.*

### *Accounting Metrics*

#### **TC0103-05. Percentage of employees that are foreign nationals. Describe potential risks of recruiting foreign nationals, and the management approach to addressing these risks.**

- .17 The registrant shall disclose the percent of employees that are foreign nationals. Foreign Nationals are defined as anyone requiring a visa for work in the country in which they are employed.
- .18 The registrant shall describe potential risks from recruiting foreign nationals, which may arise from immigration policies. The registrant shall describe the management approach to addressing the risks identified.

#### **TC0103-06. Discuss constraints on local hiring of technical staff due to difficulty in finding qualified personnel; include median length of vacancies for technical positions. Indicate number of new domestic technical staff hired through company-funded or company-facilitated programs to develop domestic workforce.**

- .19 The registrant shall discuss constraints on hiring domestic technical staff due to the limited pool of qualified personnel, where technical staff includes computer hardware engineers and computer information and research scientists, and other similar positions.
- .20 The registrant shall disclose the median length of open job vacancies for technical positions.
- .21 The registrant shall disclose the number of new hires recruited, or trained, through company-funded or company-facilitated programs to develop the domestic workforce. This includes community outreach programs, university partnerships, or other engagement programs.

#### **TC0103-07. Number of total employees and number by gender and ethnic group in each of the following two employee categories: Executive/Sr. Manager and Non-Executive.**

<b>Number</b>	<b>Executive/ Sr. Manager</b>	<b>Non-Executive</b>
<b>Total Employees</b>		
<b>Women</b>		
<b>Asian (incl. Pacific Islander)</b>		
<b>Hispanic</b>		
<b>Caucasian</b>		
<b>African-American</b>		
<b>Other</b>		

- .22 The registrant shall disclose the total number of employees and the number by gender and ethnic group in each employee category, where:
  - "Ethnic groups" are defined as Asian (including Pacific Islander), Hispanic, White, Black, and Other.

- “Non-Executive” employees include Mid-level Managers, Professionals, All others (EEO-1 categories technicians, sales, admin support, and service workers).

## *Notes*

### *Definitions*

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### *Additional References*

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## **Product Lifecycle Management**

### *Description*

*Companies must address the environmental externalities associated with the use of scarce and/or toxic material inputs in their products, their product's environmental efficiency during the use phase, and the impact that products have at the end-of-life. Hardware firms are exposed to the issue of planned obsolescence which contributes to the company's growth, but also increases the aforementioned negative externalities. The industry faces regulatory and social pressures, and increasing customer demand to reduce externalities during a product's lifecycle, including manufacturer responsibility for electronic waste, that have the potential to impact revenue growth prospects, and may present additional costs.*

### *Accounting Metrics*

#### **TC0103-08. Percentage of products (by revenue) that meet the requirements of the European Union's Restriction of Hazardous Substances (RoHS) Directive.**

- .23 A product shall be considered to conform to RoHS (directive 2002/95/EC) requirements if all constituent components have been tested and/or documented to conform with RoHS maximum concentration value requirements for lead, mercury, cadmium, hexavalent chromium and polybrominated flame retardants.
- .24 The registrant shall disclose RoHS conformance with respect to all of its products, regardless of their location of manufacture, export status, and/or location of sale.
- .25 The percentage shall be calculated as:  $100\% * (\text{revenue from covered products that meet RoHS requirements} / \text{revenue from all covered products})$ .
- .26 "Covered products" are defined as those that, as referenced in RoHS, are category 1-7 and category 10 products in Annex 1A of Waste Electrical and Electronic Equipment (WEEE) Directive (2002/96/EC):
  1. Large household appliances
  2. Small household appliances
  3. IT and telecommunications equipment
  4. Consumer equipment
  5. Lighting equipment
  6. Electrical and electronic tools (except large-scale stationary and industrial tools)
  7. Toys, leisure and sports equipment
  10. Automatic dispensers
- .27 Products exempt from the scope of RoHS shall be considered exempt from the scope of this disclosure calculation (e.g. mercury in certain fluorescent lights and lead in certain soldering applications).

#### **TC0103-09. 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.**

- .28 The registrant shall discuss its approach to managing the use of substances that appear on the ECHA's Member State Committee (MSC) [Candidate List of Substances of Very High Concern for Authorisation](#) or on the Consumer Electronics Association's (CEA) Declarable Substance List.
- .29 The registrant shall describe how its operational processes incorporate these lists and/or how it takes into consideration the chemicals on these lists.
- .30 Relevant operational processes may include, but are not limited to, product design, materials and parts procurement, product safety testing, product labeling, and product declarations (e.g. material safety data sheets).
- .31 Relevant actions to discuss may include the exclusion of substances (e.g. banned substances lists), use of material substitution assessments, product labeling, or any other methods considering usage of substances from these lists.
- .32 If the registrant assesses and manages the impact of known or potentially toxic substances with reference to other regulations, industry norms or accepted chemical lists it may identify those practices, and it shall describe the degree of overlap with REACH SVHC and JIG Declarable Substances.

**TC0103-10. Percentage of eligible products (by revenue) certified to a recognized voluntary, environmentally-focused certification standard.**

- .33 Eligible products are defined as products that are within the scope of certification of a recognized voluntary, environmentally-focused certification program for electronics products including EPEAT®, ENERGY STAR, Taiwan Green Mark, TCO Certified, Japan PC Green, EU Ecolabel (“EU Flower”), EcoLogo®, and e-Standby Program (Korea).
- .34 If the registrant’s products are certified to other environmentally-focused standards or eco-labeling programs, it shall describe the basis for recognition of the standard (e.g. ratified national standard, accepted industry association standard, ISO standard, etc.).
- .35 The registrant shall calculate the percentage of certified products as:  $100 * (\text{revenue from certified products}) / (\text{total revenue from eligible products})$ , where revenue is U.S. dollars.
- .36 The registrant should identify which products or product lines are certified and to which standard(s).

**TC0103-11. Percentage of products (by revenue) with environmentally focused principles incorporated into the designs, including a description of the design principles or criteria.**

- .37 The registrant shall calculate the revenue (in US dollars) from products designed according to environmentally focused principles or criteria as percentage of total product revenue.
- .38 Relevant considerations to discuss include elimination of toxic substances, use of recycled materials, reduction of packaging, design for consolidated shipping, design of low energy consumption products, design for product take-back, labeling for recycling, and the elimination or replacement of materials that are subject to resource scarcity (e.g. cobalt, rare earth elements, etc.).
- .39 Design shall be considered to incorporate environmentally focused principles or criteria if it can be demonstrated to follow an established standard such as the criteria of Environmentally Conscious Design (IEC-62075), through participation in the U.S. EPA’s Design for Environment (DfE) programs or projects, or by demonstrating that multiple environmental considerations (e.g. from 0.38 above) are made during product design stages.
- .40 Products shall be considered within the scope of this disclosure regardless of the date of their original design (i.e. if it originally occurred prior to the fiscal year) assuming the product continues to meet best practices used by the registrant in regards to environmentally focused design.

**TC0103-12. Amount (weight) of products recovered through take-back programs. 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 recycled though entities with Basel e-Stewards certification.**

	<b>Recovered Product</b>	<b>E-waste</b>
<b>Total Product from Take Back</b>	tons	tons
<b>Reused</b>	(%)	(%)
<b>Remanufactured</b>	(%)	(%)
<b>Recycled</b>	(%)	(%)(% thru Basel)
<b>Landfilled</b>	(%)	(%)

- .41 The registrant shall disclose the total amount of product recovered through product take back programs, measured in tons.
- .42 The registrant shall indicate the percent of product handled by each of the following end-of-life waste handling methods: reuse, remanufacture, recycling, or landfilling.
- .43 The registrant shall indicate the amount of total recovered product that is classified as electronic waste, measured in tons.
- .44 For electronic waste, indicate the percent of electronic waste recycled though entities with Basel e-Stewards certification.
- .45 The registrant shall include both materials physically handled by registrant and those handled by direct partners.

*Notes*

*Definitions*

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*Additional References*

Registration, Evaluation, Authorisation and Restriction of Chemical (REACH) Regulation (EC) No 1907/2006

Candidate List of Substances of Very High Concern (SVHC) for Authorisation is published in accordance with Article 59(10) of the REACH Regulation).

Joint Industry Guide - Material Composition Declaration for Electrotechnical Products [Joint Industry Guide \(JIG\) 101 ed. 4.1.](#),

Declarable Substance List is Table A. of JIG 101 ed. 4.1.

## **Supply Chain Management and Materials Sourcing**

### *Description*

*Companies in the hardware industry outsource much of their production to electronics manufacturing services (EMS) companies in emerging markets, and have limited direct control over social and environmental standards in production, which may vary depending on region (e.g., labor conditions, human rights violations, air and water pollution, among others). Furthermore, hardware companies face the potential for supply chain disruptions, input price increases, and damage to brand reputation, arising from environmental and social factors, particularly when scarce or rare minerals and metals are used in their products, or when suppliers violate environmental or social standards. Companies also face regulatory risks from the use of conflict minerals in their products. Companies with strong supply chain standards and an ability to adapt to increased resource scarcity will be better positioned to protect shareholder value.*

### *Accounting Metrics*

**TC0103-13. Discuss existing or projected constraints with obtaining raw materials (or components), including those related to political situations, local labor conditions, natural disasters, climate change, geography, regulations, or restricted/limited availability. Discuss any production shortfall resulting from materials supply; indicate the cause and the relative impact on production.**

- .46 The registrant shall discuss existing constraints or risks of future constraints (both actual and potential) that directly affect its access to raw materials or components, or that indirectly affect it through impacts on its suppliers.
- .47 Actual constraints include those that affected the registrant during the fiscal year, are currently affecting the registrant, or have a very high likelihood of affecting the registrant in the near term (e.g., those for which the registrant currently has inventoried material but has already enacted a contingency plan).
- .48 Potential constraints include, but are not limited to, physical limits to natural resources globally, constraints due to regulatory efforts such as the Dodd-Frank Section 1502 requirements related to conflict minerals, rare earth minerals, supply chain disruptions due to increased frequency and severity of natural disasters and other effects of climate change, and labor risks particular to geographic areas in which the registrant conducts business.
- .49 The registrant shall discuss shortfalls in production that were caused by constraints in the supply chain. This includes any deviation of actual production versus planned production that directly resulted from materials constraints.
- .50 The registrant shall indicate the cause for the shortfall, and the relative impact of the reduced production capacity as a percent of total annual production.

**TC0103-14. Number of sole-source Tier 1 suppliers, and percentage of critical supply base for which suppliers are sole-source. Percentage of Tier I suppliers who are EICC members and have implemented the EICC Code of Conduct. Percentage of Tier I suppliers in full compliance with the registrant's environmental and social/labor requirements.**

- .51 The registrant shall indicate the number of Tier 1 suppliers that are based on a sole-source supplier relationship.
- .52 Tier 1 suppliers are those that transact directly with the registrant.
- .53 The registrant shall indicate the percentage of critical supply base that is based on a sole-source supplier relationship.
- .54 Sole-source suppliers refers to a situation where there is only one supplier for a specific material or product.
- .55 Critical supply base refers to materials or equipment and software products that are essential to primary business operations, including the design process, or hardware manufacturing (where the registrant is not fully vertically integrated).
- .56 The registrant shall disclose the percentage of its Tier I suppliers who are EICC members and have implemented the EICC Code of Conduct. The registrant may limit its disclosure to those suppliers that in aggregate account for greater than, or equal to, 90% of its supplier spending (in dollars).

**TC0103-15. Discuss the process for managing environmental and social risks within the supply chain including screening, codes of conduct, audits, and certifications. Indicate if audits are first party, second party, or third party.**

- .57 The registrant shall discuss management approach to identifying and reducing supply chain risk. The management approach may include screening, codes of conduct, audits, and / or certifications.
- .58 The registrant shall indicate whether supply chain audits are first-party, second-party, or third-party, where:

- “First-party audits” are internal audits used by organizations to audit themselves; these are generally intended to confirm or improve the effectiveness of management systems. First-party audits can be used to declare that an organization complies with an ISO standard; this is called a self-declaration.
- “Second-party audits” are external audits performed by any external party that has a formal interest in the audited organization. Second-party audits are generally performed by an organization’s customers, or by others on their behalf.
- “Third-party audits” are external audits performed by independent organizations such as registrars, certification bodies, or regulators.

## *Notes*

### *Definitions*

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### *Additional References*

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# Semiconductors

SICST™ #TC0201

Prepared by the  
Sustainability Accounting Standards Board ®

October 2013  
Exposure Draft for Public Comment

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# Semiconductors

## Sustainability Accounting Standard

### About SASB

The Sustainability Accounting Standards Board (SASB) provides sustainability accounting standards for use by publicly-listed corporations in the U.S. in disclosing material sustainability issues for the benefit of investors and the public. SASB standards are designed for disclosure in mandatory filings to the Securities and Exchange Commission (SEC), such as the Form 10-K and 20-F. SASB is an independent 501(c)3 non-profit organization and is accredited to set standards by the American National Standards Institute (ANSI).

SASB is developing standards for more than 80 industries in 10 sectors. SASB's standards-setting process includes evidence-based analysis with in-depth industry research and engagement with a broad range of stakeholders. The end result of this process is the creation of a complete, industry-specific accounting standard which accurately reflects the material issues for each industry.

