Carbon Disclosure Project

CDP 2012 Investor CDP 2012 Information Request

NVIDIA Corporation

Module: Introduction

Page: Introduction

0.1

Introduction

Please give a general description and introduction to your organization

NVIDIA is known to millions around the world for creating the graphics chips used in personal computers, or PCs, that bring games and home movies to life. With the invention of the graphics processing unit, or GPU, we introduced the world to the power of computer graphics. Today, we reach well beyond PC graphics. Our energy-efficient processors power a broad range of products, from smart phones to supercomputers. Our mobile processors are used in cell phones, tablets and auto infotainment systems. PC gamers rely on our GPUs to enjoy visually immersive worlds. Designers use GPUs to create visual effects in movies and create everything from golf clubs to jumbo jets. Researchers utilize GPUs to push the frontiers of science with high-performance computing. NVIDIA has nearly 5,000 patents granted and pending worldwide.

NVIDIA solutions are based on two important technologies: the GPU and the mobile processor. Both are highly complex chips, designed by NVIDIA engineers, and manufactured for us by a third party chip foundry. GPUs are the engines of visual computing, the science and art of using computers to understand, create and enhance images. One of the most complex processors ever created, the most advanced GPUs contain billions of transistors. We have three GPU product brands: GeForce, which creates realistic visual experiences for gamers; Quadro, the standard in visual computing for designers and digital artists; and Tesla, which accelerates applications for scientists and researchers. Mobile processors incorporate central processing unit, or CPU, and GPU technologies to deliver an entire computer system on a single chip, or system-on-chip. Modern mobile processors possess significant computing capabilities yet consume one hundred times less energy than a typical PC. Tegra is our mobile processor and is built for applications ranging from smartphones, tablets and notebook PCs to televisions and cars. We believe energy-efficient mobile computing will transform how computers are used in our lives.

Based in Santa Clara, Calif., NVIDIA was founded in 1993, by Jen-Hsun Huang, who had previously served at LSI Logic and AMD, and Chris Malachowsky and Curtis Priem, who came from Sun Microsystems. The company went public in 1999 and is listed on NASDAQ, where its shares trade under the symbol NVDA. As of January 2012, iIt has some 7,100 employees in more than 16 countries.

Certain statements and responses in this report including, but not limited to, statements as to our beliefs, plans and goals related to our business and the impact of climate related matters are forward-looking statements that are subject to risks and uncertainties that could cause results to be materially different than expectations. These statements involve known and unknown risks, uncertainties and other factors, which may cause our actual results, performance, time frames or achievements to be materially different from any future results, performance, time frames or achievements expressed or implied by the forward-looking statements. We discuss many of these risk, uncertainties and other factors from time to time in the reports NVIDIA files with the Securities and Exchange Commission, or SEC, including our Form 10-Q for the quarterly period ended April 29, 2012. Copies of reports filed with the SEC are posted on NVIDIA's website and are available from NVIDIA without charge. Given these risks, uncertainties and other factors, you should not place undue reliance on these forward-looking statements. Also, these forward-looking statements represent our estimates and assumptions only as of the date of this response. Except as required by law, we assume no obligation to update these forward-looking statements publicly, or to update the reasons actual results could differ materially from those anticipated in these forward-looking statements, even if new information becomes available in the future.

0.2

Reporting Year

Please state the start and end date of the year for which you are reporting data.

The current reporting year is the latest/most recent 12-month period for which data is reported. Enter the dates of this year first.

We request data for more than one reporting period for some emission accounting questions. Please provide data for the three years prior to the current reporting year if you have not provided this information before, or if this is the first time you have answered a CDP information request. (This does not apply if you have been offered and selected the option of answering the shorter questionnaire). If you are going to provide additional years of data, please give the dates of those reporting periods here. Work backwards from the most recent reporting year.

Please enter dates in following format: day(DD)/month(MM)/year(YYYY) (i.e. 31/01/2001).

Enter Periods that will be disclosed
Sat 01 Jan 2011 - Sat 31 Dec 2011

0.3

Country list configuration

Please select the countries for which you will be supplying data. This selection will be carried forward to assist you in completing your response

Select country
United States of America
China
Finland
France
Germany
Hong Kong
India
Japan
Russia
Singapore
South Korea
Switzerland
United Kingdom
Taiwan

0.4

Currency selection

Please select the currency in which you would like to submit your response. All financial information contained in the response should be in this currency.

USD($)

0.5

Please select if you wish to complete a shorter information request

0.6

Modules

As part of the Investor CDP information request, electric utilities, companies with electric utility activities or assets, companies in the automobile or auto component manufacture sectors and companies in the oil and gas industry should complete supplementary questions in addition to the main questionnaire.
If you are in these sectors (according to the Global Industry Classification Standard (GICS)), the corresponding sector modules will be marked as default options to your information request. If you want to query your classification, please email respond@cdproject.net.
If you have not been presented with a sector module that you consider would be appropriate for your company to answer, please select the module below. If you wish to view the questions first, please see https://www.cdproject.net/en-US/Programmes/Pages/More-questionnaires.aspx.

Module: Management [Investor]

Page: 1. Governance

1.1

Where is the highest level of direct responsibility for climate change within your company?

Senior Manager/Officer

1.1a

Please identify the position of the individual or name of the committee with this responsibility

Our executive team is responsible for climate change at NVIDIA. The executive team meets yearly with representatives across our business to discuss our environmental goals and initiatives. Executives are involved throughout the year as it relates to their business area (an IT purchase, or customer request in engineering).

1.2

Do you provide incentives for the management of climate change issues, including the attainment of targets?

No

Further Information

We do not provide incentives.

Page: 2. Strategy

2.1

Please select the option that best describes your risk management procedures with regard to climate change risks and opportunities

Integrated into multi-disciplinary company wide risk management processes

2.1a

Please provide further details (see guidance)

NVIDIA has assessed its risks as part of our ISO 14001 review of aspect and impacts, and has integrated the management of these issues into our overall Environmental Management System which is reviewed annually by our environmental committee with relevant NVIDIA executives. Our approach to carbon management is managed by a cross functional team of professionals with experience in Facilities, Environment, Health and Safety, IT and Supply Chain issues. To address climate change we have developed internal procedures to design, develop, manage and report on our company emissions within our boundaries. At this time our boundary is defined all global offices under which we have operational control. The intended end user of the information we collect is both for internal metrics/goals as well as for external users which may include stakeholders such as customers, suppliers, investors and the community.

2.2

Is climate change integrated into your business strategy?

Yes

2.2a

Please describe the process and outcomes (see guidance)

Beginning in 2006, NVIDIA has initiated a variety of programs and projects in order to be well positioned to manage any risks to our business related to climate change and to realize associated opportunities. Some of these projects include: • Formation of an Environmental Committee, comprising employees from major functional groups to lead and develop our approach • Opening a LEED Platinum data center to improve the efficiency of the compute farm used for product design • Installing virtualization software to reduce the energy consumption in our data centers• Installing electric car chargers in our parking garage • Changing lighting fixtures as part of facility upgrades.

Through our product design, we are working to improve power efficiency. The energy efficiency of our products gives us a tremendous opportunity to help our customers and end users reduce their energy consumption and have a broad positive environmental impact.

2.3

Do you engage with policy makers to encourage further action on mitigation and/or adaptation?

Yes

2.3a

Please explain (i) the engagement process and (ii) actions you are advocating

At this time, we are not directly participating with governmental agencies/ policy makers on possible responses to climate change including taxation, regulation and carbon trading. However we are collaborating within our industry through the Electronics Industry Citizenship Coalition (EICC) to begin standardizing tools for the tracking of energy and water. The EICC was established in 2004 to promote an industry code of conduct for global supply chains to improve working and environmental conditions.

Page: 3. Targets and Initiatives

3.1

Did you have an emissions reduction target that was active (ongoing or reached completion) in the reporting year?

