CABLE & SATELLITE
Research Brief

SASB’s Industry Brief provides evidence for the material sustainability issues in the Cable & Satellite industry. The brief opens with a summary of the industry, including relevant legislative and regulatory trends and sustainability risks and opportunities. Following this, evidence for each material sustainability issue (in the categories of Environment, Social Capital, Human Capital, Business Model and Innovation, and Leadership and Governance) is presented. SASB’s Industry Brief can be used to understand the data underlying SASB Sustainability Accounting Standards. For accounting metrics and disclosure guidance, please see SASB’s Sustainability Accounting Standards. For information about the legal basis for SASB and SASB’s standards development process, please see the Conceptual Framework.

SASB identifies the minimum set of sustainability issues likely to be material for companies within a given industry. However, the final determination of materiality is the onus of the company.

Related Documents

- [Cable & Satellite Sustainability Accounting Standards](#)
- [Industry Working Group Participants](#)
- [SASB Conceptual Framework](#)

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The Cable & Satellite industry, which initially brought television programs to households across the U.S., is now the foundation of modern communications and information sharing. As more and more content is consumed and transmitted over the Internet rather than via traditional cable and satellite networks, the industry is focusing on gaining Internet service subscribers to make up for the stagnation in video service subscriptions. The growth of Internet content has strengthened the industry’s position as a provider of key infrastructure, including telephone and broadband Internet service.

Communication and information services have helped the public and private sectors increase efficiencies and drive innovation through lower transaction costs, and increased speed and variety of communication mediums. The industry faces several sustainability challenges and opportunities relating both to physical infrastructure and transmission of user data. As companies expand their Internet service segment, they have to handle more data and manage the effects of increasing regulatory scrutiny and consumer concern about data privacy and security. The growing influence of cable and satellite companies over modern communication and info sharing is fueling the debate over the best ways to ensure open Internet access.

Management (or mismanagement) of material sustainability issues, therefore, has the potential to affect company valuation through impacts on profits, assets, liabilities, and cost of capital.

Investors would obtain a more holistic and comparable view of performance with cable and satellite companies reporting metrics on the material sustainability risks and opportunities that could affect value in the near- and long-term in their regulatory filings. This would include both positive and negative externalities, and the non-financial forms of capital that the industry relies on for value creation.

### SUSTAINABILITY DISCLOSURE TOPICS

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Specifically, performance on the following sustainability issues will drive competitiveness within the Cable & Satellite industry:

- Managing the environmental footprint of companies’ large and expanding network infrastructure and fleets;
- Ensuring the privacy of customer data through effective data use policies, and managing government relations and business strategy on issues related to data privacy;
- Managing the increasing risk of cyber attacks, particularly for cloud-based services and business or government customers in sensitive sectors;
- Managing risks to networks and operations that could potentially create systemic or social disruption; and
- Balancing the need to expand revenues in the face of increasing competition, while preventing engagement in anti-competitive practices.

INDUSTRY SUMMARY

The Cable & Satellite industry is comprised of companies that provide various subscription-based cable and satellite services, including video, Internet, and phone services, throughout the United States. This industry excludes companies in the Telecommunications industry, such as AT&T and Verizon, which SASB covers in its standards for the Technology & Communications sector.

Cable providers distribute television programming from cable networks to subscribers. They typically provide consumers with video services, high-speed Internet, and telephone services over the Internet (VoIP). These services are traditionally bundled into packages that are billed as a unit, providing subscribers with easier billing. Satellite companies distribute TV programming via broadcasting satellites orbiting the earth or ground stations. Both satellite and cable companies compete in the same market for delivering television content to households, the industry’s main market segment.

The global revenue for companies listed on global exchanges and traded over-the-counter from the Cable & Satellite industry is $232 billion. In the U.S., the majority of cable provider revenue comes from video services (65 percent), followed by Internet (17 percent), VoIP Services (6.2 percent), business services like the capacity for multiple VoIP lines (5.8 percent), and other services (6 percent). In contrast, nearly all of U.S. satellite provider revenue (97.7 percent) is generated from video services including basic programming, video on demand, HD channels, and DVR service. Public

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1 Industry composition is based on the mapping of the Sustainable Industry Classification System (SICS) to the Bloomberg Industry Classification System (BICS). A list of representative companies appears in Appendix I.

2 Companies in the Telecommunications industry provide Internet and voice services in addition to wireless services.
companies including Comcast, Time Warner Cable (TWC), DIRECTV, Dish Network, Charter Communication, and Cablevision Systems all contribute significantly to overall revenue. Companies traded on U.S. exchanges generate most of their revenue from the domestic market, with the exception of a few companies including Liberty Global and Charter.

Programming—purchase of content—is the highest operating expense for industry players. For example, Charter disclosed programming costs of $2.1 billion, or 40 percent of operating costs and expenses for fiscal year (FY) 2013. Depreciation costs are also large due to significant infrastructure needs. Property and equipment constituted 30 percent of DIRECTV’s total assets and 46 percent of Charter’s total assets. U.S. listed companies have a median net income margin of 7.28 percent.

The Cable & Satellite industry is highly concentrated. The top four providers—Comcast, DIRECTV, Dish Network, and TWC—account for 78.2 percent of video subscribers and 56.6 percent of industry revenue. In the U.S., the satellite segment experiences even higher levels of concentration with two major players, DIRECTV and Dish Network, controlling more than 96.4 percent of the TV satellite market. The high degrees of concentration are due to several barriers to entry, including substantial up-front costs of establishing a network infrastructure, building and launching satellites, and regulation of and access to various licenses and authorizations. Without a large established subscriber base, it would be challenging for new entrants to be profitable after overcoming initial startup costs and high fixed costs.