### About this Standard

This Standard is an exposure draft presented for public review and comment. This version is not intended for implementation.

The public comment period lasts for 90 days beginning Wednesday, October 2, 2013 and ending Thursday, January 2, 2014. This Standard is subject to change thereafter.

For instructions on providing comments to SASB please [click here](#).

For an introduction to SASB Standards please [click here](#).

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# SASB Sustainability Accounting Standard

## Semiconductors (TC0201)

### Industry Description

The Semiconductors industry includes companies designing or manufacturing semiconductor devices, Integrated Circuits, their raw materials and components, or capital equipment. Some companies in the industry provide outsourced manufacturing, assembly or other services for designers of semiconductor devices. Industry trends creating new sustainability risks and opportunities include outsourcing of manufacturing, and offshoring of operations.

**Table 1. Material Sustainability Topics & Accounting Metrics**

Topic	Code	Accounting Metric
<b>GHG Emissions and Air Quality</b>	TC0201-01	Gross global Scope 1 emissions in metric tons CO <sub>2</sub> -e and amount of total emissions from PFCs. Breakdown of total emissions by countries with more than 5% of total Scope 1 emissions.
	TC0201-02	Description of organization’s long-term and short-term strategy or plan to address climate change-related risks, opportunities, and impacts, including emissions reduction target for Scope 1 emissions (both absolute and intensity targets) that was active (ongoing or reached completion) in fiscal year, and an analysis of performance against those targets.
	TC0201-03	Air emissions, in metric tons, for the following pollutants: NO <sub>x</sub> (excluding N <sub>2</sub> O), SO <sub>x</sub> , particulate matter (PM <sub>10</sub> ), carbon monoxide (CO), precursor organic compounds (POCs), and non-precursor organic compounds (NPOCs). Description of legal and regulatory fines and settlements associated with federal, state, and local environmental protection laws covering air quality. Include dollar amount of fines and settlements, and a description of corrective actions implemented in response to events.
<b>Energy Management in Manufacturing</b>	TC0201-04	Total annual energy consumed (gigajoules); percentage from purchased grid electricity. Percentage of non-grid energy from fossil fuels and renewables (e.g., wind, biomass, solar).
<b>Water and Waste Management in Manufacturing</b>	TC0201-05	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.
	TC0201-06	Total ultra-pure water (UPW) production.
	TC0201-07	Amount of waste (tons) broken down by the following waste types: (1) Hazardous and (2) Non-hazardous. For each waste type, indicate the percentage that is recycled, treated, incinerated, and landfilled; and the weighted average cost (\$) per ton for each disposal method.
	TC0201-08	Description of 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.

Topic	Code	Accounting Metric
	TC0201-09	Total releases (tons) of EPA 33/50 Program chemicals as reported in the Toxic Release Inventory (TRI). Discuss the management of these and other known toxic wastes, including source reduction efforts, recycling or reclamation efforts, and recovery efforts (such as regeneration or energy recovery).
<b>Employee Recruitment</b>	TC0201-10	Percentage of employees that are foreign nationals. Describe potential risks of recruiting foreign nationals, and management approach to addressing these risks
	TC0201-11	Discuss constraints on local hiring of technical staff due to difficulty in finding qualified personnel; include median length of vacancies for technical positions. Indicate number of new domestic technical staff hired through company-funded or company-facilitated programs to develop domestic workforce.
<b>Employee Health and Safety</b>	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.
	TC0201-13	Description of legal and regulatory fines and settlements associated with employee health and safety violations. Include dollar amount of fines and settlements, implications of the legal findings, and a description of corrective actions implemented in response to events.
<b>Product Design and Lifecycle Management</b>	TC0101-14	Percentage of products (by revenue) that meet the requirements of the European Union's Restriction of Hazardous Substances (RoHS) Directive.
	TC0201-15	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.
	TC0201-16	Percentage of products (by revenue) with environmentally focused principles incorporated into the designs, including a description of the design principles or criteria.
	TC0201-17	SPEC CPU2006 per watt for top 10 bestselling chipsets, indicate end-use product type for each.
	TC0201-18	Discussion of the integration of data security features into product design to improve cyber security for customers.
	TC0201-19	Description of products tailored to address specific 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 market. Provide percent of total R&D spending allocated to these products or services.
<b>Supply Chain Management and Materials Sourcing</b>	TC0201-20	Discuss existing or projected constraints with obtaining raw materials (or components), including those related to political situations, local labor conditions, natural disasters, climate change, geography, regulations, or restricted/limited availability. Discuss any production shortfall resulting from materials supply; indicate the cause and the relative impact on production.

Topic	Code	Accounting Metric
	TC0201-21	Number of sole-source Tier 1 suppliers, and percentage of critical supply base for which suppliers are sole-source. Percentage of Tier I suppliers who are EICC members, and have implemented the EICC Code of Conduct. Percentage of Tier I suppliers in full compliance with the registrant’s environmental and social/labor requirements.
	TC0201-22	Discuss the process for managing environmental and social risks within the supply chain including screening, codes of conduct, audits, and certifications. Indicate if audits are first party, second party, or third party.
<b>Intellectual Property Protection and Competitive Behavior</b>	TC0201-23	Description of legal and regulatory fines and settlements associated with anti-competitive practices and market manipulation, including Intellectual Property (IP) violations and IP practices to unfairly restrict competition. Include dollar amount of fines, implications of the legal findings, and settlements and a description of corrective actions implemented in response to events.

## **GHG Emissions and Air Quality**

### *Description*

*Greenhouse gas emissions and hazardous air emissions that affect local air quality from semiconductor manufacturing operations are a source of regulatory and related operational risks for companies, arising from current and potential future regulations in the U.S. and abroad. With the offshoring trend in the industry, the likelihood and impact of climate change regulations may vary depending on the location of fabs. However, companies ensuring superior performance of entities under their control in such locations are likely to benefit from enhanced reputation, or be able to better manage long-term regulatory risks and higher compliance costs in such countries.*

### *Accounting Metrics*

#### **TC0201-01. Gross global Scope 1 emissions in metric tons CO<sub>2</sub>-e and amount of total emissions from PFCs. Breakdown of total emissions by countries with more than 5% of total Scope 1 emissions.**

- .01 The registrant shall report its total Scope 1 direct GHG emissions in metric tons of carbon dioxide equivalent (CO<sub>2</sub>-e).
- .02 The CO<sub>2</sub>-e calculation shall include emissions of CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, and SF<sub>6</sub> (the six Kyoto gases), 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.
- .03 Although PFCs are included in the total Scope 1 GHG emissions inventory, the registrant shall also report separately its emissions of PFCs in metric tons CO<sub>2</sub>-e.
- .04 The registrant shall list the countries in which more than 5 percent of total Scope 1 emissions are released. For each of these countries, the registrant shall indicate the percent of total global Scope 1 emissions that were released in that country.

#### **TC0201-02. Description of organization's long-term and short-term strategy or plan to address climate change-related risks, opportunities, and impacts, including emissions reduction target for Scope 1 emissions (both absolute and intensity targets) that was active (ongoing or reached completion) in fiscal year, and an analysis of performance against those targets.**

- .05 The registrant shall discuss strategies or plans to address climate change-related risks, including emissions reduction targets, as well as programs and initiatives undertaken to meet or prepare for current or future regulatory obligations related to greenhouse gas emissions and air quality. These programs and initiatives may include process efficiency improvements, energy efficiency improvements, chemical replacement, use of renewable energy, or purchase of carbon credits, among others.
- .06 Emissions reduction targets should reflect the scope, percent of emissions in scope, percent reduction from base year, metric denominator (intensity targets only), base year, base year emissions, and target year.

#### **TC0201-03. Air emissions, in metric tons, for the following pollutants: NO<sub>x</sub> (excluding N<sub>2</sub>O), SO<sub>x</sub>, particulate matter (PM<sub>10</sub>), carbon monoxide (CO), precursor organic compounds (POCs), and non-precursor organic compounds (NPOCs). Description of legal and regulatory fines and settlements associated with federal, state, and local environmental protection laws covering air quality. Include dollar amount of fines and settlements, and a description of corrective actions implemented in response to events.**

- .07 The registrant shall report, in metric tons, its emissions of air pollutants associated with semiconductor manufacturing.
- .08 The registrant shall briefly describe the nature and context of fines and settlements associated with environmental protection, including civil actions (e.g., civil judgment, settlements, or regulatory penalties) and criminal actions (e.g., criminal judgment, penalties, or restitutions) taken by any entity (government, businesses, or individuals).
- .09 The registrant shall disclose the amount of any fine or settlement associated with each incident, not including legal fees.
- .10 The registrant shall describe any corrective actions it has implemented as a result of each incident. This may include, but is not limited to, specific changes in operations, management, processes, products, business partners, training, or technology.
- .11 If relevant, the registrant should discuss other implications associated with the fine or settlement, including any limitations on contracting with government or other institutional clients.

## *Notes*

### *Definitions*

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### *Additional References*

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## **Energy Management in Manufacturing**

### *Description*

*Manufacturing semiconductor devices is an energy-intensive process and involves high energy costs. Fossil-fuel based energy production and consumption contribute to significant environmental impacts, including climate change and pollution that have the potential to indirectly, yet materially, impact the results of operation of semiconductor companies, due to rising costs of fossil-fuel based energy from the pricing of GHG emissions, incentives for energy efficiency and renewable energy, and risks associated with reliance on nuclear energy and its increasingly limited license to operate. As manufacturing becomes more complex with industry innovation, new technologies to manufacture semiconductors are likely to need higher energy consumption, unless companies invest in the energy efficiency of their operations.*

### *Accounting Metrics*

#### **TC0201-04. Total annual energy consumed (gigajoules); percentage from purchased grid electricity. Percentage of non-grid energy from fossil fuels and renewables (e.g., wind, biomass, solar).**

- .12 The registrant shall convert the amount of electricity it consumed from kilowatt hours (kWh) to gigajoules (GJ).
- .13 The registrant shall disclose fossil fuel consumption in terms of its energy content, using higher heating values (HHV), also known as gross calorific values (GCV), and which are directly measured or taken from the Intergovernmental Panel on Climate Change (IPCC), the U.S. Department of Energy (DOE), or the U.S. Energy Information Administration (EIA).
- .14 The registrant shall disclose renewable energy consumption as a percentage of its overall energy consumption, in terms of its energy content. For biofuels, the registrant shall use HHVs from the sources mentioned above. For solar or wind energy consumption, the registrant shall convert from electricity production (kWh) to gigajoules (GJ).
- .15 The registrant shall disclose renewable energy data for renewable energy it directly produces, or which it purchases through renewable energy certificates (RECs) that are certified (i.e., through Green-e), or renewable power purchase agreements (PPAs). It shall not disclose the renewable portion of the energy drawn from electricity grids.

### *Notes*

#### *Definitions*

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#### *Additional References*

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## **Water and Waste Management in Manufacturing**

### *Description*

*Ultra-pure water is critical to the semiconductor production process, and as manufacturing becomes more complex, companies are finding it challenging to reduce water use, which is likely to pose operational risks as a result of increasing water stress in several river basins. Furthermore, contamination of local water resources, including from underground storage of hazardous materials used in semiconductors manufacturing, and inadequate waste management practices, can increase operating costs of water purification, and lead to social unrest or governmental intervention. This can affect company reputation, halt production, or impose additional legal or regulatory costs on companies. Companies addressing water and waste management in manufacturing operations, and incorporating water stress considerations in decisions about fab locations, will be better positioned to deal with existing, and emerging, regulations in the U.S. and globally.*

### *Accounting Metrics*

**TC0201-05. 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.**

- .16 Water withdrawn is the total amount of water removed from freshwater sources for use in operations. Water withdrawals shall be disclosed in terms of cubic meters (m<sup>3</sup>).
- .17 The registrant shall disclose the total amount of water by volume (m<sup>3</sup>) that was returned to the watershed during the fiscal year. This figure shall include the amount discharged directly to the environment or by way of a local wastewater treatment plant.
- .18 The registrant shall disclose the total amount of water by volume (m<sup>3</sup>) that was recycled during the fiscal year. This figure shall include the amount recycled in closed loop and open loop systems. Water recycled for purposes other than data center operation (e.g., grey water reuse) shall not be included in this figure.
- .19 Using the World Resources Institute's (WRI) Water Risk Atlas tool, Aqueduct (publicly available online [here](#)), the registrant shall analyze all of its manufacturing facilities for water risks and identify facilities that are in a location with High (40–80%) or Extremely High (>80%) Baseline Water Stress. Water withdrawn, returned, or recycled in locations with High or Extremely High Baseline Water Risk shall be indicated as a percentage of the total water withdrawn, returned, or recycled, respectively.

**TC0201-06. Total ultra-pure water (UPW) production.**

- .20 Amount of ultra-pure water production shall be disclosed in terms of cubic meters (m<sup>3</sup>).
- .21 Ultra-pure water is water that has been purified to uncommonly stringent specifications as required for use in the semiconductor industry.
- .22 For the purpose of this disclosure, ultra-pure water refers to water which meets the criteria described in "Standard Guide for Ultra Pure Water Used in the Electronics and Semiconductor Industries" (ASTM D5127-13); "Guide for Ultrapure Water Used in Semiconductor Processing" (SEMI F63-0213); or equivalent.