Intensity target

3.1b

Please provide details of your intensity target

ID	Scope	% of emissions in scope	% reduction from base year	Metric	Base year	Normalized base year emissions	Target year	Comment
1	Scope 1+2+3	44%	9%	metric tonnes CO2e per square foot	2007		2012	NVIDIA's BUSINESS OPERATIONS GOAL: NVIDIA pledges to reduce U.S. GHG emissions by 9% per square foot of non-data center space by end of 2012.
2	Scope 2	28%	9%	Other: Power usage effectiveness (PUE) reduction goal	2007		2012	NVIDIA'S DATACENTER GOAL: NVIDIA pledges to reduce U.S. GHG emissions by 9% in PUE for data centers by end of 2012. Power usage effectiveness (PUE) is a measure 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). PUE is the ratio of total amount of power used by a computer data center facility to the power delivered to computing equipment. PUE was developed by a consortium called The Green Grid. PUE is the inverse of Data Center Infrastructure Efficiency (DCiE). An ideal PUE is 1.0. Anything that isn't considered a computing device in a data center (i.e. lighting, cooling,

ID	Scope	% of emissions in scope	% reduction from base year	Metric	Base year	Normalized base year emissions	Target year	Comment
								etc.) falls into the category of facility power usage.

3.1c

Please also indicate what change in absolute emissions this intensity target reflects

ID	Direction of change anticipated in absolute Scope 1+2 emissions at target completion?	% change anticipated in absolute Scope 1+2 emissions	Direction of change anticipated in absolute Scope 3 emissions at target completion?	% change anticipated in absolute Scope 3 emissions	Comments
1	No change	0	No change	0	We do not track by absolute reductions as we are still growing. We are working towards an overall energy strategy to maintain current levels by increasing building efficiency. The target goal is normalized by energy used per square foot.
2	No change	0	No change	0	The target goal is Power Usage Effectiveness (PUE), a measure 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). As the company grows in size, we are working towards an overall data center energy strategy to maintain current levels by increasing building and IT server efficiency. We do not track absolute emissions as our data centers are growing to meet the demands of our business.

3.1d

Please provide details on your progress against this target made in the reporting year

ID	% complete (time)	% complete (emissions)	Comment
1	80	100	NVIDIA goal is to reduce U.S. GHG emissions by 9% per square foot of non-data center space by end of 2012. As of December 31, 2011, we are currently at 110% of the goal for business operations.
2	80	0	Our current PUE is 1.59 as of December 31, 2011, which is 58% of the reductions needed to reach our goal of 1.53.

3.2

Does the use of your goods and/or services directly enable GHG emissions to be avoided by a third party?

Yes

3.2a

Please provide details (see guidance)

We engineer our products for energy efficiency. Improving performance per watt is a guiding principle of our design process and a key consideration at each step of product development. The efficiencies of parallel processing mean our Graphic Processing Unit (GPU) consumes less power than other equivalent forms of computation. Our highly efficient products and technology include:
• NVIDIA Tesla solutions for high performance computing: The Tesla 10 series GPUs deliver the equivalent performance of a multicore Central Processing Unit (CPU) at 1/10th the cost and 1/20th the power consumption.
• NVIDIA CUDA parallel processing architecture: CUDA is a parallel computing platform and computing model that enables compute-intensive calculations to be done on lower cost, power-efficient GPUs.
• NVIDIA Optimus technology: Optimus maximizes energy conservation and battery life in notebooks by automatically shutting off the GPU when it is's not needed.
• NVIDIA Tegra mobile processors: The Tegra 3 quad-core processor utilizes 4PLUS1 technology that employs four CPU cores which power up only as they are needed, as well as a fifth battery-saving core for lower-power tasks. It also has an ultra low-power GPU. The result is fast performance at a fraction of the power consumption of typical CPU-only mobile devices.
Examples: 1) High Performance Computing Field: One of the world's fastest supercomputers, China's Tianhe-1A, which uses more than 7,000 NVIDIA Tesla GPUs, uses about half as much power as the CPU-powered Jaguar, number three on the list. The GPU-powered Tsubame 2.0, the fourth fastest supercomputer, is also the second most energy-efficient supercomputer in the world, according to the latest Green500 list of green supercomputers. 2) Financial Industry: Bloomberg shifted one bond pricing application running on 2,000 CPUs to a 48 GPU rack of NVIDIA Tesla GPUs. The CPU system cost $4 million and $1.2 million in annual energy bills; the GPU one cost under $150,000, with about $30,000 yearly in energy. Similarly, the French bank BNP Paribas swapped out a 64 CPU system for a pair of NVIDIA Tesla S1070 systems – just eight GPUs – and cut energy use from 44 kilowatts to 2.9 kilowatts. 3) Consumer Packaged Goods Industry: Working with Proctor & Gamble, researchers at Temple University ran molecular dynamics simulations to find better shampoos and detergents. To increase efficiency, they replaced 32 CPU servers with a single tower server running NVIDIA Tesla C2050 GPUs. Power consumption went from 21 to 1 kilowatt, energy costs were cut from $37,000 to just $2,000 per year.
Scientists at Temple University are using GPUs to model "surfactants" to determine the cleaning capacity and texture of shampoos, laundry detergents, and many other cleaning products.
In business, Tesla calculations are done by our customers and vary depending upon the business process being used and how much computing power is needed. An example of Tesla product used in the financial industry for bond pricing: - 48 Tesla GPUs were used compared to 2,000 CPUs - Only 45kWatt of power was used with Tesla compared to 1200kWatt for CPU-only servers - The Tesla system cost $400,000 compared to CPU-only server installation of $8 million. Tesla is featured in four of the top ten greenest super computers in the world.
In 2011, we completed development of a new product architecture called Kepler. We also decreased the size of our chips from 40 nanometer (nm) to 28nm. By using our suppliers 28nm process, we reduced active power by about 15 percent and leakage by about 50% compared to 40nm, resulting in an overall improvement in power efficiency of about 35%. We have not calculated the CO2 savings of implementing this process across our product sales.

3.3

Did you have emissions reduction initiatives that were active within the reporting year (this can include those in the planning and/or implementation phases)

Yes

3.3a

Please identify the total number of projects at each stage of development, and for those in the implementation stages, estimated CO2e savings

Stage of development	Number of projects	Total estimated annual CO2e savings (only for rows marked *)
Under investigation	2	670
To be implemented*	0	0
Implementation commenced*	0	0
Implemented*	4	1320
Not to be implemented	0	0

3.3b

For those initiatives implemented in the reporting year, please provide details in the table below

Activity type	Description of activity	Estimated annual CO2e savings	Annual monetary savings (unit currency)	Investment required (unit currency)	Payback period
Energy efficiency: processes	Professional Engineering Services Group Lab Project (Santa Clara): Using our technology to improve the density of equipment being tested in this lab. -This project required no additional investment, it was a change in existing business process. RESULTS: -4x increase in testing capability in same space-Direct capital savings of $100,000 (equipment/space)-Power Savings Estimate: 160,000 KWh/yr	110	33000	0	<1 year
Energy efficiency: processes	Game Test Lab and F.A.T. Labs (Santa Clara & Moscow) Custom build software utility to shut off idle computers Achieved 85% shut down time vs. previously idle clients in limited testing-Power Savings Estimate: 754,000 KWh/yr-Operational savings of $70,000 annual (power reduction)-Status: Deployed to 177 systems out of approximately 700 systems	520	70000	20000	<1 year
Energy efficiency: processes	Windows Hardware Qualification Lab (Santa Clara & Pune) Upgrade hardware on 575 clients to increase performance and lower power consumption by half Power Savings Estimate: 1,000,000 KWh/yr-Status: First 100 upgraded clients being tested	690	92000	170000	1-3 years
Product design	In 2011, we completed development of a new product architecture called Kepler. We also decreased the size of our chips from 40nm to 28nm. By using our suppliers 28nm process, we reduced active power by about 15% and leakage by about 50% compared to 40nm, resulting in an overall improvement in power efficiency of about 35%. -We have not calculated the CO2 savings of implementing this process across our product sales.				
Behavioral change	Continue to implement video conferencing in conference rooms in Santa Clara, Calif.; Hsinchu and Shanghai, China; and Hyderabad, India. Estimated to eliminate 90,000 travel miles and almost 20 tons of CO2	20			
Energy efficiency: building services	Raise temperature of 100 labs by 2°C				<1 year
Energy efficiency: building services	Reduce Santa Clara printer fleet by half, to reduce energy usage. New fleet will enable us to reduce power costs.				

3.3c

What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Compliance with regulatory requirements/standards	We were certified to the ISO 14001 standard in 2006. This ISO standard goes beyond legal compliance and focuses on minimizing harmful effects on the environment that may be caused by our company activities, and emphasizes continuous improvement of our environmental performance. As evidence of our commitment to environmental excellence, we have received zero findings on our final audits for the past five years.
Financial optimization calculations	The directive from our executive team is clear – we have the freedom to execute the programs we believe will be most impactful, but should demonstrate a clear Return on Investment within a 1 – 2 year time frame.
Employee engagement	Our environmental management committee is the driver of our business operations strategy, and assists NVIDIA in establishing systems and programs that reduce energy, water usage and waste, as well as encourages employees to become active participants in protecting our environment.
Internal incentives/recognition programs	NVIDIA hosts a Green Ideas Community, which is an internal website where employees can post ideas for how to reduce our carbon footprint. Our “green team” reviews and implements the best ideas that provide a cost savings and environmental benefit for the company and planet. We also offer Freecycle – an internal version of the Freecycle web site to encourage “reuse” among employees. It’s available globally and it currently has a very loyal following.

Further Information

Under Investigation:

1) We are investigating Electric Vehicle Charging stations for our Santa Clara, Calif. campus. While this does not result in a carbon reduction for our company, it does enable our employees to greatly reduce the vehicle emissions.

2) We are still researching with Silicon Valley Power a project to reduce annual energy by 1.7 – 2.0 million kWh (670 tonnes of CO2e) in our legacy Santa Clara data center. Including utility incentives, simple payback is approximately 2.2 years. Some of the technology developed out of this project will also be applied to the cooling systems serving the major software labs, reducing cooling energy in these lab by 40%.
3) In 2012 we funded an additional engineering study examining the use of adiabatic cooling in the Santa Clara, Calif. data center which would eliminate the need for mechanical cooling for over 8,000 hours per year.

Page: 4. Communication

4.1

Have you published information about your company’s response to climate change and GHG emissions performance for this reporting year in other places than in your CDP response? If so, please attach the publication(s)

Publication	Page/Section Reference	Identify the attachment
In voluntary communications (complete)	Page 13	Global Citizenship Report
In annual reports (complete)	Page 120	NVIDIA Annual Report and 10-K

Further Information

Our 2011 Global Citizenship Report describes our economic, social, and environmental performance for the fiscal year ended Jan. 30, 2011. In it, we track our performance across four dimensions: company, workforce, environment and community.

Page 120 – climate change addressed as a risk factor.

Attachments

https://www.cdproject.net/Sites/2012/04/13604/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/NVDA-2012AR_Proxy_10K.pdf
https://www.cdproject.net/Sites/2012/04/13604/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/4.Communication/2012 Global Citizenship Report - Custom Report.pdf

Module: Risks and Opportunities [Investor]

Page: 2012-Investor-Risks&Opps-ClimateChangeRisks

5.1

Have you identified any climate change risks (current or future) that have potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply

Risks driven by changes in regulation
Risks driven by changes in physical climate parameters
Risks driven by changes in other climate-related developments

5.1a

Please describe your risks driven by changes in regulation

ID	Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact
RR1	Carbon taxes	The introduction of carbon taxes could have an indirect impact on NVIDIA facilities that are located in areas that rely on fossil fuel based energy sources. Energy suppliers who are directly affected by carbon taxes are likely to seek to pass costs through to their customers and we could see increased operating costs as a result. This would have the biggest impacts at our large headquarters campus in Santa Clara, Calif. as well as our data centers and larger international facilities. India has a carbon tax on coal to support the development of the National Clean Energy Fund which affects energy prices for facilities in this country. We have a number of facilities in India including a data center. China has proposed a carbon tax on fossil fuels such as oil and coal. This has potential implications for energy costs at our facilities in this country. California's AB32 cap and trade emissions program, set to start in 2013, could also serve to increase the costs of fossil fuel derived energy sources.	Increased operational cost	1-5 years	Direct	Virtually certain	Low
RR2	Fuel/energy taxes and regulations	We do not manufacture the silicon wafers used for	Increased operational cost	1-5 years	Indirect (Supply chain)	Likely	Low

ID	Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact
		our products and do not own or operate a wafer fabrication facility. Instead, we are dependent on industry-leading foundries, to manufacture our semiconductor wafers using their fabrication equipment and techniques. As semi-conductor manufacturing is relatively energy intensive, the introduction of fuel/energy taxes in locations where NVIDIA's suppliers are based could lead to increased operational costs that our suppliers may seek to pass on to their customers. One of our key suppliers for example has facilities in Taiwan which has recently initiated an energy tax. As NVIDIA is only one of many customers to this supplier, we anticipate that any increased costs would be shared across the supplier's customer base with a resulting low magnitude of impact on the cost of goods sold to NVIDIA.					
RR3	Fuel/energy taxes and regulations	NVIDIA product is shipped to customers throughout the world and the goods and components that we purchase are also transported from suppliers around the world. Freight costs are a component of our operational cost, and the taxation of fossil fuel based transport fuels used in air, road and ocean travel drives an increase in our product shipping costs.	Increased operational cost	1-5 years	Indirect (Client)	Virtually certain	Low

5.1b

Please describe (i) the potential financial implications of the risk before taking action; (ii) the methods you are using to manage this risk; and (iii) the costs associated with these actions

(i)
• RR1– The financial implications of carbon taxes are increased operational costs arising from increased fuel and electricity prices. In addition to the US where NVIDIA has the largest footprint, India is a focus because of the relatively high cost of energy. While energy costs are only a small fraction of total operational costs, they impact our bottom line, and, in the face of increased energy prices, a failure to manage these costs relative to our peers could affect our competitiveness in the longer term.
• RR2–An increase in the price of components could negatively affect our profit margin and/or serve to increase the price, and potentially reduce the competitiveness, of our products. We anticipate that any increase in energy costs experienced by our suppliers as a result of new taxes, would be shared across their customer base, and, will not have a significant impact on component price.
• RR3 – We incur costs associated with the transport of goods from our suppliers and shipping of our product to our customers. Taxes levied on transport fuels serve to increase the costs to our bottom line.
(ii)
• RR1- NVIDIA is committed to reducing the environmental impact and financial cost of its energy consumption by investing in energy efficiency.
• Achieve a power usage efficiency (PUE) of 1.5 by 2012 (US data centers)
During 2011, we invested in Hara's energy and carbon accounting software, to give us better visibility to our global energy use and cost trends and to help us target efficiency improvements.
Improving data-center energy efficiency is a core pillar of our efforts and we have a compute farm specialist who focuses exclusively on opportunities to improve efficiency at our headquarters.
We evaluate, and optimize the energy consumption of the IT equipment that we purchase for our data centers. During 2011, we upgraded 1,958 of the oldest, slowest data center server systems to 433 modern systems. We also achieved the LEED Platinum rating for one of our datacenters.
We have embarked on a datacenter airflow optimization project. We are partnering with Silicon Valley Power in a study to reduce annual energy use by 1.7 – 2.0 million kWh in our legacy Santa Clara data center. We are also considering funded a study to examine the use of adiabatic cooling in one of our data centers. This would eliminate the need for mechanical cooling for over 8,000 hours per year.
In 2011 we Launched Phase 1 of a Lab Energy Audit in 10 of our high energy use labs.. We installed custom built software to shut off idle computers, achieving 70% shut down time versus previously idle clients in limited testing. Power savings are in the order of 725,000 kwh per year. This solution will be deployed to other labs during 2012. We are also working on upgrading hardware to increase performance and lower power consumption. The first 100 upgraded clients have been tested, with computing clusters showing initial savings of 28% vs. old systems.
Other energy efficient measures include; use of Virtual Machine software to optimize load on server racks, occupancy sensors to control lighting, installation of energy efficient lighting, security guard nightly walks to turn-off unused lights, de-lamping, and the use of watt stoppers. All of these initiatives are supported by an employee engagement campaign.
Through our actions, we anticipate the impact level to remain low over the 5-10 year time horizon.
• RR2 - NVIDIA has a program to engage with its suppliers in the area of energy use and GHG emissions. NVIDIA joined the Electronics Industry Citizenship Coalition (EICC) in 2006. Since then, we have leveraged our membership to raise awareness among our key manufacturing suppliers and to improve factory conditions in areas including environmental impact. The EICC has an Environment workgroup of which NVIDIA is a member and actively participates in developing policy and managing the process as we move forward. The workgroup has developed a three -year plan to reduce aggregate carbon emissions among EICC member manufacturing facilities. The goal is to analyze data from members and suppliers starting in 2012 and use that information to develop an industry-wide reduction campaign beginning in 2013.
We have requested that all Silicon Chip Operations suppliers report their scope 1 and 2 GHG emissions via the CDP or the EICC's Carbon Reporting System. . The data they provide will enable us to report on the carbon footprint of our suppliers, to establish a baseline for our supply chain, and generate ideas as to how GHG emissions can be reduced, including through energy efficiency.
Through our actions, we anticipate the impact level to remain low over the 5-10 year horizon.