**TC0201-07. Amount of waste (tons) broken down by the following waste types: (1) Hazardous and (2) Non-hazardous. For each waste type, indicate the percentage that is recycled, treated, incinerated, and landfilled; and the weighted average cost (\$) per ton for each disposal method.**

	<b>Hazardous</b>	<b>Non-Hazardous</b>
<b>Total Waste</b>	tons	tons
<b>Recycled</b>	(%)(%)	(%)(%)
<b>Treated</b>	(%)(%)	(%)(%)
<b>Incinerated</b>	(%)(%)	(%)(%)
<b>Landfilled</b>	(%)(%)	(%)(%)

- .23 The registrant shall disclose the total amount of waste, measured in tons, for each of the following waste types: (1) hazardous waste and (2) non-hazardous waste.
- .24 The registrant shall indicate the percent of each waste type handled by each of the following end-of-life disposal methods: recycling, treating, incinerating, or landfilling.
- .25 For each waste type and method of waste disposal, the registrant shall indicate the weighted average cost for disposal.

**TC0201-08. Description of 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.**

- .26 The registrant shall briefly describe the nature and context of fines and settlements associated with environmental protection, including civil actions (e.g., civil judgment, settlements, or regulatory penalties) and criminal actions (e.g., criminal judgment, penalties, or restitutions) taken by any entity (government, businesses, or individuals).
- .27 The registrant shall disclose the amount of any fine or settlement associated with each incident, not including legal fees.
- .28 The registrant shall describe any corrective actions it has implemented as a result of each incident. This may include, but is not limited to, specific changes in operations, management, processes, products, business partners, training, or technology.
- .29 If relevant, the registrant should discuss other implications associated with the fine or settlement, including any limitations on contracting with government or other institutional clients.

**TC0201-09. Total releases (tons) of EPA 33/50 Program chemicals as reported in the Toxic Release Inventory (TRI). Discuss the management of these and other known toxic wastes, including source reduction efforts, recycling or reclamation efforts, and recovery efforts (such as regeneration or energy recovery).**

- .30 The registrant shall disclose the amount of EPA 33/50 Program chemicals released, measured in tons.
- .31 The EPA's 33/50 Program was a voluntary reduction program ended in 1994 that identified 17 high priority toxics: benzene, carbon tetrachloride, chloroform, dichloromethane, methyl ethyl ketone, methyl isobutyl ketone, tetrachloroethylene, toluene, 1,1,1-trichloroethane, trichloroethylene, xylenes, cadmium and cadmium compounds, chromium and chromium compounds, cyanide compounds, lead and lead compounds, mercury and mercury compounds, nickel and nickel compounds.
- .32 The registrant shall discuss the processes and controls for proper management of these and other toxic wastes, with specific focus on waste minimization through source reduction, recycling or reclamation, and resource recovery.

*Notes*

*Definitions*

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*Additional References*

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## **Employee Recruitment**

### *Description*

*Companies in the industry are focusing on higher margin products and activities, as they increasingly outsource manufacturing. As a result, semiconductor companies need highly-skilled research and development, and sales staff. Companies are facing competition in attracting highly-skilled employees, including electrical engineers, research scientists, and process engineers, and compensation for such employees is a significant cost component for the industry. Companies are vulnerable to immigration policy changes as they try to recruit foreign nationals with the necessary skills to meet the shortage in skilled domestic employees.*

### *Accounting Metrics*

#### **TC0201-10. Percentage of employees that are foreign nationals. Describe potential risks of recruiting foreign nationals, and management approach to addressing these risks.**

- .33 The registrant shall disclose the percent of employees that are foreign nationals. Foreign Nationals are defined as anyone requiring a visa for work in the country in which they are employed.
- .34 The registrant shall describe potential risks from recruiting foreign nationals, which may arise from immigration policies. The registrant shall describe the management approach to addressing the risks identified.

#### **TC0201-11. Discuss constraints on local hiring of technical staff due to difficulty in finding qualified personnel; include median length of vacancies for technical positions. Indicate number of new domestic technical staff hired through company-funded or company-facilitated programs to develop domestic workforce.**

- .35 The registrant shall discuss constraints on hiring domestic technical staff due to limited pool of qualified personnel, where technical staff includes research scientists, electrical engineers, process engineers, and other similar positions.
- .36 The registrant shall disclose the median length of open job vacancies for technical positions.
- .37 The registrant shall disclose the number of new hires recruited through or trained through company-funded or company-facilitated programs to develop domestic workforce. This includes community outreach programs, university partnerships, or other engagement programs.

### *Notes*

#### *Definitions*

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#### *Additional references*

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## **Employee Health and Safety**

### *Description*

*Some chemicals used in semiconductor manufacturing are known to be hazardous to human health, and workers in fabs, particularly maintenance workers, are at risk of exposure. Despite the phasing out of some harmful substances in manufacturing, concerns remain about both the short- and long-term health impacts of the thousands of other chemicals still used in the process. Violations of employee health and safety regulations could result in monetary and non-monetary penalties, and reputational impacts. Adverse litigation rulings against the company from employee lawsuits related to both regulated, and unregulated, known hazardous substances could also affect profitability. Impacts may increase in magnitude over the medium- to long-term as the quality and availability of data on health hazards, particularly on long-term health effects, improves.*

### *Accounting Metrics*

#### **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.**

- .38 The registrant shall discuss efforts to assess, monitor, and reduce exposure of employees to human health hazards including, but not limited to, solvents, corrosives, lead (and its compounds), arsenic (and its compounds), as well as known or suspected carcinogens, teratogens, and mutagens.
- .39 The registrant shall describe management approach to short term (acute) and long term (chronic) risks.

#### **TC0201-13. Description of legal and regulatory fines and settlements associated with employee health and safety violations. Include dollar amount of fines and settlements, implications of the legal findings, and a description of corrective actions implemented in response to events.**

- .40 The registrant shall briefly describe the nature and context of fines and settlements associated with health and safety violations, including civil actions (e.g., civil judgment, settlements, or regulatory penalties) and criminal actions (e.g., criminal judgment, penalties, or restitutions) taken by any entity (government, businesses, or individuals).
- .41 The registrant shall disclose the amount of any fine or settlement associated with each incident, not including legal fees.
- .42 The registrant shall describe any corrective actions it has implemented as a result of each incident. This may include, but is not limited to, specific changes in operations, management, processes, products, business partners, training, or technology.
- .43 If relevant, the registrant should discuss other implications associated with the fine or settlement, including any limitations on contracting with government or other institutional clients.

### *Notes*

#### *Definitions*

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#### *Additional references*

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## **Product Design and Lifecycle Management**

### *Description*

*There are two main areas where the industry can lower the environmental and human health impacts of its products during their use and at the end of life. The first is improving the energy efficiency of semiconductor capital equipment and devices when they are being used by customers. This provides an important value proposition for customers, and therefore can improve company revenues. Second, to address regulatory and litigation risks from the evolving nature of toxic materials legislation in the U.S. and existing E.U. legislation, companies can work to reduce and eventually eliminate the use of toxic materials from semiconductor devices. In addition to lowering negative use-phase and end-of-life impacts, semiconductor companies can address customer needs by creating tailored products for applications in growth markets such as healthcare and clean energy, including smart grids. In addition, innovating to create more secure semiconductor products to tackle the growing threat of cyber-attacks that their customers face can enhance brand value and improve customer acquisition.*

### *Accounting Metrics*

#### **TC0201-14. Percentage of products (by revenue) that meet the requirements of the European Union's Restriction of Hazardous Substances (RoHS) Directive.**

- .44 A product shall be considered to conform to RoHS (directive 2002/95/EC) requirements if all constituent components have been tested and/or documented to conform with RoHS maximum concentration value requirements for lead, mercury, cadmium, hexavalent chromium and polybrominated flame retardants.
- .45 The registrant shall disclose RoHS conformance with respect to all of its products, regardless of their location of manufacture, export status, and/or location of sale.
- .46 The percentage shall be calculated as:  $100\% * (\text{revenue from covered products that meet RoHS requirements} / \text{revenue from all covered products})$ .
- .47 "Covered products" are defined as those that, as referenced in RoHS, are category 1-7 and category 10 products in Annex 1A of Waste Electrical and Electronic Equipment (WEEE) Directive (2002/96/EC):
  - 1. Large household appliances
  - 2. Small household appliances
  - 3. IT and telecommunications equipment
  - 4. Consumer equipment
  - 5. Lighting equipment
  - 6. Electrical and electronic tools (except large-scale stationary and industrial tools)
  - 7. Toys, leisure and sports equipment
  - 10. Automatic dispensers
- .48 Products exempt from the scope of RoHS shall be considered exempt from the scope of this disclosure calculation (e.g. mercury in certain fluorescent lights and lead in certain soldering applications).

#### **TC0201-15. 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.**

- .49 The registrant shall discuss its approach to managing the use of substances that appear on the ECHA's Member State Committee (MSC) [Candidate List of Substances of Very High Concern for Authorisation](#) or on the Consumer Electronics Association's (CEA) Declarable Substance List.
- .50 The registrant shall describe how its operational processes incorporate these lists and/or how it takes into consideration the chemicals on these lists.
- .51 Relevant operational processes may include, but are not limited to, product design, materials and parts procurement, product safety testing, product labeling, and product declarations (e.g. material safety data sheets).
- .52 Relevant actions to discuss may include the exclusion of substances (e.g. banned substances lists), use of material substitution assessments, product labeling, or any other methods considering usage of substances from these lists.

- .53 If the registrant assesses and manages the impact of known or potentially toxic substances with reference to other regulations, industry norms or accepted chemical lists it may identify those practices, and it shall describe the degree of overlap with REACH SVHC and JIG Declarable Substances.

**TC0201-16. Percentage of products (by revenue) with environmentally focused principles incorporated into the designs, including a description of the design principles or criteria.**

- .54 The registrant shall calculate the revenue (in US dollars) from products designed according to environmentally focused principles or criteria as percentage of total product revenue.
- .55 Relevant considerations to discuss include elimination of toxic substances, use of recycled materials, reduction of packaging, design for consolidated shipping, design of low energy consumption products, design for product take-back, labeling for recycling, and the elimination or replacement of materials that are subject to resource scarcity (e.g. cobalt, rare earth elements, etc.).
- .56 Design shall be considered to incorporate environmentally focused principles or criteria if it can be demonstrated to follow an established standard such as the criteria of Environmentally Conscious Design (IEC-62075), through participation in the U.S. EPA's Design for Environment (DfE) programs or projects, or by demonstrating that multiple environmental considerations (e.g. from 0.55 above) are made during product design stages.
- .57 Products shall be considered within the scope of this disclosure regardless of the date of their original design (i.e. if it originally occurred prior to the fiscal year) assuming the product continues to meet best practices used by the registrant in regards to environmentally focused design.

**TC0201-17. SPEC CPU2006 per watt for top 10 bestselling chipsets, indicate end-use product type for each.**

- .58 The registrant shall disclose the SPEC CPU2006 per watt for each of the top 10 bestselling chipsets as a measure of compute intensive performance, which emphasizes the performance of the computer's processor (CPU), the memory architecture, and the compilers.
- .59 The registrant shall indicate the end-use product type associated with each of the top 10 bestselling chipsets.
- .60 SPEC CPU2006 is made up of two subcomponents that focus on two different types of compute intensive performance:
- CINT2006 for measuring and comparing compute-intensive integer performance; and
  - CFP2006 for measuring and comparing compute-intensive floating point performance.
- .61 A higher score indicates better performance on the given workload.

**TC0201-18. Discussion of the integration of data security features into product design to improve cyber security for customers.**

- .62 The registrant shall describe specific products on which new data security features were integrated. Indicate the rationale for including these new products or features, such as accessing new market segment, or mitigating customer risk.
- .63 The products described here are specifically designed or upgraded to address data security issues including risks from U.S. Department of Commerce National Institute of Standards and Technology (NIST)-defined cyber vulnerabilities and threats, where:
- "Vulnerability" is a weakness in system security procedures, design, implementation, internal controls, etc., that could be accidentally triggered or intentionally exploited and result in a violation of the system's security policy.
  - "Threat-source" is either: (1) intent and method targeted at the intentional exploitation of a vulnerability; or (2) the situation and method that may accidentally trigger a vulnerability.
  - "Threat" is the potential for a "threat source" to exploit (intentional), or trigger (accidental) a specific vulnerability.
  - "Risk" is the net mission/business impact (probability of occurrence combined with impact) from a particular threat source exploiting, or triggering, a particular information technology vulnerability. IT related-risks arise from legal liability or mission/business loss due to:
    - Unauthorized (malicious, non-malicious, or accidental) disclosure, modification, or destruction of information
    - Non-malicious errors and omissions
    - IT disruptions due to natural or man-made disasters
    - Failure to exercise due care and diligence in IT implementation and operation

**TC0201-19. Description of products tailored to address specific 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 market. Provide percent of total R&D spending allocated to these products or services.**

- .64 The registrant shall disclose total annual revenue generated from products that are specifically enhanced, designed, or developed to directly address specific sustainability needs such as smart grid and healthcare offerings. A general product or service that may—or may not—be used to address smart grid and healthcare offerings, shall not be included in this disclosure.
- .65 The registrant shall disclose the total addressable market, and segmented or serviceable addressable market associated with the potential market opportunity for each of these products or services, where
- Total addressable market is defined for this purpose as revenues (in U.S. dollars) the registrant would earn were the registrant able to capture 100 percent of the global market share for the category of product or service being discussed (e.g. global market for supply chain management software). The total addressable market provides a broader context for the segmented addressable market.
  - Segmented or serviceable addressable market is defined for this purpose as revenues (in U.S. dollars) that the registrant would earn based on the customers that the registrant could reach with existing or planned capabilities, sales channels, or products. It is a subset of the total addressable market (e.g. market for supply chain management software in the U.S. focused on sustainable supply chains).
- .66 The registrant shall discuss the source of the dollar values for the total and serviceable markets (e.g. third party study or registrant's own calculations). Indicate key assumptions or parameters used in calculating these values, including: time period, geographic regions, and product definitions or categories. Total addressable and serviceable addressable market values may be based on bottom-up calculations of total competitive sales of the product or service by existing suppliers in the market; top-down calculations of competitive sales based on market research reports, industry reports or other studies; or end-user purchases of the product or service during the period being discussed.
- .67 The registrant shall disclose the target 3-year share of market and current share of market, as a measure of targeted growth, where:
- Target 3-year share of market is the percentage of the serviceable addressable market that the registrant plans to address over a three-year time horizon.
- .68 The registrant shall disclose total current share of market based on total annual revenue generated from these products.
- .69 The registrant shall identify percent of research and development expenditures allocated to the development of these products.