RR3
As fuel represents a major component of our overall freight costs, our continuous focus on optimizing our supply chain and reducing freight spend, has resulted in significant savings to the company and a positive impact on the environment.
Our Supply Chain/Logistics optimization efforts include:
- Consolidation programs for finished goods replenishments into Vendor Managed Inventory hubs, and work in process shipments from subcontractors.
- Optimization of subcontractor packing to ensure that cartons and pallets are fully packed and efficiently unitized
- Use of lightweight pallets to reduce weight of shipments
- A multi modal (Ocean/Truck) replenishment program for US Distribution/Retail
- A balanced Supplier Score Card that awards points for our suppliers' participation in environmental initiatives.
We have begun to gather detailed carbon footprint reporting from our transport suppliers to better assess areas of opportunities and gauge the impact of our supply chain optimization/carbon reduction efforts.
Through our actions, we anticipate the impact level to remain low over the 5-10 year time horizon.
(iii)
• RR1–As an example of investment in energy efficiency made during 2011; we spent $2.8 million upgrading older server equipment with a resulting $1.04 million annual saving (not factoring in utility rate increases). We also spent $60,000 on our lab energy audits.
o RR2– We incur annual membership costs and pay for supplier audits associated with the EICC. Our involvement in EICC also involves management time.

o RR3 - No additional resources have to date been allocated to our internally-led freight savings initiative; which forms part of our broader continuous improvement efforts.

5.1c

Please describe your risks that are driven by change in physical climate parameters

ID	Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact
RP1	Change in temperature extremes	Some of NVIDIA's facilities are located in regions that are expected to experience a greater number and severity of high heat events as a result of climate change. These regions include California, where we have our headquarters offices and a data center, India where we also have offices, labs and a data center, and several countries in South East Asia where we have offices and labs. The greater incidence of high heat events would lead to increased cooling demands for our facilities which in turn would increase operational costs.	Increased operational cost	6-10 years	Direct	Unknown	Unknown
RP2	Change in temperature extremes	Some of NVIDIA's facilities are located in regions that are expected to experience a greater number and severity of high heat events as a result of climate	Other: Disruption of operations	6-10 years	Direct	Unknown	Unknown

ID	Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact
		change. These regions include California, where we have our headquarters offices and a data center, India where we also have offices, labs and a data center, and several countries in South East Asia where we have offices and labs. The greater incidence of high heat events would lead to increased cooling demands for our facilities. Multiple users increasing their cooling demand in an individual area could lead to grid black-outs, which are already a problem in certain areas such as India.					
RP3	Change in precipitation extremes and droughts	While NVIDIA is not itself a heavy user of water, our business relies on the supply of components from vendors who depend on a reliable source of water for their manufacturing operations; and semiconductor manufacturing is identified by the CDP's Water Disclosure program as a water intensive sector. NVIDIA	Reduction/disruption in production capacity	>10 years	Indirect (Supply chain)	Unknown	Unknown

ID	Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact
		sources from suppliers throughout the world, including regions that are anticipated to suffer water resource shortages as a result of climate change. For example, a key supplier has facilities in Taiwan which is anticipated to suffer water shortages as a result of climate change. Should NVIDIA's suppliers experience water rationing or other measures that significantly reduce their access to a reliable water supply this could affect their production capacity, which could in turn affect NVIDIA's ability to fulfill customer orders.					
RP4	Tropical cyclones (hurricanes and typhoons)	NVIDIA has facilities that are located in regions anticipated to experience a greater incidence and severity of tropical cyclones. For example, NVIDIA has facilities in Taiwan, China, southern US, Japan, Korea and Singapore. Tropical	Reduction/disruption in production capacity	1-5 years	Direct	Unknown	Unknown

ID	Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact
		storms have the potential to cause physical damage to our buildings and equipment, direct harm to our employees, and to disrupt our operations.					
RP5	Tropical cyclones (hurricanes and typhoons)	We do not manufacture the silicon wafers used for our products and do not own or operate a wafer fabrication facility. Instead, we are dependent on industry-leading foundries to manufacture our semiconductor wafers using their fabrication equipment and techniques. Some of our suppliers have facilities in locations that are anticipated to experience a greater frequency of tropical storms as a result of climate change and our suppliers' operations and production output could potentially be affected by such tropical storms. This in turn could affect the supply of components to NVIDIA and negatively impact our ability to fulfill	Reduction/disruption in production capacity	1-5 years	Direct	Unknown	Unknown

ID	Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact
		customer orders.					
RP6	Tropical cyclones (hurricanes and typhoons)	The physical impacts from climate change have the potential to affect a local hub for the tech industry which in turn can have industry-wide ramifications. For example, Thailand experienced severe flooding in July 2011 that caused widespread damage to the local manufacturing industry. PC manufacturers obtain disk drive components used in their PCs from suppliers with operations in Thailand that were severely impacted by the flooding. These PC manufacturers experienced a short-term reduction in the supply of these disk drive components. As a result, in NVIDIA's fourth quarter of fiscal year 2012 shipments of PCs by some PC manufacturers were reduced, which reduced the demand for NVIDIA's Graphics Processing Units (GPUs). In addition, higher disk-drive prices constrained	Reduced demand for goods/services	Unknown	Indirect (Supply chain)	Unknown	Unknown

ID	Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact
		the ability of some PC manufacturers to include a GPU in their systems which also reduced demand for our GPUs and negatively impacted our financial results for the fourth quarter of fiscal year 2012.					

5.1d

Please describe (i) the potential financial implications of the risk before taking action; (ii) the methods you are using to manage this risk; and (iii) the costs associated with these actions

(i)
RP1 - the financial implications of increased cooling demand at our facilities are a direct increase in the amount and therefore the cost of energy needed to run our facilities. Energy costs are only a small fraction of our total operational costs, however these costs directly impact our bottom line, and, in the face of increased energy prices, a failure to manage these costs relative to our peers could affect our competitiveness in the longer term.
RP2 - if we did not have sufficient back-up power to our critical facilities, the financial implications of grid black-outs arise from an interruption of operations, including staff not being able to complete tasks, and the potential loss of data, which could in turn negatively affect a wide range of business operations and ultimately our ability to fulfill customer orders.
RP3: Water costs may increase as a result of water shortages. Key manufacturing suppliers may seek to pass increased costs to their customers, including NVIDIA. If our key suppliers experience limits on their production output capacity as a result of water rationing, this could adversely affect the supply of components to NVIDIA which in turn could affect our ability to fulfill customer orders.
RP4: Tropical storms could result in physical damage to our buildings and equipment, leading to repair, and possibly even rebuild costs. They may result in staff not being able to travel to work with potential lost worktime. If a data center went down and we did not have contingency arrangements in place, we could suffer a loss of data.
RP5: If a key supplier manufacturing facility goes down as a result of a tropical storm, this would likely adversely affect our supplier's production output, which would affect our ability to fulfill customer orders, and potentially lead to revenue losses.
RP6: in the event that a region that is a local hub for the tech industry is negatively affected by physical impacts, we could experience a downturn in customer orders for our products, as is illustrated by the Thailand situation in 2011.
(ii)
RR1- NVIDIA is committed to reducing the environmental impact and financial cost of its energy consumption by proactively investing in energy efficiency.
During 2011, we purchased Hara's energy and carbon accounting software, to give us better visibility to our global energy use and cost trends and to help us target efficiency improvements.
During 2011, we upgraded 1,958 of the oldest, slowest data center server systems to 433 modern systems. We also achieved the LEED Platinum rating for one of our data centers.
We have embarked on a data center airflow optimization project. We are partnering with Silicon Valley Power in a study to reduce annual energy use by 1.7 – 2.0 million kWh in our legacy Santa Clara, Calif. data center. We are also considering funding a study to examine the use of adiabatic cooling in one of our datacenters. This would eliminate the need for mechanical cooling for over 8,000 hours per year.
In 2011 we launched Phase 1 of a Lab Energy Audit in 10 of our high energy use labs. We installed custom built software to shut off idle computers, achieving 70% shut down time versus previously idle clients in limited testing. This solution will be deployed to other labs during 2012. We are also working on upgrading hardware to increase performance and lower power consumption. The first 100 upgraded clients have been tested, with computing clusters showing initial savings of 28% vs. old systems.

The likelihood and magnitude ratings remain unknown.
RP2: As part of our global property strategy, we strive to ensure that we have sufficient back up power for critical facilities so that they can continue to operate effectively in the event of a grid black out. The likelihood and magnitude ratings remain unknown.

RP3:
NVIDIA joined the Electronics Industry Citizenship Coalition (EICC) in 2006. The EICC has an Environment workgroup of which NVIDIA is a member. The workgroup has developed a three-year plan to reduce aggregate water consumption

among EICC member manufacturing facilities. The goal is to analyze data from members and suppliers starting in 2012 and use that information to develop an industry-wide reduction campaign beginning in 2013.
We have requested our key Silicon Chip Operations suppliers to disclose the amount of water used in their facilities, how much water they are treating internally and recycling, and the quality of their treated wastewater prior to discharge from their facilities. We are also encouraging suppliers to share best-known methods with each other for improving treatment and maximizing recycling of process wastewater.
The likelihood and magnitude ratings remain unknown.
RP4: NVIDIA is developing business continuity plans (BCP) for all its facilities. To date these have focused on action that will be taken to protect employees from harm and limit business impacts in the immediate aftermath of an event such as a tropical storm. The plans will be evolved over time as our understanding of risks to our business from climate change and other factors, improves.
RP5: Our current business continuity planning process includes our critical supply chain, and aims to identify and ensure sufficient contingency for risks (including risks such as flooding and tropical storms) at all levels of the supply chain, down to the extraction of base materials used in the manufacture of our products. Through our process we hope to better understand the likelihood and magnitude of the risk.
RP6: This industry-wide type of issue is beyond NVIDIA's management control or influence. The likelihood and magnitude ratings remain unknown.

(iii)
RP1 – As an example of investment in energy efficiency made during 2011; we spent $2.8million upgrading older server equipment with a resulting $1.04 million annual saving.
RP2 – we incur costs associated with purchasing, maintaining and running back up power equipment.
RP3 – We incur annual membership costs and pay for supplier audits associated with the EICC. Our EICC involvement requires management time.
RP4 and 5: In 2011 we invested financial resources to develop BCP plans across our corporate support functions. In 2012 we expanded the scope and invested additional financial resources to further develop the business continuity plans.
RP6 – This industry-wide type of issue is beyond NVIDIA's management control or influence.

5.1e

Please describe your risks that are driven by changes in other climate-related developments

ID	Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact
R01	Other drivers	Ever since we established our environmental programs in 2005, we have recognized that our customers have expectations on us to invest in reducing our environmental impact. In 2005, we started to receive requests from our customers to provide information about our environmental programs and our investment in certifying our Santa Clara campus to the ISO14001 standard was in part to demonstrate our commitment to our customers. Many of our customers are large, high profile companies who have well established environmental programs. They understand that they are only able to reduce their total impact by actively engaging with their suppliers to obtain information on impacts in the supply chain and	Reduced demand for goods/services	Current	Direct	Unknown	Low-medium

ID	Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact
		encourage impact reduction. Some of NVIDIA's customers are members of the CDP Supply chain consortium and have requested that NVIDIA respond to the CDP supply chain module, providing customer specific data. If NVIDIA were not responsive to such requests, this could negatively impact our relations with our customers and could lead to lost business should our customers decide to engage with alternative suppliers.					

5.1f

Please describe (i) the potential financial implications of the risk before taking action; (ii) the methods you are using to manage this risk; (iii) the costs associated with these actions

RO1
(i) Financial implications: If we were not responsive to our customers' requests regarding our greenhouse gas emissions data and reduction plans, we could lose customers and their associated business.

(ii) Management: Ensuring that our customers' expectations are met and where possible exceeded has always been a key driver for our environmental programs and we are committed to being both responsive and proactive in our climate change related dealings with customers. We have responded to the CDP supply chain module for 2 years and will do so again in 2012. Our efforts to set and publicize energy and greenhouse gas reduction goals, and to invest in measures to meet these goals, are in part to demonstrate the seriousness of our commitment to our customers. We understand that providing robust data is important to our customers and during 2011, we implemented the Hara energy and carbon accounting software platform to add more rigor to our data collection. In 2012, we have engaged a third party accounting firm to verify our 2011 greenhouse gas emissions data. Recognizing that our customers are not only interested in our emissions performance but also that of our supply chain, our participation in the EICC and engagement with suppliers on greenhouse gas and water resources helps our customers to meet their own sustainable supply chain goals.
Through all of the action we are currently taking to respond to our customers' requests in the area of climate change we believe the residual risk rating is low and that customers are unlikely to lose customers and their associated business. .
(iii) Costs: During 2011, we incurred costs associated with employee time, consulting fees, memberships and use of the Hara energy and carbon accounting software platform in support of our greenhouse gas program.

Page: 2012-Investor-Risks&Opps-ClimateChangeOpp

6.1

Have you identified any climate change opportunities (current or future) that have the potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply

Opportunities driven by changes in regulation
Opportunities driven by changes in other climate-related developments

6.1a

Please describe your opportunities that are driven by changes in regulation

ID	Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact
OR1	Fuel/energy taxes and regulations	Energy costs are rising globally, a situation which is exacerbated	Increased demand for existing products/services	1-5 years	Indirect (Client)	Unlikely	Low

ID	Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact
		in some regions such as China, India and parts of Europe by taxes intended to reduce fossil fuel use. As customers seek to reduce their operational costs, they are increasingly looking for energy efficient technology solutions. This promotes the market for NVIDIA products that use significantly less energy when compared with alternative solutions.					
OR2	Product efficiency regulations and standards	Future product efficiency standards may serve in part to drive the market for energy efficient technology products. This creates an opportunity for NVIDIA to develop and market products that offer energy efficiency advantages over comparable products. For example, under the EU Eco-design Directive, server and other equipment which incorporate	Increased demand for existing products/services	1-5 years	Indirect (Client)	Unlikely	Low

ID	Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact
		NVIDIA products may be subject to future implementing measures. While NVIDIA products themselves are unlikely to be directly affected by the legislation, customers who place technology equipment on the market may be required to incorporate higher levels of energy efficiency to their product and this in turn could stimulate demand for products such as our highly efficient Graphic Processing Units.					

6.1b

Please describe (i) the potential financial implications of the opportunity; (ii) the methods you are using to manage this opportunity; (iii) the costs associated with these actions

OR1 and OR2

(i) Financial Implications:. Energy taxes and product efficiency standards driving increased demand for NVIDIA's energy efficient products translate into revenue generation opportunities for our company. It may also serve to justify increased R&D investment in the design and development of new, energy-efficient products.
(ii) Management: We engineer our products for energy efficiency. Improving performance per watt is a guiding principle of our design process and a key consideration at each step of product development. The efficiencies of parallel processing mean Graphic Processing Units (GPU) consume less power than other equivalent forms of computation. Whether for mobile systems or high performance computing, customers are choosing GPUs for power conservation without a performance tradeoff.
Our highly efficient products and technology include:
• NVIDIA Tesla solutions for high performance computing: The Tesla 10 series GPUs deliver the equivalent performance of a multicore central processing unit (CPU) at 1/10th the cost and 1/20th the power consumption.
• NVIDIA Compute Unified Device Architecture (CUDA) parallel processing architecture: CUDA is a parallel computing platform and computing model that enables compute-intensive calculations to be done on lower cost, power-efficient GPUs. Learn more about GPU Computing.
• NVIDIA Optimus technology: Optimus maximizes energy conservation and battery life in notebooks by automatically shutting off the GPU when it's not needed.
• NVIDIA Tegra mobile processors: The Tegra 3 quad-core processor utilizes 4PLUS1 technology that employs four CPU cores which power up only as they are needed, as well as a fifth battery-saving core for lower-power tasks. It also has an ultra-low power GPU. The result is extremely fast performance at a fraction of the power consumption of typical CPU-only mobile devices.
GPUs have been designed to be the most energy-efficient processors in the market. On a per-instruction basis, GPUs are dramatically more power efficient than CPUs, which traditionally have handled the bulk of computations that make computers work.
With the recent introduction of NVIDIA's new GPU architecture, called Kepler, our goal was to continue to push the

limits in graphics processing capabilities with extreme energy efficiency. The first GPU based on Kepler is both our highest performing GPU to date, and our most efficient in terms of performance per watt.