## *Notes*

### *Definitions*

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### *Additional references*

Registration, Evaluation, Authorisation and Restriction of Chemical (REACH) Regulation (EC) No 1907/2006

Candidate List of Substances of Very High Concern (SVHC) for Authorisation is published in accordance with Article 59(10) of the REACH Regulation).

Joint Industry Guide - Material Composition Declaration for Electrotechnical Products [Joint Industry Guide \(JIG\) 101 ed. 4.1.](#),

Declarable Substance List is Table A. of JIG 101 ed. 4.1.

The NIST 800 Series is a set of documents that describe United States federal government computer security policies, procedures, and guidelines. [NIST](#) (National Institute of Standards and Technology) is a unit of the Commerce Department. The documents are available free of charge, and can be useful to businesses and educational institutions, as well as to government agencies. (Available on-line at: <http://csrc.nist.gov/publications/PubsSPs.html>)

## Product Design and Lifecycle Management

### *Description*

*Companies in the Semiconductors industry outsource much of their production to companies in emerging markets, and have limited direct control over social and environmental standards in production, which may vary depending on region (e.g., labor conditions, human rights violations, air and water pollution, among others). Furthermore, semiconductor companies face the potential for supply chain disruptions, input price increases, and damage to brand reputation, arising from environmental and social factors, particularly when scarce or rare minerals and metals are used in their products, or when suppliers violate environmental or social standards. Companies also face regulatory risks from the use of conflict minerals in their products. Companies with strong supply chain standards, and an ability to adapt to increased resource scarcity will be better positioned to protect shareholder value.*

### *Accounting Metrics*

**TC0201-20. Discuss existing or projected constraints with obtaining raw materials (or components), including those related to political situations, local labor conditions, natural disasters, climate change, geography, regulations, or restricted/limited availability. Discuss any production shortfall resulting from materials supply; indicate the cause and the relative impact on production.**

- .70 The registrant shall discuss existing constraints or risks of future constraints (both actual and potential) that directly affect its access to raw materials or components, or that indirectly affect it through impacts on its suppliers.
- .71 Actual constraints include those that affected the registrant during the fiscal year, are currently affecting the registrant, or have a very high likelihood of affecting the registrant in the near term (e.g., those for which the registrant currently has inventoried material but has already enacted a contingency plan).
- .72 Potential constraints include, but are not limited to, physical limits to natural resources globally, constraints due to regulatory efforts such as the Dodd-Frank Section 1502 requirements related to conflict minerals, rare earth minerals, supply chain disruptions due to increased frequency and severity of natural disasters and other effects of climate change, and labor risks particular to geographic areas in which the registrant conducts business.
- .73 The registrant shall discuss shortfalls in production that were caused by constraints in the supply chain. This includes any deviation of actual production, versus planned production, that directly resulted from materials constraints.
- .74 The registrant shall indicate the cause for the shortfall, and the relative impact of the reduced production capacity as a percent of total annual production.

**TC0201-21. Number of sole-source Tier 1 suppliers, and percentage of critical supply base for which suppliers are sole-source. Percentage of Tier I suppliers who are EICC members, and have implemented the EICC Code of Conduct. Percentage of Tier I suppliers in full compliance with the registrant's environmental and social/labor requirements.**

- .75 The registrant shall indicate the number of Tier 1 suppliers that are based on a sole-source supplier relationship.
- .76 Tier 1 suppliers are those that transact directly with the registrant.
- .77 The registrant shall indicate the percentage of critical supply base that is based on a sole-source supplier relationship.
- .78 "Sole-source suppliers" refers to a situation where there is only one supplier for a specific material or product.
- .79 "Critical supply base" refers to materials or equipment and software products that are essential to primary business operations, including the design process, or hardware manufacturing (where the registrant is not fully vertically integrated).
- .80 The registrant shall disclose the percentage of its Tier I suppliers who are EICC members, and have implemented the EICC Code of Conduct. The registrant may limit its disclosure to those suppliers that in aggregate account for greater than or equal to 90% of its supplier spending (in dollars).



**TC0201-22. Discuss the process for managing environmental and social risks within the supply chain including screening, codes of conduct, audits, and certifications. Indicate if audits are first party, second party, or third party.**

- .81 The registrant shall discuss management approach to identifying and reducing supply chain risk. The management approach may include screening, codes of conduct, audits, and / or certifications.
- .82 The registrant shall indicate whether supply chain audits are first-party, second-party, or third-party, where:
- "First-party audits" are internal audits used by organizations to audit themselves; these are generally intended to confirm or improve the effectiveness of management systems. First-party audits can be used to declare that an organization complies with an ISO standard; this is called a self-declaration.
  - "Second-party audits" are external audits performed by any external party that has a formal interest in the audited organization. Second-party audits are generally performed by an organization's customers, or by others on their behalf.
  - "Third-party audits" are external audits performed by independent organizations such as registrars, certification bodies, or regulators.

*Notes*

*Definitions*

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*Additional references*

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## Intellectual Property Protection and Competitive Behavior

### *Description*

*Intellectual Property (IP) protection on the one hand is an important driver of innovation; on the other hand, companies could use it to restrict access to the benefits from innovation, particularly if they are dominant market players that enjoy network effects. Acquisition of patents and other IP protection can sometimes be used as a strategy to restrict competition. Management of IP and ensuring competitive business practices are important due to their cost impacts on companies from legal and regulatory actions, and their impacts on intangible assets. Companies in the industry have previously faced penalties for collusion and price fixing, affecting profitability.*

### *Accounting Metrics*

**TC0201-23. Description of legal and regulatory fines and settlements associated with anti-competitive practices and market manipulation, including Intellectual Property (IP) violations and IP practices to unfairly restrict competition. Include dollar amount of fines, implications of the legal findings, and settlements and a description of corrective actions implemented in response to events.**

- .83 The registrant shall briefly describe the nature and context of fines and settlements associated with anti-competitive practices and market manipulation, including civil actions (e.g., civil judgment, settlements, or regulatory penalties) and criminal actions (e.g., criminal judgment, penalties, or restitutions) taken by any entity (government, businesses, or individuals).
- .84 The registrant shall disclose the amount of any fine or settlement associated with each incident, not including legal fees.
- .85 The registrant shall describe any corrective actions it has implemented as a result of each incident. This may include, but is not limited to, specific changes in operations, management, processes, products, business partners, training, or technology.
- .86 If relevant, the registrant should discuss other implications associated with the fine or settlement, including any limitations on contracting with government or other institutional clients.

### *Notes*

#### *Definitions*

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#### *Additional references*

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# Telecommunications

SICST™ #TC0301

Prepared by the  
Sustainability Accounting Standards Board ®

October 2013  
Exposure Draft for Public Comment

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# Telecommunications

## Sustainability Accounting Standard

### About SASB

The Sustainability Accounting Standards Board (SASB) provides sustainability accounting standards for use by publicly-listed corporations in the U.S. in disclosing material sustainability issues for the benefit of investors and the public. SASB standards are designed for disclosure in mandatory filings to the Securities and Exchange Commission (SEC), such as the Form 10-K and 20-F. SASB is an independent 501(c)3 non-profit organization and is accredited to set standards by the American National Standards Institute (ANSI).

SASB is developing standards for more than 80 industries in 10 sectors. SASB's standards-setting process includes evidence-based analysis with in-depth industry research and engagement with a broad range of stakeholders. The end result of this process is the creation of a complete, industry-specific accounting standard which accurately reflects the material issues for each industry.

### About this Standard

This Standard is an exposure draft presented for public review and comment. This version is not intended for implementation.

The public comment period lasts for 90 days beginning Wednesday, October 2, 2013 and ending Thursday, January 2, 2014. This Standard is subject to change thereafter.

For instructions on providing comments to SASB please [click here](#).

For an introduction to SASB Standards please [click here](#).

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# SASB Sustainability Accounting Standard

## Telecommunications (TC0301)

### Industry description

The Telecommunications industry consists of two main segments. Wireless services provide direct communication through radio-based cellular networks, and operate and maintain the associated switching and transmission facilities. This segment is influenced by the trend of increasing data use due to expansion in smartphones and tablets. The wireline segment provides local and long-distance voice communication via the Public Switched Telephone Network. Wireline carriers also offer voice over internet protocol (VoIP) telephone, television, and broadband internet services over an expanding network of fiber optic cables.

**Table 1. Material Sustainability Topics & Accounting Metrics**

Topic	Code	Accounting Metric
<b>Energy Management in Operations</b>	TC0301-01	Total annual energy consumed (gigajoules); percentage from purchased grid electricity. Percentage of non-grid energy from fossil fuels and renewables (e.g., wind, biomass, solar).
	TC0301-02	Weighted Average Power Usage Effectiveness (PUE) for all owned data centers.
	TC0301-03	Network data energy intensity for (a) cellular networks and (b) fixed networks.
<b>Data Privacy</b>	TC0301-04	Revenue derived from use of customer content and non-content data outside of primary intended use, broken down by type (e.g. selling targeted ads, selling information to third party). Describe policy to notify customers or obtain their consent for the use of personal and business-sensitive data for such purposes.
	TC0301-05	Description of legal and regulatory fines and settlements associated with customer privacy including violations of the Children's Online Privacy Protection Act and E.U. Directive 2002/58 on Privacy and Electronic Communications (E-Privacy Directive), and Federal Trade Commission monitoring of companies' privacy policies. Include dollar amount of fines and settlements, implications of the legal findings, and a description of corrective actions implemented in response to events.
	TC0301-06	Number of government or law enforcement requests received and number resulting in disclosure of (a) customer content and (b) non-content data. Discuss policy regarding the provision of personal data to government or law enforcement agencies and notification to customers about such requests.
<b>Data Security</b>	TC0301-07	Number and description of data security breaches that resulted in the actual outcomes of a business process deviating from the expected outcomes with respect to confidentiality, integrity, and availability. Include a discussion of: (a) The impact of the incident, such as loss of information, compromise of data, litigation, regulatory fines, loss of revenue, lost time, damage to reputation (qualitative measure of severity). (b) Corrective actions taken in response to the incident and associated costs, such as remediation costs or increased costs for additional security measures.

Topic	Code	Accounting Metric
	TC0301-08	Discussion of management approach to identifying and addressing risk from US Department of Commerce National Institute of Standards and Technology (NIST)-defined cyber vulnerabilities and threats.
<b>Labor Relations</b>	TC0301-09	Percentage of active workforce covered under collective bargaining agreements, broken down by U.S. and foreign employees.
	TC0301-10	Number of strikes and lockouts resulting in work stoppages of at least one day, including the number, duration, and reason for the stoppage (in days).
<b>Product Disposal</b>	TC0301-11	Number of products recovered through take back programs, number of recovered products that are (a) reused, (b) returned to the manufacturer for recovery, and (c) landfilled.
<b>Delivering Sustainability Solutions for Customers</b>	TC0301-12	Describe significant environmental and social trends affecting key customer segments and their impact on demand for registrant's products or services. 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 market. Provide percent of total R&D spending allocated to these products or services.
<b>Managing Systemic Risks from Technology Disruptions</b>	TC0301-13	Average Interruption Frequency and Average Interruption Duration.
	TC0301-14	For all significant performance issues and/or service disruptions, describe the type (e.g. network outage, technical disruption), extent (number of users/accounts affected), duration (number of days), root cause (e.g. weather-related, human error, etc.), and corrective actions.
	TC0301-15	Discussion of business continuity risks related to technical failures, weather events, or natural disasters, include measures to address those risks and to provide unimpeded service. Discussion should cover estimated amount of potential loss, probability of that loss, and the associated timeframe.
<b>Competitive Behavior</b>	TC0301-16	Description of legal and regulatory fines and settlements associated with anti-competitive practices and market manipulation. Include dollar amount of fines, implications of the legal findings, and settlements and a description of corrective actions implemented in response to events.