To reach these levels of efficiency, NVIDIA engineers applied their experiences from the previous Fermi generation of processors to better optimize the Kepler architecture. Our engineering team wrote a white paper to explain specific differences between the previous and current architectures and the engineering innovation that was called upon to improve energy efficiency.
The year 2011 was the second in which an NVIDIA-powered machine topped the list of greenest supercomputers. The Tsubame 2.0 system at the Tokyo Institute of Technology's Global Scientific Information Center uses NVIDIA Tesla GPUs to accelerate computation. Tsubame 2.0 is more than three times as efficient as the most efficient CPU-only system. Related to its work on this system, the Tokyo Institute of Technology was awarded the coveted Gordon Bell Prize, specifically for "Special Achievement in Scalability and Time-to Solution."
Through our actions we anticipate, over the 5-10 year time horizon, a medium-high positive impact on our business is likely.

(iii) Costs: Our focus on the energy efficiency of our products is an integral part of our ongoing research and development investment. Just one example of this focus is our new Kepler architecture which has been shown to be highly energy efficient when compared to other products with a similar function. Kepler is our highest performing GPU to date, and our most efficient in terms of performance per watt.

6.1e

Please describe the opportunities that are driven by changes in other climate-related developments

ID	Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact
OO1	Reputation	NVIDIA's business success depends on effective relationships with our stakeholders, including customers, employees and investors. We see an opportunity to enhance our relations with these stakeholders through our environmental commitments and leadership. Through our direct engagement with customers and investors, we know that our environmental performance is a point of interest for them. We are also aware of research that shows that employees are placing increased importance on the corporate environmental performance of employers. We are also conscious of the need to demonstrate efforts to reduce our greenhouse gas emissions to the City agencies responsible for overseeing the planning and	Other: Improved stakeholder relations	Current	Direct	Unlikely	Unknown

ID	Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact
		development of our facilities.					

6.1f

Please describe (i) the potential financial implications of the opportunity; (ii) the methods you are using to manage this opportunity; (iii) the costs associated with these actions

OO1

(i) Financial implications: The financial implications of improving our stakeholder relations include i) attracting and retaining customers which could maintain and grow our revenue ii) the potential for favorable ratings of NVIDIA by investment analysts, particularly in the SRI space, with a potential longer term positive impact on our share value iii) attracting and retaining the best employees, which is critical to our ability to design, develop and market innovative products; and iv) ensuring a positive relationship with local City agencies enabling us to continue to develop our facilities.

(ii) Management: All aspects of NVIDIA's environmental programs potentially serve to build our stakeholder relations and our reputation in general. We are proactive in our dealings with customers, investment analysts, employees, and local agencies and communities, and seek to demonstrate that we are both responsive to their interests and committed to environmental leadership in our industry.
In terms of our customers, we are actively supporting one customer to help them in its efforts to investigate the availability of greenhouse gas emissions at all levels of the supply chain. Our wider efforts to gather carbon data from our suppliers through our Electronic Industry Citizenship Coalition (EICC) membership are also directed at helping not only us, but our customers to understand the carbon impact of their supply chain. We respond to the CDP supply chain questionnaire, following customer requests for us to do so.

We are making a significant investment into the development of products which have been shown to be highly energy efficient when compared to other products with a similar function. With the recent introduction of NVIDIA's new Graphic Processing Unit (GPU) architecture, called Kepler, our goal was to push the limits in graphics processing capabilities with extreme energy efficiency. The first GPU based on Kepler is both our highest performing GPU to date, and our most efficient in terms of performance per watt. To reach these levels of efficiency, NVIDIA engineers applied their experiences from the previous Fermi generation of processors to better optimize the Kepler architecture. Our engineering team wrote a white paper to explain specific differences between the previous and current architectures and the engineering innovation that was called upon to improve energy efficiency. Our customers are saving money and energy by using our GPU architecture and that in turn is enhancing our customer relationships.
Our Visualize Green program aims to leverage the creativity of our employees and business partners to drive innovation and resource efficiency in our operations and our products, with the stated goal of leaving a healthier planet for future generations. We aim to make our environmental programs a source of pride for our employees. We post annual environmental goals for our employees, and provide regular internal communications on our water and energy efficiency programs. All new employees receive an orientation to our environmental commitments during new hire training. We act beyond the day to day operations at our facilities, for example by integrating environmental sustainability practices to our annual GPU Technology Conference, which is attended by representatives from many different organizations. The vendors, exhibitors and production crews all receive a 'green manifesto', an agreement to look at every aspect of their participation and make it as energy efficient and environmentally responsible as possible. We also provide tips to conference attendees on how they can reduce their own environmental impact, for example through the way they travel to and from the conference.

To improve our standing with local stakeholders, including City agencies, in Santa Clara, California, where our headquarters is located, we have been an active member of the Bay Area Green Business program since 2007.
We believe that proactive communication and reporting of our environmental programs will further build our stakeholder relations. We have responded to the CDP Investor survey every year since 2007, making our responses public, and we publish an annual global citizenship report that details our environmental programs. We also post case studies about our energy efficient products on our corporate website. We use our global citizenship report website to ask stakeholders how are doing and what we could do better, in an effort to ensure that we effectively integrate their interests as we further develop our program.

Our efforts have been recognized by third parties. We came tenth out of 500 companies (and third in our industry sector) in the 2011 Newsweek Green Rankings and we won the 2012 Acterra Business Award for Sustainability in the large company category. This recognition should serve to further build our reputation for environmental leadership.

Through our actions, we anticipate that a positive impact on our reputation is likely. We are unable to quantify the positive impact to our business due to the intangible nature of the opportunity, and the magnitude rating remains unknown.

(iii) Cost: During 2011, we incurred costs associated with employee time, consulting fees, memberships and use of the Hara energy and carbon accounting software platform in support of our greenhouse gas program.

6.1h

Please explain why you do not consider your company to be exposed to opportunities driven by physical climate parameters that have the potential to generate a substantive change in your business operations, revenue or expenditure

While our business may see some opportunities from physical climate parameters, we do not believe these to be direct or significant enough to drive substantive change in our operations, revenue or expenditure over the next 10 years. We have considered opportunities related to our operations, our supply chain and our products.
Like many other technology companies, NVIDIA has facilities and suppliers located in regions, such as south east Asia, that are projected to experience physical climate changes such as extreme heat, drought and tropical cyclones. If we are able to build resiliency into our operations and supply chain more effectively than other companies in our sector, we may have a competitive advantage by being less exposed to climate related events that could disrupt operations and production output. However, for the foreseeable future, our focus is on building resiliency in order to limit and manage risk to our business.
Organizations based in regions that experience higher average temperatures and/or higher temperature extremes, are likely to experience greater cooling demands, therefore using more energy, with associated increases in operational costs. As organizations seek to limit the impact of higher temperatures driving up operational costs, this in turn may increase demand for energy efficient products, such as NVIDIA's highly efficient graphics processing unit (GPU) technology. We do not consider this opportunity as tangible or significant over the next 10 years as other factors such as new regulation and taxes that are likely to drive demand for our energy efficient products.

Module: GHG Emissions Accounting, Energy and Fuel Use, and Trading [Investor]

Page: 7. Emissions Methodology

7.1

Please provide your base year and base year emissions (Scopes 1 and 2)

Base year	Scope 1 Base year emissions (metric tonnes CO2e)	Scope 2 Base year emissions (metric tonnes CO2e)
Mon 01 Jan 2007 - Mon 31 Dec 2007	1459	16345

7.2

Please give the name of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions

Please select the published methodologies that you use
US EPA Climate Leaders: Direct HFC and PFC Emissions from Manufacturing Refrigeration and Air Conditioning Equipment1
US EPA Climate Leaders: Indirect Emissions from Purchases/ Sales of Electricity and Steam1
US EPA Climate Leaders: Direct Emissions from Stationary Combustion1

7.2a

If you have selected "Other", please provide details below

7.3

Please give the source for the global warming potentials you have used

Gas	Reference
CO2	IPCC Second Assessment Report (SAR - 100 year)
CH4	IPCC Second Assessment Report (SAR - 100 year)
N2O	IPCC Second Assessment Report (SAR - 100 year)

7.4

Please give the emissions factors you have applied and their origin; alternatively, please attach an Excel spreadsheet with this data

Fuel/Material/Energy	Emission Factor	Unit	Reference
			Emission Factors Attached

Further Information

Emission Factors Attached

Attachments

https://www.cdproject.net/Sites/2012/04/13604/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/7.EmissionsMethodology/DefaultEmissionFactorExport (CDP 2011).xlsx
https://www.cdproject.net/Sites/2012/04/13604/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/7.EmissionsMethodology/SupplierEmissionFactorExport(CDP 2011).xlsx

Page: 8. Emissions Data - (1 Jan 2011 - 31 Dec 2011)

8.1
Please select the boundary you are using for your Scope 1 and 2 greenhouse gas inventory

Operational control

8.2a
Please provide your gross global Scope 1 emissions figure in metric tonnes CO2e

2166.72

8.3a
Please provide your gross global Scope 2 emissions figure in metric tonnes CO2e

43893

8.4
Are there are any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions which are not included in your disclosure?

Yes

8.4a
Please complete the table

Source	Scope	Explain why the source is excluded
Lab Chemicals	Scope 1	Chemicals from our laboratories are not material and are not included in reporting.
Refrigerants	Scope 1	Other process-related emissions related to fugitive emissions from cooling devices have been excluded. NVIDIA is in the process of determining reliable monitoring procedures for this emissions source.

8.5
Please estimate the level of uncertainty of the total gross global Scope 1 and Scope 2 figures that you have supplied and specify the sources of uncertainty in your data gathering, handling, and calculations

Scope 1 emissions: Uncertainty range	Scope 1 emissions: Main sources of uncertainty	Scope 1 emissions: Please expand on the uncertainty in your data	Scope 2 emissions: Uncertainty range	Scope 2 emissions: Main sources of uncertainty	Scope 2 emissions: Please expand on the uncertainty in your data
Less than or equal to 2%	Data Gaps Assumptions Extrapolation	If no primary energy use is available, energy use is estimated using the Commercial Buildings Energy Consumption Survey (CBECS) based on the square	More than 2% but less than or equal to 5%	Data Gaps Assumptions Extrapolation	If no primary energy use is available, energy use is estimated using the Commercial Buildings Energy Consumption Survey (CBECS) based on the square

Scope 1 emissions: Uncertainty range	Scope 1 emissions: Main sources of uncertainty	Scope 1 emissions: Please expand on the uncertainty in your data	Scope 2 emissions: Uncertainty range	Scope 2 emissions: Main sources of uncertainty	Scope 2 emissions: Please expand on the uncertainty in your data
		footage listed on the lease, climate zone and facility type. If partial energy use or cost data is available, missing data is estimated based on the average of existing partial data. GHG emissions calculation is subject to inherent uncertainty because of such things as emissions factors that are used in mathematical models to calculate emissions and the inability of those models, due to incomplete scientific knowledge and other factors, to precisely characterize under all circumstances the relationship between various inputs and the resultant emissions. Environmental and electricity use data used in GHG emissions calculations are subject to inherent limitations, given the nature and the methods used for determining such data. Finally, the selection of different but acceptable measurement techniques may result in materially different measurements.			footage listed on the lease, climate zone and facility type. If partial energy use or cost data is available, missing data is estimated based on the average of existing partial data. GHG emissions calculation is subject to inherent uncertainty because of such things as emissions factors that are used in mathematical models to calculate emissions and the inability of those models, due to incomplete scientific knowledge and other factors, to precisely characterize under all circumstances the relationship between various inputs and the resultant emissions. Environmental and electricity use data used in GHG emissions calculations are subject to inherent limitations, given the nature and the methods used for determining such data. Finally, the selection of different but acceptable measurement techniques may result in materially different measurements.

8.6

Please indicate the verification/assurance status that applies to your Scope 1 emissions

Verification or assurance complete

8.6a

Please indicate the proportion of your Scope 1 emissions that are verified/assured

More than 90% but less than or equal to 100%

8.6b

Please provide further details of the verification/assurance undertaken, and attach the relevant statements

Level of verification or assurance	Relevant verification standard	Relevant statement attached
Limited assurance	AT101	See: NVIDIA Report of Independent Accountants.pdf and NVIDIA Assertion CDP.pdf (attached in further information).

Level of verification or assurance	Relevant verification standard	Relevant statement attached

8.7

Please indicate the verification/assurance status that applies to your Scope 2 emissions

Verification or assurance complete

8.7a

Please indicate the proportion of your Scope 2 emissions that are verified/assured

More than 90% but less than or equal to 100%

8.7b

Please provide further details of the verification/assurance undertaken, and attach the relevant statements

Level of verification or assurance	Relevant verification standard	Relevant statement attached
Limited assurance	AT101	See: NVIDIA Report of Independent Accountants.pdf and NVIDIA Assertion CDP.pdf (attached in further information).

8.8

Are carbon dioxide emissions from the combustion of biologically sequestered carbon (i.e. carbon dioxide emissions from burning biomass/biofuels) relevant to your company?

No

Further Information

NVIDIA's Report of Independent Accountants and NVIDIA Assertion_CDP Attached.

Attachments

https://www.cdproject.net/Sites/2012/04/13604/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/8.EmissionsData(1Jan2011-31Dec2011)/NVIDIA Assertion_CDP.pdf
https://www.cdproject.net/Sites/2012/04/13604/Investor CDP 2012/Shared Documents/Attachments/InvestorCDP2012/8.EmissionsData(1Jan2011-31Dec2011)/Nvidia Report of Independent Accountants.pdf

Page: 9. Scope 1 Emissions Breakdown - (1 Jan 2011 - 31 Dec 2011)

9.1

Do you have Scope 1 emissions sources in more than one country or region (if covered by emissions regulation at a regional level)?

Yes

9.1a

Please complete the table below

Country	Scope 1 metric tonnes CO2e
United States of America	2048
India	87
United Kingdom	32

9.2

Please indicate which other Scope 1 emissions breakdowns you are able to provide (tick all that apply)

By GHG type
By activity

9.2c
Please break down your total gross global Scope 1 emissions by GHG type

GHG type	Scope 1 metric tonnes CO2e
CH4	4.04
N2O	11.87
CO2	2151

9.2d
Please break down your total gross global Scope 1 emissions by activity

Activity	Scope 1 metric tonnes CO2e
Stationary Natural Gas	2070
Stationary Distillate Fuel Oil	96

Page: 10. Scope 2 Emissions Breakdown - (1 Jan 2011 - 31 Dec 2011)

10.1
Do you have Scope 2 emissions sources in more than one country or region (if covered by emissions regulation at a regional level)?

Yes

10.1a
Please complete the table below

Country	Scope 2 metric tonnes CO2e
United States of America	24356
India	12674
China	2734
Taiwan	1595
Hong Kong	1354
United Kingdom	487.8
Germany	419.7
Russia	98.05
South Korea	26.10
Japan	43.98
France	40.91
Singapore	34.58
Finland	25.93
Switzerland	1.96

10.2
Please indicate which other Scope 2 emissions breakdowns you are able to provide (tick all that apply)

By activity

10.2c
Please break down your total gross global Scope 2 emissions by activity

Activity	Scope 2 metric tonnes CO2e
Electricity	43893

Page: 11. Emissions Scope 2 Contractual

11.1

Do you consider that the grid average factors used to report Scope 2 emissions in Question 8.3 reflect the contractual arrangements you have with electricity suppliers?

Yes

11.2

Has your organization retired any certificates, e.g. Renewable Energy Certificates, associated with zero or low carbon electricity within the reporting year or has this been done on your behalf?

No

Page: 12. Energy

12.1

What percentage of your total operational spend in the reporting year was on energy?

More than 0% but less than or equal to 5%

12.2

Please state how much fuel, electricity, heat, steam, and cooling in MWh your organization has consumed during the reporting year

Energy type	MWh
Fuel	11731.3
Electricity	100409
Heat	0
Steam	0
Cooling	0

12.3

Please complete the table by breaking down the total "Fuel" figure entered above by fuel type

Fuels	MWh
Natural gas	11347
Distillate fuel oil No 2	384.3

Page: 13. Emissions Performance

13.1

How do your absolute emissions (Scope 1 and 2 combined) for the reporting year compare to the previous year?

Increased

13.1a

Please complete the table

Reason	Emissions value (percentage)	Direction of change	Comment
Change in boundary		Increase	The reporting boundary has increased from US to global.