## **Energy Management in Operations**

### *Description*

*Energy production and consumption generates significant environmental impacts, including climate change and pollution, which have the potential to indirectly yet materially impact the results of operation of telecom companies that are highly reliant on energy as an input for value creation due to their reliance on continuous, uninterrupted supply of energy for data centers and network operations. The way in which a telecom company manages its overall energy efficiency or intensity, its reliance on different types of energy, and ability to access alternative source of energy, will become increasingly material with an increasing global regulatory focus on climate change, including incentives for energy efficiency and renewable energy, pricing of GHG emissions, and due to risks such as those associated with reliance on nuclear energy.*

### *Accounting Metrics*

#### **TC0301-01. Total annual energy consumed (gigajoules); percentage from purchased grid electricity. Percentage of non-grid energy from fossil fuels and renewables (e.g., wind, biomass, solar).**

- .01 The registrant shall convert the amount of electricity it consumed from kilowatt hours (kWh) to gigajoules (GJ).
- .02 The registrant shall disclose fossil fuel consumption in terms of its energy content, using higher heating values (HHV), also known as gross calorific values (GCV), and which are directly measured or taken from the Intergovernmental Panel on Climate Change (IPCC), the U.S. Department of Energy (DOE), or the U.S. Energy Information Administration (EIA).
- .03 The registrant shall disclose renewable energy consumption as a percentage of its overall energy consumption, in terms of its energy content. For biofuels, the registrant shall use HHVs from the sources mentioned above. For solar or wind energy consumption, the registrant shall convert from electricity production (kWh) to gigajoules (GJ).
- .04 The registrant shall disclose renewable energy data for renewable energy it directly produces, or which it purchases through renewable energy certificates (RECs) that are certified (i.e., through Green-e), or renewable power purchase agreements (PPAs). It shall not disclose the renewable portion of the energy drawn from electricity grids.

#### **TC0301-02. Weighted Average Power Usage Effectiveness (PUE) for all owned data centers.**

- .05 The registrant shall report a trailing twelve-month (TTM) weighted average power usage effectiveness (PUE) for all owned data centers. The weighted average PUE is calculated as all energy use in data center facilities, divided by the data center energy use that directly powers computing equipment. Annual disclosure reflects a 12-month rolling average.
- .06 Energy use in the data center facility should include all sources of energy used by the data center, not just electricity.
- .07 PUE for a dedicated building or PUE for a mixed use facility are the preferred metrics; however, if data availability is limited a partial PUE (pPUE) can be reported and should be noted as such. 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.

#### **TC0301-03. Network data energy intensity for (a) cellular networks and (b) fixed networks.**

- .08 The registrant shall disclose the energy use in kilowatt hours (kWh) per petabyte of data transmitted for cellular networks and for fixed networks.
- .09 Traffic volumes taken into account refer to the same period of observation of energy consumption.

### *Notes*

#### *Definitions*

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*Additional References:*

**The Green Grid. White Paper #49-PUE: A Comprehensive Examination of the Metric.** See more at:

<http://www.thegreengrid.org/en/Global/Content/white-papers/WP49-PUEAComprehensiveExaminationoftheMetric#sthash.bs74EgC4.dpuf>.

Uptime Institute. 2009. **Opinion of the Institute, Green Computing.** Lean Clean & Green, The Global Energy Future of Enterprise IT & the Data Center Energy—The New Disruptive Technology.”

Uptime Institute. 2009. **Opinion of the Institute, Lean Computing.** Lean Clean & Green, The Global Energy Future of Enterprise IT & the Data Center Energy—The New Disruptive Technology.”



## **Data Privacy**

### *Description*

*As customers pay increased attention to privacy issues around cell phone, Internet and email services, telecom companies will have to implement strong management practices and guidelines related to their use of customer data, including providing third parties with access to such data, and related to government requests for customer information. In the absence of data privacy measures, companies could face difficulties in acquiring and retaining customers, and face increased regulatory scrutiny.*

### *Accounting Metrics*

**TC0301-04. Revenue derived from use of customer content and non-content data outside of primary intended use, broken down by type (e.g. selling targeted ads, selling information to third party). Describe policy to notify customers or obtain their consent for the use of personal and business-sensitive data for such purposes.**

- .10 The registrant shall indicate the total annual revenue derived from its own use of customer data, outside of the primary intended use. Primary intended use is defined as the reasonable expectation of a customer regarding use of his/her personal or business data. The activities measured here comprise secondary uses of customer data, where secondary use is intentional by the registrant (i.e. not a breach of security), but is outside of the primary intended use expected by the customer.
- .11 Customer content includes customer-generated information such as email text, while non-content data includes information such as an email address, a person's name, country of residence, or gender, or system-generated data such as IP addresses and traffic data.
- .12 Indicate each type of secondary use of customer data, and the type of customer consent obtained for each.

**TC0301-05. Description of legal and regulatory fines and settlements associated with customer privacy including violations of the Children's Online Privacy Protection Act and E.U. Directive 2002/58 on Privacy and Electronic Communications (E-Privacy Directive), and Federal Trade Commission monitoring of companies' privacy policies. Include dollar amount of fines and settlements, implications of the legal findings, and a description of corrective actions implemented in response to events.**

- .13 The registrant shall briefly describe the nature and context of fines and settlements associated with customer privacy, including civil actions (e.g., civil judgment, settlements or regulatory penalties) and criminal actions (e.g., criminal judgment, penalties or restitutions) taken by any entity (government, businesses, or individuals).
- .14 The registrant shall disclose the amount of any fine or settlement associated with each incident, not including legal fees.
- .15 If relevant, the registrant shall discuss other implications associated with the fine or settlement, including any limitations on contracting with government or other institutional clients.
- .16 The registrant shall describe any corrective actions it has implemented as a result of each incident. This may include, but is not limited to, specific changes in operations, management, processes, products, business partners, training, or technology.

**TC0301-06. Number of government or law enforcement requests received and number resulting in disclosure of (a) customer content and (b) non-content data. Discuss policy regarding the provision of personal data to government or law enforcement agencies and notification to customers about such requests.**

- .17 The registrant shall disclose the number of requests received from government or law enforcement agencies during the reporting year and the number of requests with which it complied, for each type of data: customer content and non-content.
- .18 Customer content includes customer-generated information such as phone conversations or email text, while non-content data includes information such as an email address, a person's name, country of residence, or gender, or system-generated data such as IP addresses and traffic data.
- .19 The registrant shall describe its policy for determining whether to comply with a request for customer data, including the level of management approval required to release customer information; specifically, under what conditions will the registrant release customer data, and what requirements must be met in the request.

## *Notes*

### *Definitions*

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### *Additional References*

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## **Data Security**

### *Description*

*Recent examples of cyber-attacks on critical infrastructure in both the U.S. and abroad illustrate the need for enhanced network security and a comprehensive legislative framework to address this issue. As the providers of critical infrastructure, companies in this industry will face an increasing threat to shareholder value associated with data security, including potential costs associated with regulatory compliance or addressing security breaches, reputational damage, and lost revenues and market share.*

### *Accounting Metrics*

**TC0301-07. Number and description of data security breaches that resulted in the actual outcomes of a business process deviating from the expected outcomes with respect to confidentiality, integrity, and availability. Include a discussion of: (a) The impact of the incident, such as loss of information, compromise of data, litigation, regulatory fines, loss of revenue, lost time, damage to reputation (qualitative measure of severity). (b) Corrective actions taken in response to the incident and associated costs, such as remediation costs or increased costs for additional security measures.**

- .20 The registrant shall disclose significant data security breaches that have affected business outcomes or have resulted in a deviation from a reasonable customer expectation of data security, including but not limited to violations of California's Information Practices Act. These breaches may be due to deficiencies or failures of people, process, or technology.
- .21 A data security breach is considered significant if it is disruptive to a large number of customers or fundamental business operations in a manner that affects time to market, revenue capture, or other material parameters.
- .22 The registrant shall describe the impact of the security breach including business implications as well as impacts to customers.
- .23 The registrant shall describe the corrective actions taken and the cost of those actions. The costs should include cost for new systems or training, legal fees, reimbursements or reparations, or any other cost directly associated with correcting the impact of the security breach.

**TC0301-08. Discussion of management approach to identifying and addressing risk from US Department of Commerce National Institute of Standards and Technology (NIST)-defined cyber vulnerabilities and threats.**

- .24 The registrant shall describe the risk posed by the cyber vulnerabilities and threats, using NIST Special Publication 800-33 definitions and concepts, where:
  - "Vulnerability" is a weakness in system security procedures, design, implementation, internal controls, etc., that could be accidentally triggered or intentionally exploited and result in a violation of the system's security policy.
  - "Threat-source" is either (1) intent and method targeted at the intentional exploitation of a vulnerability or (2) the situation and method that may accidentally trigger a vulnerability.
  - "Threat" is the potential for a "threat source" to exploit (intentional) or trigger (accidental) a specific vulnerability.
  - "Risk" is the net mission/business impact (probability of occurrence combined with impact) from a particular threat source exploiting, or triggering, a particular information technology vulnerability. IT related-risks arise from legal liability or mission/business loss due to:
    - Unauthorized (malicious, non-malicious, or accidental) disclosure, modification, or destruction of information.
    - Non-malicious errors and omissions.
    - IT disruptions due to natural or man-made disasters.
    - Failure to exercise due care and diligence in IT implementation and operation
- .25 The registrant shall describe its approach to evaluating and managing risk from cyber security vulnerabilities and threats, including: external/removable media, attrition (e.g., a DDoS or brute force attack), web, email, improper usage, and loss/theft of equipment.
- .26 The registrant may choose to structure this response consistent with the Cybersecurity Framework outlined in the "Discussion Draft of the Preliminary Cybersecurity Framework August 28, 2013," provided by the National Institute of Standards and Technology (NIST) in advance of the Fourth Cybersecurity Framework workshop on Sept.11-13, 2013, at the University of Texas at Dallas. Available on-line at: [http://www.nist.gov/itl/upload/discussion-draft\\_preliminary-cybersecurity-framework-082813.pdf](http://www.nist.gov/itl/upload/discussion-draft_preliminary-cybersecurity-framework-082813.pdf)

## *Notes*

### *Definitions*

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### *Additional References*

Discussion Draft of the Preliminary Cybersecurity Framework August 28, 2013. Draft is provided by the National Institute of Standards and Technology (NIST) in advance of the Fourth Cybersecurity Framework workshop on Sept.11-13, 2013, at the University of Texas at Dallas. (Available on-line at: [http://www.nist.gov/itl/upload/discussion-draft\\_preliminary-cybersecurity-framework-082813.pdf](http://www.nist.gov/itl/upload/discussion-draft_preliminary-cybersecurity-framework-082813.pdf) )

The NIST 800 Series is a set of documents that describe United States federal government computer security policies, procedures and guidelines. [NIST](http://www.nist.gov) (National Institute of Standards and Technology) is a unit of the Commerce Department. The documents are available free of charge, and can be useful to businesses and educational institutions, as well as to government agencies. (Available on-line at: <http://csrc.nist.gov/publications/PubsSPs.html> )

## **Labor Relations**

### *Description*

*The telecommunications industry relies heavily on union employees. Subsequently, the ability to manage collective bargaining and labor relations is a material issue for these firms, due to potential disruptions to operations and increased labor costs.*

### *Accounting Metrics*

**TC0301-09. Percentage of active workforce covered under collective bargaining agreements, broken down by U.S. and foreign employees.**

- .27 The registrant shall indicate the percentage of U.S. employees and the percentage of foreign employees in the active workforce who are covered under collective bargaining agreements during any part of the fiscal year, where:
- "Active workforce" refers to the maximum number of unique employees employed at any time during the fiscal year.
  - "U.S. employees" refers to employees that do not need a Visa to work in the U.S.
  - "Foreign employees" refers to the employees that do need a Visa to work in the U.S.

**TC0301-10. Number of strikes and lockouts resulting in work stoppages of at least one day, including the number, duration, and reason for the stoppage (in days).**

- .28 The registrant shall indicate the number of strikes and lockouts that resulted in work stoppages of at least one day in duration.
- .29 For each work stoppage, the registrant shall indicate the duration in days.
- .30 For each work stoppage, the registrant shall indicate the nature of the strike or lockout which caused the work stoppage, including specifically the reason stated by labor.

### *Notes*

#### *Definitions*

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#### *Additional References*

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## **Product Disposal**

### *Description*

*State laws in the U.S., and legislation abroad indicate increasing concern and societal pressure to address the issue of electronic waste, which could have a material impact on telecom companies through impacts on brand value, market share and regulatory costs. Telecom companies work in partnership with phone manufacturers to bundle telecom services and mobile devices, and therefore have a shared responsibility for end-of-life management of such devices. Companies have an opportunity to work within their supply chain to encourage sustainable design that limits the use of restricted substances and encourages reusable parts, thereby limiting long-term costs associated with disposal.*

### *Accounting Metrics*

TC0301-11. **Number of products recovered through take back programs, number of recovered products that are (a) reused, (b) returned to the manufacturer for recovery, and (c) landfilled.**

- .31 The registrant shall indicate the number of products returned through take-back programs.
- .32 Of the products returned, indicate the number of products that are (a) reused by partner organizations (e.g. in developing countries or for charitable purposes), (b) returned to the manufacturer for refurbishment, remanufacturing, or recycling, and (c) landfilled.
- .33 The registrant shall include both materials physically handled by registrant and those handled by direct partners.

### *Notes*

#### *Definitions*

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#### *Additional References*

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## Delivering Sustainability Solutions for Customers

### *Description*

*As companies in the industry face competition in wireline services from cable providers, and look to expand their wireless and data services to increase revenues, sustainability-related communications solutions for customers are becoming important drivers of long-term value creation. Business and retail customers of Telecommunications companies face growing Environmental, Social and Governance challenges, including those related to energy and environmental resource management, sustainable supply chains, and the quality and affordability of healthcare, financial services, and education, depending on the customers being served. By developing new technologies such as machine-to-machine communication, leveraging their networks, and creating innovative services and business models to enable customers to address their sustainability concerns, companies in the industry will be able to acquire new customers, and expand market share and revenue-generating potential, particularly with increasing data use on wireless networks.*

### *Accounting Metrics*

TC0301-12. **Describe significant environmental and social trends affecting key customer segments and their impact on demand for registrant's products or services. 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 market. Provide percent of total R&D spending allocated to these products or services.**

- .34 The registrant shall identify key customer segments. Customer segments include (a) government agencies, indicate level of government and service area (e.g. Federal - Department of Defense, State – Department of Transportation, Local –Public Utilities Commission, etc.); (b) corporations and organizations, indicate industry type (e.g. Healthcare, etc); and individual consumers collectively. A key customer segment represents more than 5% of total revenue.
- .35 Examples of customer needs emerging from social trends include domestic or global communications services for healthcare, education, and financial services, to improve quality, access and/or affordability. The registrant shall indicate how the product or service meets customer expectations or needs related to the social trend.
- .36 Examples of customer needs emerging from environmental trends include domestic or global communications services facilitating sustainable supply chains, and energy and environmental resource management. The registrant shall indicate how the product or service meets customer expectations or needs related to the environmental trend.
- .37 The registrant shall disclose the total addressable market, and segmented or serviceable addressable market associated with the potential market opportunity for each of these products or services, where
  - Total addressable market is defined for this purpose as revenues (in U.S. dollars) the registrant would earn were the registrant able to capture 100 percent of the global market share for the category of product or service being discussed (e.g. global market for supply chain management software). The total addressable market provides a broader context for the segmented addressable market.
  - Segmented or serviceable addressable market is defined for this purpose as revenues (in U.S. dollars) that the registrant would earn based on the customers that the registrant could reach with existing or planned capabilities, sales channels, or products. It is a subset of the total addressable market (e.g. market for supply chain management software in the U.S. focused on sustainable supply chains).
- .38 The registrant shall discuss the source of the dollar values for the total and serviceable markets (e.g. third party study or registrant's own calculations). Indicate key assumptions or parameters used in calculating these values, including: time period, geographic regions, and product definitions or categories. Total addressable and serviceable addressable market values may be based on bottom-up calculations of total competitive sales of the product or service by existing suppliers in the market; top-down calculations of competitive sales based on market research reports, industry reports or other studies; or end-user purchases of the product or service during the period being discussed.
- .39 The registrant shall disclose the target 3-year share of market and current share of market, as a measure of targeted growth, where:
  - Target 3-year share of market is the percentage of the serviceable addressable market that the registrant plans to address over a three-year time horizon.

- .40 The registrant shall disclose total current share of market based on total annual revenue generated from products or services that directly address these key customer needs around environmental or social trends. A general product or service that may—or may not—be used to address an environmental or social issue shall not be included in this disclosure.
- .41 The registrant shall identify percent of research and development expenditures allocated to the development of these products or services.

### *Notes*

#### *Definitions*

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#### *Additional References*

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## Managing Systemic Risks from Technology Disruptions

### *Description*

*Physical threats to telecom network infrastructure such as from extreme weather events, the frequency of which is likely to increase with climate change, create social or systemic risks with potentially significant economic impacts. In the absence of resilient infrastructure, companies may face lost revenue associated with service outages, and unplanned capital expenditures to repair damaged or compromised equipment.*

### *Accounting Metrics*

#### **TC0301-13. Average Interruption Frequency and Average Interruption Duration.**

- .42 The Average Interruption Frequency is the total number of “customer interruptions” divided by the total number of “customers served;” and the Average Interruption Duration is the total “customer interruption duration” divided by the total number of “customers served,” where:
- “Customer interruptions” are the number of incidents creating a disruption in service, multiplied by the number of customer accounts affected.
  - “Customer interruption duration” is the sum for all interruptions of the total downtime of the interruption, multiplied by the number of customer accounts affected.
  - “Customers served” is the number of unique accounts serviced during the fiscal year.
- .43 Interruptions disclosed here are qualified as those that are disruptive to a large number of customers or fundamental business operations in a manner that affected time to market, revenue capture, or other material effect.

#### **TC0301-14. For all significant performance issues and/or service disruptions, describe the type (e.g. network outage, technical disruption), extent (number of users/accounts affected), duration (number of days), root cause (e.g. weather-related, human error, etc.), and corrective actions.**

- .44 For each significant performance issue or service disruption, the registrant shall disclose the type of disruption, the extent of impact, the duration of the disruption, the cause, as well as any corrective actions taken to prevent future disruptions.
- .45 A performance issue or service disruption is considered significant if it is disruptive to a large number of customers or fundamental business operations in a manner that affects time to market, revenue capture, or other material parameters.

#### **TC0301-15. Discussion of business continuity risks related to technical failures, weather events, or natural disasters, include measures to address those risks and to provide unimpeded service. Discussion should cover estimated amount of potential loss, probability of that loss, and the associated timeframe.**

- .46 The registrant shall discuss potential business continuity risks associated with technology disruptions, including an identification of critical business operations and redundancies or other measures implemented to enhance resilience of the system or to reduce impact, including insurance against loss.
- .47 The registrant shall discuss estimated amount of potential loss, probability of that loss, and the associated timeframe. These estimates may be based on insurance figures or other third-party or internal assessments of potential loss.
- .48 Disruptions due to data security breaches are excluded from this disclosure, as they are covered in the Data Security issue of this standard.

### *Notes*

#### *Definitions*

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#### *Additional References*

## **Competitive Behavior**

### *Description*

*The telecommunications industry provides the classic example of the network effect, in which the value of the service rises with the number of people using it and exposes telecom companies to anti-trust violations. The industry is also exposed to the development of natural monopolies, and the regulatory action that can ensue. Continuing industry consolidation has led to concern on the part of consumer advocates over issues such as pricing, contracts, device locking, and network neutrality, which pose reputational and regulatory risks to company operations.*

### *Accounting Metrics*

**TC0301-16. Description of legal and regulatory fines and settlements associated with anti-competitive practices and market manipulation. Include dollar amount of fines, implications of the legal findings, and settlements and a description of corrective actions implemented in response to events.**

- .49 The registrant shall briefly describe the nature and context of fines and settlements associated with anti-competitive practices and market manipulation, including civil actions (e.g., civil judgment, settlements or regulatory penalties) and criminal actions (e.g., criminal judgment, penalties or restitutions) taken by any entity (government, businesses, or individuals).
- .50 The registrant shall disclose the amount of any fine or settlement associated with each incident, not including legal fees.
- .51 The registrant shall describe any corrective actions it has implemented as a result of each incident. This may include, but is not limited to, specific changes in operations, management, processes, products, business partners, training, or technology.
- .52 If relevant, the registrant should discuss other implications associated with the fine or settlement, including any limitations on contracting with government or other institutional clients.

### *Notes*

#### *Definitions*

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#### *Additional References*

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# Internet Media & Services

SICST™ #TC0401

Prepared by the  
Sustainability Accounting Standards Board ®

October 2013  
Exposure Draft for Public Comment

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# Internet Media & Services Sustainability Accounting Standard

## About SASB

The Sustainability Accounting Standards Board (SASB) provides sustainability accounting standards for use by publicly-listed corporations in the U.S. in disclosing material sustainability issues for the benefit of investors and the public. SASB standards are designed for disclosure in mandatory filings to the Securities and Exchange Commission (SEC), such as the Form 10-K and 20-F. SASB is an independent 501(c)3 non-profit organization and is accredited to set standards by the American National Standards Institute (ANSI).

SASB is developing standards for more than 80 industries in 10 sectors. SASB's standards-setting process includes evidence-based analysis with in-depth industry research and engagement with a broad range of stakeholders. The end result of this process is the creation of a complete, industry-specific accounting standard which accurately reflects the material issues for each industry.

## About this Standard

This Standard is an exposure draft presented for public review and comment. This version is not intended for implementation.

The public comment period lasts for 90 days beginning Wednesday, October 2, 2013 and ending Thursday, January 2, 2014. This Standard is subject to change thereafter.

For instructions on providing comments to SASB please [click here](#).

For an introduction to SASB Standards please [click here](#).

## Sustainability Accounting Standards Board

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# SASB Sustainability Accounting Standard

## Internet and Media Services (TC0401)

### Industry description

The Internet Media and Services industry consists of two main segments. The Internet Media segment includes companies providing content online, search engines and Internet advertising channels, online gaming, and online communities such as social networks. The Internet-based Services segment includes companies selling services mainly through the Internet. The industry generates revenues primarily from online advertising, on usually free content, with other sources of revenue being subscription fees, content sales, or sale of user information to interested third parties.

**Table 1. Material Sustainability Topics & Accounting Metrics**

Topic	Code	Accounting Metric
<b>Environmental Footprint of Data Center and Office Hardware</b>	TC0401-01	(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.  (b) Total annual energy consumption of data centers, including colocation equipment (aggregate in gigajoules).
	TC0401-02	Weighted Average Power Usage Effectiveness (PUE) for all owned data centers.
	TC0401-03	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.
	TC0401-04	Description of current environmental criteria for determining the location of new data centers, including factors affecting energy and water consumption (e.g., humidity, average temperature, water availability, regional- or state-level carbon legislation or pricing, or carbon intensity of grid electricity); indicate which environmental criteria are key decision drivers. Discuss how the environmental criteria were factored into the final outcome for past data center location decisions.
<b>Data Privacy, Advertising Standards, and Freedom of Expression</b>	TC0401-05	Discuss how the registrant addresses the following principles as they relate to customer information for behavioral advertising, or other uses: education, transparency, consumer control, data security, material changes to policies and practices, sensitive data, and accountability.
	TC0401-06	Describe how customer content and non-content data is used outside of the primary intended use (e.g., selling targeted ads, selling information to a third party, improving own product and service offerings), including discrete revenue derived from such uses.
	TC0401-07	Description of legal and regulatory fines and settlements associated with customer privacy including, but not limited to, violations of the Children's Online Privacy Protection Act, Directive 2002/58/EC (ePrivacy Directive), and Federal Trade Commission Act. Include dollar amount of fines and settlements, implications of the legal findings, and a description of corrective actions implemented in response to events.

Topic	Code	Accounting Metric
	TC0401-08	Number of government or law enforcement requests received and number resulting in disclosure of (a) customer content and (b) non-content data. Discuss policy regarding the provision of personal data to government or law enforcement agencies and notification to customers about such requests.
	TC0401-09	List of countries where core products or services are monitored, blocked, or subject to content filtering or censorship, even if required by local law. For each country, indicate the number and type of products and services that were subject to the action and the duration of the effect. Indicate percent of customers affected.
<b>Data Security</b>	TC0401-10	Number and description of data security breaches that resulted in the actual outcomes of a business process deviating from the expected outcomes with respect to confidentiality, integrity, and availability. Include a discussion of: (a) The impact of the incident, such as loss of information, compromise of data, litigation, regulatory fines, loss of revenue, lost time, damage to reputation (qualitative measure of severity). (b) Corrective actions taken in response to the incident and associated costs, such as remediation costs or increased costs for additional security measures.
	TC0401-11	Discussion of management approach to identifying and addressing risk from the U.S. Department of Commerce National Institute of Standards and Technology (NIST)-defined cyber vulnerabilities and threats, including: external/removable media, attrition (e.g., a DDoS or brute force attack), web, email, improper usage, and loss/theft of equipment.
	TC0401-12	Discussion of the management approach to integration of data security considerations into internet services; indicate specific services affected and rationale for the feature.
<b>Employee Recruitment, Inclusion, and Performance</b>	TC0401-13	Percentage of employees that are foreign nationals. Describe potential risks of recruiting foreign nationals, and management approach to addressing these risks.
	TC0401-14	Discuss constraints on local hiring of technical staff due to difficulty in finding qualified personnel; include median length of vacancies for technical positions. Indicate number of new domestic technical staff hired through company-funded or company-facilitated programs to develop domestic workforce.
	TC0401-15	Number of total employees and number by gender and ethnic group in each of the following two employee categories: Executive/Sr. Manager and Non-Executive.
	TC0401-16	Employee engagement as a percentage or an index, including a description of methodology employed.
	TC0401-17	Employee turnover by voluntary and involuntary for all employees. Ratio of "Pivotal Employees Leaving" to "All Employees Leaving" by gender, ethnic group, and employee category.
<b>Intellectual Property Protection and Competitive Behavior</b>	TC0401-18	Description of legal and regulatory fines and settlements associated with anti-competitive practices and market manipulation, including Intellectual Property (IP) violations, and IP practices to unfairly restrict competition. Include dollar amount of fines, implications of the legal findings, and settlements and a description of corrective actions implemented in response to events.