13.2

Please describe your gross combined Scope 1 and 2 emissions for the reporting year in metric tonnes CO2e per unit currency total revenue

Intensity figure	Metric numerator	Metric denominator	% change from previous year	Direction of change from previous year	Reason for Change
0.011	metric tonnes CO2e	unit total revenue		N/A	We are unable to determine the percent change from the previous year as the reporting boundary has increased from US to global.

13.3

Please describe your gross combined Scope 1 and 2 emissions for the reporting year in metric tonnes CO2e per full time equivalent (FTE) employee

Intensity figure	Metric numerator	Metric denominator	% change from previous year	Direction of change from previous year	Reason for Change
0.001	metric tonnes CO2e	FTE Employee		N/A	We are unable to determine the percent change from the previous year as the reporting boundary has increased from US to global.

13.4

Please provide an additional intensity (normalized) metric that is appropriate to your business operations

Intensity figure	Metric numerator	Metric denominator	% change from previous year	Direction of change from previous year	Reason for Change
0.008	metric tonnes CO2e	square foot		N/A	We are unable to determine the percent change from the previous year as the reporting boundary has increased from US to global.

Page: 14. Emissions Trading

14.1

Do you participate in any emission trading schemes?

No, and we do not currently anticipate doing so in the next two years

14.2

Has your company originated any project-based carbon credits or purchased any within the reporting period?

No

Page: 2012-Investor-Scope 3 Emissions

15.1

Please provide data on sources of Scope 3 emissions that are relevant to your organization

Sources of Scope 3 emissions	metric tonnes CO2e	Methodology	If you cannot provide a figure for emissions, please describe them
Business travel	5174	Track air miles by flight distance - Long Flights (>1600 km/1000 mi)	EPA Climate Leaders Protocol 2007-2009.
Business travel	678.3		

Sources of Scope 3 emissions	metric tonnes CO2e	Methodology	If you cannot provide a figure for emissions, please describe them
		Track air miles by flight distance - Medium Flights (<1600 km/1000 mi)	EPA Climate Leaders Protocol 2007-2009.
Business travel	139.4	Track air miles by flight distance - Short flights (<500 km/313 mi)	EPA Climate Leaders Protocol 2007-2009.

15.2

Please indicate the verification/assurance status that applies to your Scope 3 emissions

Not verified or assured

15.3

Are you able to compare your Scope 3 emissions for the reporting year with those for the previous year for any sources?

Yes

15.3a

Please complete the table

Sources of Scope 3 emissions	Reason for change	Emissions value (percentage)	Direction of change	Comment
Business travel	Other: Travel restrictions in 2010	49	Increase	Increase in business travel in 2011

Module: 2012-Investor-ICT

Page: 2012-Investor-ICT-ICT1.DataCenterActivities

ICT0.1a

Please identify whether "data centers" comprise a significant component of your business within your reporting boundary

Yes

ICT1.1

Please provide a description of the parts of your business that fall under "data centers"

We define data centers as a facility used to house computer systems and associated components, and storage systems. It generally includes redundant or backup power supplies, redundant data communications connections, environmental controls (e.g., air conditioning, fire suppression) and security devices. We four data centers located in California, India and Hong Kong.

Three of the four data centers are co-located. The GHG emissions are included in our Scope 2 emissions.

We track Scope 1 and Scope 2 emissions specifically for our data centers but decline to report this data for CDP.

ICT1.2

Please provide your absolute Scope 1 and 2 emissions for the data centers component of your business

Business Activity	Scope 1 emissions (metric tonnes CO2e)	Scope 2 emissions (metric tonnes CO2e)
Data centers		

ICT1.3

Please provide the annual electricity consumption of your data center(s) in MWh

ICT1.4

Please provide a Power Usage Effectiveness (PUE) value for your data center(s). You can provide this information as (a) an average, (b) a range or (c) by individual data center – please tick which you wish to provide (tick all that apply)

Average

ICT1.4a

Please provide your average PUE across your data centers

Average PUE	Comment
1.59	Our current US PUE is 1.59 as of December 31, 2011.

ICT1.5

Please provide details of how you have calculated your PUE value

Our PUE calculations is the ratio of total amount of power used by a computer data center facility to the power delivered to computing equipment.

ICT1.6

Please identify the measures you have undertaken in the reporting year to increase the energy efficiency of your data center(s)

Energy efficiency measure	Comment
Server Virtualization	Hong Kong and India have the server virtualization infrastructure complete. We are now migrating physical systems to virtualization machines at these locations.
Server Consolidation	During 2011, we upgraded 1,958 of the oldest, slowest data center server systems to 433 modern systems.
Power Management Efficiencies	We evaluate, and optimize the energy consumption of the IT equipment before we purchase it for our data centers.

ICT1.7

Please describe the measures you are planning to implement to increase the energy efficiency of your data center(s)

Energy efficiency measure	Comment
Cooling Efficiencies	We have embarked on a data center airflow optimization project. We are partnering with Silicon Valley Power in a study to reduce annual energy use by 1.7 – 2.0M kWh in our legacy Santa Clara data center. We are also considering funded a study to examine the use of adiabatic cooling in one of our data centers. This would eliminate the need for mechanical cooling for over 8,000 hours per year.

ICT1.8

Do you measure the utilization rate of your data center(s)?

Yes

ICT1.8a

What methodology do you use to calculate this?

NVIDIA's Data Center Operations team uses a combination of methods to measure the utilization of our data centers. Twice yearly, Facilities provides a reading on overall power utilization for our data centers, and we use the results as the basis for evaluating cooling adjustments. We also add any new cabinets to the computer drawings of the data centers. Periodically we review computer utilization metrics for compute farm and storage.

ICT1.9

Do you provide carbon emissions data to your clients?

No

ICT1.10

Do you participate in any other data center efficiency schemes (e.g. The Green Grid, EU Code of Conduct, etc)?

No

ICT1.11

Please describe any efforts you have made to incorporate renewable energy into the electricity supply to your data center(s) or to re-use waste heat

We have evaluated solar and fuel cell technology over the past few years, but have been unable to justify the cost from a Return on Investment prospective.

We have not evaluated reusing waste heat in our data center operations.

Page: 2012-Investor-ICT-ICT2.ProvisionNetworkConnect

ICT0.1b

Please identify whether "provision of network/connectivity services" comprises a significant component of your business within your reporting boundary

No

Page: 2012-Investor-ICT-ICT3.ManufactureOfHardware

ICT0.1c

Please identify whether "manufacture of hardware" comprise a significant component of your business within your reporting boundary

No

Page: 2012-Investor-ICT-ICT4.ManufactureOfSoftware

ICT0.1d

Please identify whether "manufacture of software" comprise a significant component of your business within your reporting boundary

No

Page: 2012-Investor-ICT-ICT5.BusinessServices

ICT0.1e

Please identify whether "business services (office based activities)" comprise a significant component of your business within your reporting boundary

Yes

ICT5.1

Please provide a description of the parts of your business that fall under "business services (office based activities)"

We define office based activities as the location where NVIDIA Corporation owns or leases its operations, excluding data centers. We apply the Control Approach to reporting GHG emissions.

Under the Control Approach, NVIDIA applies the Operational Control Criterion to determine facilities that are included in our organizational boundary. As per the EPA Climate Leaders guidance, we assume operational control of facilities we lease if we have the ability to track energy use and/or emissions.

We track Scope 1 and Scope 2 emissions specifically for our business services but decline to report this data for CDP.

ICT5.2

Please provide your absolute Scope 1 and 2 emissions for the business services (office based activities) component of your business

Business services	Scope 1 emissions (metric tonnes CO2e)	Scope 2 emissions (metric tonnes CO2e)
Business services (office based activities)		

ICT5.3

Please describe your gross combined Scope 1 and 2 emissions for the business services (office based activities) component of your business in metric tonnes per square meter

Intensity figure	Metric numerator	Metric denominator	% change from previous year	Direction of change from previous year	Reason for change
	metric tonnes CO2e	Square meter			

ICT5.4

Please describe your electricity use for the provision of business services (office based activities) component of your business in MWh per square meter

Intensity figure	Metric numerator	Metric denominator	% change from previous year	Direction of change from previous year	Reason for change
	MWh	Square meter			

Page: 2012-Investor-ICT-ICT6.OtherActivities

ICT0.1f

Please identify whether "other activities" comprise a significant component of your business within your reporting boundary

No

Module: Sign Off

Page: Sign Off

Please enter the name of the individual that has signed off (approved) the response and their job title

Gloria Miller, Sr Manager, Global Health, Safety and the Environment.