Topic	Code	Accounting Metric
	TC0401-19	Description of legal and regulatory fines and settlements associated with information published in violation of Intellectual Property (IP) rights. Include dollar amount of fines and settlements, implications of the legal findings, and a description of corrective actions implemented in response to events.

# Environmental Footprint of Data Center and Office Hardware

## *Description*

*With the industry providing an increasing number of cloud services, which require them to own, operate, or rent data centers and other hardware, managing the energy and water use associated with the IT hardware infrastructure is becoming important to shareholder value. Despite the increasing efficiency of data centers, their growing importance in the economy, and to the industry's operations, requires companies to focus on energy efficiency. Companies face a tradeoff between energy and water consumption due to data center cooling needs, and decisions about data center locations and sources of energy are important for managing costs, obtaining reliable supply of energy and water, and lowering reputational risks, particularly with an increasing global regulatory focus on climate change, and innovations in energy efficiency and renewable energy.*

## *Accounting Metrics*

TC0401-01. **(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. (b) Total annual energy consumption of data centers, including colocation equipment (aggregate in gigajoules).**

- .01 The registrant shall convert the amount of electricity it consumed from kilowatt hours (kWh) to gigajoules (GJ).
- .02 The registrant shall disclose purchased grid electricity consumption as a percentage of its overall energy consumption.
- .03 The registrant shall disclose non-grid renewable energy consumption as a percentage of its overall energy consumption, in terms of its energy content. For biofuels, the registrant shall use higher heating values (HHV), also known as gross calorific values (GCV), and which are directly measured or taken from the Intergovernmental Panel on Climate Change (IPCC), the U.S. Department of Energy (DOE), or the U.S. Energy Information Administration (EIA). For solar or wind energy consumption, the registrant shall convert from electricity production (kWh) to gigajoules (GJ).
- .04 Non-grid renewable refers to the renewable energy the registrant either directly produces, or purchases through renewable energy certificates (RECs) that are certified (i.e., through Green-e) or through renewable power purchase agreements (PPAs). It shall not disclose the renewable portion of the energy that is drawn from electricity grids.
- .05 The registrant shall report the weighted average carbon intensity of its energy consumption. The weighted average is calculated by taking the total GHG inventory of energy consumption (in metric Tons CO<sub>2</sub>e) and dividing by the total energy use (in GJ).
- .06 The GHG inventory of energy consumption reflects the CO<sub>2</sub>e emissions associated with Scope 1 direct emissions from owned energy generation, as well as the Scope 2 indirect emissions from purchased electricity. The CO<sub>2</sub>e calculation shall include emissions of CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O, 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.
- .07 While total energy use characterizes the effect of demand-side initiatives directly, the carbon intensity metric further accounts for efforts to reduce energy-related carbon emissions through supply-side strategies such as, generating renewable or lower emissions energy on-site, purchasing renewable energy through Renewable Energy Credits (RECs), or Power Purchase Agreements (PPAs), locating data centers in regions where grid electricity is less carbon intensive, among others.
- .08 The registrant shall disclose the portion of total energy consumption (in GJ) associated with owned data centers, including energy consumption from data center colocation services provided by the registrant, if any.

TC0401-02. **Weighted Average Power Usage Effectiveness (PUE) for all owned data centers.**

- .09 The registrant shall report a trailing twelve-month (TTM) weighted average power usage effectiveness (PUE) for all owned data centers, where:
  - PUE reflects the ratio of, "total amount of power used by a computer data center facility," to, "power delivered to computing equipment." PUE measures of 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).
- .10 The weighted average 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.
- .11 Energy use in the data center facility shall include electricity purchased from the grid, as well as non-grid sources of energy.
- .12 PUE for a dedicated building or PUE for a mixed use facility are the preferred metrics; however, if data availability is limited a partial PUE (pPUE) can be reported and should be noted as such. 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.

TC0401-03. **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.**

- .13 Water withdrawn is the total amount of water removed from freshwater sources for use in operations. Water withdrawals shall be disclosed in terms of cubic meters (m<sup>3</sup>).
- .14 The registrant shall disclose the total amount of water by volume (m<sup>3</sup>) that was returned to the watershed during the fiscal year. This figure shall include the amount discharged directly to the environment, or by way of a local wastewater treatment plant.
- .15 The registrant shall disclose the total amount of water by volume (m<sup>3</sup>) that was recycled during the fiscal year. This figure shall include the amount recycled in closed loop and open loop systems. Water recycled for purposes other than data center operation (e.g., grey water reuse) shall not be included in this figure.
- .16 Using the World Resources Institute's (WRI) Water Risk Atlas tool, Aqueduct (publicly available online [here](#)), the registrant shall analyze all of its data center facilities for water risks, and identify facilities that are in a location with High (40–80%) or Extremely High (>80%) Baseline Water Stress. Water withdrawn, returned, or recycled in locations with High or Extremely High Baseline Water Risk shall be indicated as a percentage of the total water withdrawn, returned, or recycled, respectively.

TC0401-04. **Description of current environmental criteria for determining the location of new data centers, including factors affecting energy and water consumption (e.g., humidity, average temperature, water availability, regional- or state-level carbon legislation or pricing, or carbon intensity of grid electricity); indicate which environmental criteria are key decision drivers. Discuss how the environmental criteria were factored into the final outcome for past data center location decisions.**

- .17 The registrant shall disclose decision criteria based on strategic environmental considerations for locating new data centers.
- .18 The registrant shall indicate which of the environmental criteria are key decision drivers, defined as those environmental criteria that might override a pure cost-based decision to locate in a certain region.
- .19 The registrant shall disclose decisions for new data center locations made during the reporting year, and indicate how the environmental criteria were incorporated (e.g., which environmental risks were mitigated or how the environmental criteria drove improved performance).

## *Notes*

### *Definitions*

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### *Additional References:*

**The Green Grid. White Paper #49-PUE: A Comprehensive Examination of the Metric.** See more at: <http://www.thegreengrid.org/en/Global/Content/white-papers/WP49-PUEAComprehensiveExaminationoftheMetric#sthash.bs74EgC4.dpuf> .

Uptime Institute. 2009. **Opinion of the Institute, Green Computing.** "Lean Clean & Green, The Global Energy Future of Enterprise IT & the Data Center Energy—The New Disruptive Technology."

Uptime Institute. 2009. **Opinion of the Institute, Lean Computing.** "Lean Clean & Green, The Global Energy Future of Enterprise IT & the Data Center Energy—The New Disruptive Technology."

## **Data Privacy, Advertising Standards, and Freedom of Expression**

### *Description*

*Companies in the industry need customer data to innovate and provide customers with new tools and services, generate revenues through advertising sales, and track and prevent criminal activities, online predators, especially those targeting children, and hacking. However, the use and storage of a wide range of customer data, including sensitive personal and confidential business information raises privacy concerns, leading to increasing regulatory scrutiny in the U.S. and abroad. Companies with dominant market positions may have an undue advantage in collecting and using vast amounts of user data. Companies face reputational risks from providing access to user data to governments, with concerns that the data may be used to limit the freedoms of their citizens. Companies also may face local laws requiring censorship of culturally- or politically-sensitive material on websites, and these may differ from country to country. This issue may impact company profitability and influence decisions about entering or operating in certain markets.*

### *Accounting Metrics*

**TC0401-05. Discuss how the registrant addresses the following principles as they relate to customer information for behavioral advertising, or other uses: education, transparency, consumer control, data security, material changes to policies and practices, sensitive data, and accountability.**

- .20 The registrant shall describe the nature, scope, and implementation of its policies and practices related to its use of customer data and information for behavioral advertising or other uses.
- .21 Customer information includes, but is not limited to, personally identifiable information (PII).
- .22 The registrant shall specifically outline how it addresses the following principles, described by the cross-industry [Self-Regulatory Principles for Online Behavioral Advertising](#):
  - Education - participation in educational efforts for consumers about behavioral online advertising
  - Transparency - clearly disclosing information about data collection and data use practices
  - Consumer control - allowing users to choose whether data is collected or transferred to non-affiliates
  - Data security - providing basic security provisions and having clear policies relating to retention of customer information
  - Material changes - obtaining consent before applying changes to policies that are less restrictive than existing ones
  - Sensitive data - abiding by the Children's Online Privacy Protection Act, and handling customer data such as financial information, Social Security numbers, and medical information
  - Accountability - participation in self-regulatory organizations such as the Direct Marketing Association

**TC0401-06. Describe how customer content and non-content data is used outside of the primary intended use (e.g., selling targeted ads, selling information to a third party, improving own product and service offerings), including discrete revenue derived from such uses.**

- .23 The registrant shall indicate the percent of total annual revenue derived from its own use of customer data, outside of the primary intended use. Primary intended use is defined as the reasonable expectation of a customer regarding use of his/her personal or business data. The activities measured here comprise secondary uses of customer data, where secondary use is intentional by the registrant (i.e., not a breach of security), but is outside of the primary intended use expected by the customer.
- .24 Customer content includes customer-generated information such as email text, while non-content data includes information such as an email address, a person's name, country of residence, or gender, or system-generated data such as IP addresses and traffic data.
- .25 Indicate each type of secondary use of customer data, and the revenue derived from such uses. Incremental revenue from improving primary product and service offerings through the use of customer data shall be excluded.

**TC0401-07. Description of legal and regulatory fines and settlements associated with customer privacy including, but not limited to, violations of the Children's Online Privacy Protection Act, Directive 2002/58/EC (ePrivacy Directive), and Federal Trade Commission Act. Include dollar amount of fines and settlements, implications of the legal findings, and a description of corrective actions implemented in response to events.**

- .26 The registrant shall briefly describe the nature and context of fines and settlements associated with customer privacy, including civil actions (e.g., civil judgment, settlements, or regulatory penalties) and criminal actions (e.g., criminal judgment, penalties, or restitutions) taken by any entity (government, businesses, or individuals).
- .27 The registrant shall disclose the amount of any fine or settlement associated with each incident, not including legal fees.
- .28 If relevant, the registrant shall discuss other implications associated with the fine or settlement, including any limitations on contracting with government or other institutional clients.
- .29 The registrant shall describe any corrective actions it has implemented as a result of each incident. This may include, but is not limited to, specific changes in operations, management, processes, products, business partners, training, or technology.

**TC0401-08. Number of government or law enforcement requests received and number resulting in disclosure of (a) customer content and (b) non-content data. Discuss policy regarding the provision of personal data to government or law enforcement agencies and notification to customers about such requests.**

- .30 The registrant shall disclose the number of requests received from government or law enforcement agencies during the reporting year and the number of requests with which it complied, for each type of data: customer content and non-content.
- .31 Customer content includes customer-generated information such as email text, while non-content data includes information such as an email address, a person’s name, country of residence, or gender, or system-generated data such as IP addresses and traffic data.
- .32 The registrant shall describe its policy for determining whether to comply with a request for customer data, including the level of management approval required to release customer information; specifically, under what conditions will the registrant release customer data, and what requirements must be met in the request. The registrant shall also describe its policy for notifying customers about such requests, including timing of notification.

**TC0401-09. List of countries where core products or services are monitored, blocked, or subject to content filtering or censorship, even if required by local law. For each country, indicate the number and type of products and services that were subject to the action and the duration of the effect. Indicate percent of customers affected.**

- .33 The registrant shall describe the implications for user privacy from government or law enforcement monitoring of data gathered through use of registrants’ products or services; specifically, indicate the countries where this monitoring is occurring, and the extent of its reach across product or service line. Indicate percent of customers affected.
- .34 The registrant shall describe the implications for freedom of expression from blocking of registrant’s products or services, or filtering or censoring of content generated through the use of registrant’s products or services due to government, judicial, or law enforcement requests or requirements; specifically, indicate the countries where this blocking or censorship is occurring and the extent of its reach across product or service line. Indicate percent of customers affected.
- .35 “Monitoring” occurs when government or law enforcement has routine access to content or non-content data of specific users or of all users of a particular product or service.
- .36 “Blocking” occurs when the registrant is prohibited by law or government authority from providing some or all of the registrant’s products or services in a country.
- .37 “Subject to content filtering or censorship” occurs when government or other authority prohibits or removes open access to, or display of, certain types of content of specific users or of all users of a particular product or service. Examples include content that is considered politically or culturally sensitive.

*Notes*

*Definitions*

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*Additional References*

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## **Data Security**

### *Description*

*With companies in the Internet Media and Services industry being subject to a large and growing number of cyber-attacks putting customer information at risk, the issue of data security is likely to have a significant financial impact on them. Tackling data security threats both for their own, and their customers', data through adequate prevention, detection, and remedial actions, is important for companies' customer acquisition and retention, and could help reduce extraordinary expenses from breach of data security.*

### *Accounting Metrics*

**TC0401-10. Number and description of data security breaches that resulted in the actual outcomes of a business process deviating from the expected outcomes with respect to confidentiality, integrity, and availability. Include a discussion of: (a) The impact of the incident, such as loss of information, compromise of data, litigation, regulatory fines, loss of revenue, lost time, damage to reputation (qualitative measure of severity). (b) Corrective actions taken in response to the incident and associated costs, such as remediation costs or increased costs for additional security measures.**

- .38 The registrant shall disclose significant data security breaches that have affected business outcomes or have resulted in a deviation from a reasonable customer expectation of data security, including but not limited to violations of California's Information Practices Act. These breaches may be due to deficiencies or failures of people, process, or technology.
- .39 A data security breach is considered significant if it is disruptive to a large number of customers or fundamental business operations in a manner that affects time to market, revenue capture, or other material parameters.
- .40 The registrant shall describe the impact of the security breach including business implications as well as impacts to customers.
- .41 The registrant shall describe the corrective actions taken and the cost of those actions. The costs should include cost for new systems or training, legal fees, reimbursements or reparations, or any other cost directly associated with correcting the impact of the security breach.

**TC0401-11. Discussion of management approach to identifying and addressing risk from the U.S. Department of Commerce National Institute of Standards and Technology (NIST)-defined cyber vulnerabilities and threats, including: external/removable media, attrition (e.g., a DDoS or brute force attack), web, email, improper usage, and loss/theft of equipment.**

- .42 The registrant shall describe the risk posed by the cyber vulnerabilities and threats, using NIST Special Publication 800-33 definitions and concepts, where:
  - "Vulnerability" is a weakness in system security procedures, design, implementation, internal controls, etc., that could be accidentally triggered or intentionally exploited and result in a violation of the system's security policy.
  - "Threat-source" is either (1) intent and method targeted at the intentional exploitation of a vulnerability or (2) the situation and method that may accidentally trigger a vulnerability.
  - "Threat" is the potential for a "threat source" to exploit (intentional) or trigger (accidental) a specific vulnerability.
  - "Risk" is the net mission/business impact (probability of occurrence combined with impact) from a particular threat source exploiting, or triggering, a particular information technology vulnerability. IT related-risks arise from legal liability or mission/business loss due to:
    - Unauthorized (malicious, non-malicious, or accidental) disclosure, modification, or destruction of information.
    - Non-malicious errors and omissions.
    - IT disruptions due to natural or man-made disasters.
    - Failure to exercise due care and diligence in IT implementation and operation
- .43 The registrant shall describe its approach to evaluating and managing cyber security vulnerabilities, threats, and risks.
- .44 The registrant may choose to structure this response consistent with the Cybersecurity Framework outlined in the "Discussion Draft of the Preliminary Cybersecurity Framework August 28, 2013," provided by the National Institute of Standards and Technology (NIST) in advance of the Fourth Cybersecurity Framework workshop on Sept.11-13, 2013, at the University of Texas at Dallas. Available on-line at: [http://www.nist.gov/itl/upload/discussion-draft\\_preliminary-cybersecurity-framework-082813.pdf](http://www.nist.gov/itl/upload/discussion-draft_preliminary-cybersecurity-framework-082813.pdf)

TC0401-12. **Discussion of the management approach to integration of data security considerations into internet services; indicate specific services affected and rationale for the feature.**

- .45 The registrant shall discuss the integration of data security considerations into service provision. Describe specific services on which the data security features were integrated. Indicate the rationale for including these features, such as, for access to new market segment, to mitigate risk, etc.

### *Notes*

#### *Definitions*

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#### *Additional References*

Discussion Draft of the Preliminary Cybersecurity Framework August 28, 2013. Draft is provided by the National Institute of Standards and Technology (NIST) in advance of the Fourth Cybersecurity Framework workshop on Sept.11-13, 2013, at the University of Texas at Dallas. (Available on-line at: [http://www.nist.gov/itl/upload/discussion-draft\\_preliminary-cybersecurity-framework-082813.pdf](http://www.nist.gov/itl/upload/discussion-draft_preliminary-cybersecurity-framework-082813.pdf) )

The NIST 800 Series is a set of documents that describe United States federal government computer security policies, procedures and guidelines. [NIST](http://www.nist.gov) (National Institute of Standards and Technology) is a unit of the U.S. Commerce Department. The documents are available free of charge, and can be useful to businesses and educational institutions, as well as to government agencies. (Available on-line at: <http://csrc.nist.gov/publications/PubsSPs.html>)

## **Employee Recruitment, Inclusion, and Performance**

### *Description*

*Employees are key contributors to value creation in the Internet Media & Services industry, and employee costs are a significant proportion of operating expenses. While the number of job openings in the industry is growing, companies are finding it difficult to recruit qualified employees to fill software engineering and research positions. Companies are vulnerable to immigration policy changes as they try to recruit foreign nationals with the necessary skills to meet the shortage in skilled domestic employees. Intense competition in the industry to acquire highly-skilled employees, and efforts to improve employee engagement, and therefore retention and productivity, both of which affect profitability, has resulted in significant monetary, and non-monetary, compensation and benefits being offered. Industry employees are said to experience lower separation between 'work' and 'life' than more traditional occupations, with implications for job satisfaction. Flexibility in working practices might influence the recruitment and retention of a more diverse workforce. While constrained by low diversity in education and training related to the skills needed in the industry, companies would benefit from recruiting a more diverse workforce, providing adequate support to traditionally under-represented employees, and discouraging implicit biases in promotions. Greater workforce diversity is important for innovation, and helps companies understand the needs of their diverse and global customer base, and communicate with customers effectively.*

### *Accounting Metrics*

**TC0401-13. Percentage of employees that are foreign nationals. Describe potential risks of recruiting foreign nationals, and management approach to addressing these risks.**

- .46 The registrant shall disclose the percent of employees that are foreign nationals. Foreign Nationals are defined as anyone requiring a visa for work in the country in which they are employed.
- .47 The registrant shall describe potential risks from recruiting foreign nationals, which may arise from immigration policies. The registrant shall describe management approach to addressing the risks identified.

**TC0401-14. Discuss constraints on local hiring of technical staff due to difficulty in finding qualified personnel; include median length of vacancies for technical positions. Indicate number of new domestic technical staff hired through company-funded or company-facilitated programs to develop domestic workforce.**

- .48 The registrant shall discuss constraints on hiring domestic technical staff due to limited pool of qualified personnel, where technical staff includes researchers, developers, engineers, and other similar positions.
- .49 The registrant shall disclose the median length of open job vacancies for technical positions.
- .50 The registrant shall disclose the number of new hires recruited, or trained, through company-funded or company-facilitated programs to develop domestic workforce. This includes community outreach programs, university partnerships, or other engagement programs.
- .51 The registrant shall discuss management approach to minimizing impact from offshoring activities, such as re-training the domestic staff, or offering outplacement services following layoffs.

**TC0401-15. Number of total employees and number by gender and ethnic group in each of the following two employee categories: Executive/Sr. Manager and Non-Executive.**

Number	Executive/ Sr. Manager	Non-Executive
<b>Total Employees</b>		
<b>Women</b>		
<b>Asian (incl. Pacific Islander)</b>		
<b>Hispanic</b>		
<b>Caucasian</b>		
<b>African-American</b>		
<b>Other</b>		

- .52 The registrant shall disclose the total number of employees and the number by gender and ethnic group in each employee category, where:
- “Ethnic groups” are defined as Asian (including Pacific Islander), Hispanic, White, Black, and Other.
  - “Non-Executive” employees include Mid-level Managers, Professionals, All others (EEO-1 categories technicians, sales, admin support, and service workers).

**TC0401-16. Employee engagement as a percentage or an index, including a description of methodology employed.**

- .53 The registrant shall disclose employee engagement as a percentage (i.e. percentage of employees deemed “engaged”) or as an index (e.g. strength of employee agreement with a survey statement).
- .54 The disclosure shall be calculated based on the results of an employee engagement survey or research study conducted by the registrant, an external entity contracted to perform such a study by the registrant, or an independent third party.
- .55 The registrant shall briefly describe the:
- Source of its survey (e.g. third-party survey or registrant’s own),
  - Methodology used to calculate the index (e.g. a simple average of individual employee survey responses, with a numerical value assigned to the strength of agreement or disagreement with a survey statement),
  - Possible range of the index, and
  - Summary of questions or statements included in the survey or study (e.g. those related to goal setting, support to achieve goals, training and development, work processes, and commitment to the organization).
- .56 Where the survey methodology has changed compared to previous reporting years, the registrant shall indicate results based on both the old and new methods in the year in which the change is made.
- .57 If results are limited to a subsection of employees, the registrant shall include the percentage of employees included in the study or survey, and the representativeness of the sample.

**TC0401-17. Employee turnover by voluntary and involuntary for all employees. Ratio of “Pivotal Employees Leaving” to “All Employees Leaving” by gender, ethnic group, and employee category.**

- .58 The registrant shall calculate monthly voluntary turnover as = total number of employee-initiated voluntary separations (such as resignation, retirement, etc.) for each month divided by the average number of employees for the month (the sum of the employees on the registrant’s payroll at each pay period / number of pay periods). The registrant shall disclose its annual voluntary turnover rate which is calculated by adding the 12 monthly turnover figures together and multiplying by 100 to arrive at a percentage.
- .59 The registrant shall calculate monthly involuntary turnover as = total number of registrant-initiated separation (such as dismissal, downsizing, redundancy, expiry of contract, etc.) for each month divided by the average number of employees for the month (the sum of the employees on the registrant’s payroll at each pay period / number of pay periods). The registrant shall disclose its annual involuntary turnover rate, which is calculated by adding the 12 monthly turnover figures together and multiplying them by 100 to arrive at a percentage.
- .60 The registrant shall disclose the ratio of “Pivotal Employees Leaving” to “All Employees Leaving” by gender, ethnic group, and employee category, where:
- “Ethnic groups” are defined as: Asian (including Pacific Islander), Hispanic, White, Black, and Other.
  - “Employee categories” are defined as: Executives/Sr. Managers, Mid-level Managers, Professionals, and All others (EEO-1 categories technicians, sales, admin support, and service workers).
- .61 “Pivotal Employees” represent a company’s critical talent; identified as the top quartile pay progressors (i.e., the top 25% of individuals who received the largest percentage pay increases over the past two fiscal years).
- .62 The registrant shall classify all employees according to the [U.S. Equal Employment Opportunity Commission EEO-1 Job Classification Guide](#) and record the number of employees employed at any time during the fiscal year in each classification.

## *Notes*

The ratio of “Pivotal Employees Leaving” to “All Employees Leaving” is a simplified version of a metric known as Talent Quotient™ as described in “An Economic View of the Impact of Human Capital on Firm Performance and Valuation.” Mark C. Ubelhart, Hewitt Associates, 2009.

### *Definitions:*

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*Additional References:*

[Society of Human Resources Management, Executive Brief: Tracking Trends in Employee Turnover](#)



## **Intellectual Property Protection and Competitive Behavior**

### *Description*

*Despite the openness of the Internet, companies in the industry spend a significant proportion of their revenues on Intellectual Property (IP) protection, including acquiring patents and copyrights. While IP protection is inherent to the business model of companies in the industry, and is an important driver of innovation, companies could use it to restrict access to the benefits from innovation, particularly if they are dominant market players that enjoy network effects. Acquisition of patents, and other IP protection, can sometimes be used as a strategy to restrict competition. Companies are constantly engaged in litigation for patent or copyright infringement, and many have been acquiring a large number of patents to protect themselves against such litigation, which can increase costs. Adverse legal or anti-trust rulings could create extraordinary expenses or liabilities, and may affect revenues if product modifications are needed.*

### *Accounting Metrics*

**TC0401-18. Description of legal and regulatory fines and settlements associated with anti-competitive practices and market manipulation, including Intellectual Property (IP) violations, and IP practices to unfairly restrict competition. Include dollar amount of fines, implications of the legal findings, and settlements and a description of corrective actions implemented in response to events.**

- .63 The registrant shall briefly describe the nature and context of fines and settlements associated with anti-competitive practices and market manipulation, including civil actions (e.g., civil judgment, settlements, or regulatory penalties), and criminal actions (e.g., criminal judgment, penalties, or restitutions) taken by any entity (government, businesses, or individuals).
- .64 The registrant shall disclose the amount of any fine or settlement associated with each incident, not including legal fees.
- .65 The registrant shall describe any corrective actions it has implemented as a result of each incident. This may include, but is not limited to, specific changes in operations, management, processes, products, business partners, training, or technology.
- .66 If relevant, the registrant should discuss other implications associated with the fine or settlement, including any limitations on contracting with government or other institutional clients.

**TC0401-19. Description of legal and regulatory fines and settlements associated with information published in violation of Intellectual Property (IP) rights. Include dollar amount of fines and settlements, implications of the legal findings, and a description of corrective actions implemented in response to events.**

- .67 The registrant shall briefly describe the nature and context of fines and settlements associated with information published in violation of IP rights, which could include fines and settlements both for:
  - Information to which links are provided
  - Information that is posted online (either self-generated or by third parties, including users).
- .68 This shall include civil actions (e.g., civil judgment, settlements, or regulatory penalties) and criminal actions (e.g., criminal judgment, penalties, or restitutions) taken by any entity (government, businesses, or individuals).
- .69 The registrant shall disclose the amount of any fine or settlement associated with each incident, not including legal fees.
- .70 The registrant shall describe any corrective actions it has implemented as a result of each incident. This may include, but is not limited to, specific changes in operations, management, processes, products, business partners, training, or technology.
- .71 If relevant, the registrant should discuss other implications associated with the fine or settlement, including any limitations on contracting with government or other institutional clients.

### *Notes*

#### *Definitions*

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#### *Additional References*