Although the Cable & Satellite industry has high barriers to entry, its TV services segment is facing increasing external competition as subscribers obtain content via new sources. Streaming content through mobile devices like phones and tablets is becoming an increasing threat to the industry as customers cut the cord on traditional television. New Internet streaming services like Netflix, Hulu, Amazon, and Google are all now striving to capture market share in Internet TV, thereby adding alternatives to traditional TV providers. In fact, U.S. households are sourcing their programming and information from non-traditional TV devices: 67 percent of content is watched on computers, smartphones, and tablets, and 48 percent is watched through subscription services like Netflix and Hulu.

As a result, TV providers have seen an increase in customer churn rates. Between 2008 and 2013, the number of TV subscriptions has decreased by 0.3 percent annually, and is expected to decrease further over the next five years. Conversely, the number of broadband Internet connections increased 16.4 percent annually during the same period. Broadband growth mitigates the loss of revenue for cable providers as subscribers substitute TV services for broadband Internet connections.
In January 2014, the DC District Court of Appeals struck down certain clauses of ‘net neutrality,’ giving cable providers additional leverage to combat these new Internet-streaming threats (discussed further in the Regulatory Trends section). In contrast, satellite companies have limited options to generate revenue from new or growing segments, as nearly 100 percent of their revenues comes from TV services.\(^{24}\)

As new technologies and methods constantly shape and redefine the way consumers access their favorite television programs, Cable and satellite companies may suffer if they cannot adapt. To deal with these external threats, some companies have engaged in mergers and acquisitions. Providers are looking to vertically integrate with network content producers to secure a competitive pricing advantage. Currently four out of the top six cable providers hold an ownership interest in network content providers.\(^{25}\) For example, in 2011 Comcast acquired 51 percent of General Electric’s share of NBC Universal; it acquired the rest in 2013.\(^{26}\)

Competitors also engage in mergers or acquisitions of peers as they search for new sources of value. Cable company Charter Communications acquired Optimum West in 2013, adding more than 360,000 cable customers to Charter’s existing 5.2 million-subscriber base.\(^{27}\) Charter recently attempted to acquire TWC in a deal worth $37.3 billion, but TWC rejected the offer for being inadequate.\(^{28}\) After the failed attempt by Charter, Comcast offered $45.2 billion, much closer to TWC’s asking price.\(^{29}\) The deal is current being evaluated by the Federal Trade Commission.

These mergers and acquisitions are an attempt to stay competitive in a quickly evolving market. The companies that vertically integrate with networks can reduce licensing fees and gain higher margins, as programming accounts for the majority of operating expenses for cable and satellite companies.\(^{30, 31}\)

Despite growing demand for programming and an increase in consumer disposable income, all service providers expect a continued decline in paid-TV subscribers. Satellite providers are expected to provide more niche content, such as multicultural and sports programming, to increase their appeal. Furthermore, both satellite and cable providers will look to original content to generate revenue through subscriptions and increased advertising.\(^{32}\) In the future, wire and cable telecommunications providers are expected to compete through premium services accessed online. These services might include cloud-based DVR services, like the ability to access programming from outside the home or bundled services that provide remote control over home security or energy usage. By partnering with mobile telecommunications for value-added services, cable companies have the potential to increase revenue and reverse customer turnover in the industry.\(^{33, 34}\)
LEGISLATIVE AND REGULATORY TRENDS IN THE CABLE & SATELLITE INDUSTRY

The Cable & Satellite industry is highly regulated, with extensive oversight of networks, providers, and their intermediaries to protect competition, intellectual property, and consumers. Laws apply differently to the various service offerings of the industry, adding to the complexity of the legal framework. The following section provides a brief summary of key regulations and legislative efforts related to this industry.\footnote{This section does not purport to contain a comprehensive review of all regulations related to this industry, but is intended to highlight some ways in which regulatory trends are impacting the industry.}

The Federal Communications Commission (FCC) regulates communications by radio, television, wire, satellite and cable, and is the primary authority for communications law, regulation, and technological innovation.\footnote{It was formed under one of the earliest communications laws, the Communications Act of 1934, which was amended when Congress adopted the Cable Communications Policy Act of 1984 (CCPA). Over the following decades, the various communications acts have attempted to increase competition among providers of video, voice, and, eventually, Internet services. The CCPA established policies that promoted competition in the industry, addressing ownership, channel use, franchising, subscriber privacy, service rates, authorization of services, and equal employment opportunity, among other topics. Though the industry’s total subscriptions and capacity grew as a result of the new legislation, competition among cable service providers did not increase, resulting in higher service rates for many. The law had failed to effectively promote competition, so Congress went further, enacting the 1992 Cable Television Consumer Protection and Competition Act, which promoted “availability of diverse views and information.” The Telecommunications Act of 1996 was created to provide a framework for competition and further remove regulatory barriers to entry, promoting the development of technology in the industry. To facilitate the entrance of new players, the 1996 Act mandated interconnection of telecommunications networks, unbundling, non-discrimination, and cost-based pricing of leased parts of the network.} It was formed under one of the earliest communications laws, the Communications Act of 1934, which was amended when Congress adopted the Cable Communications Policy Act of 1984 (CCPA). Over the following decades, the various communications acts have attempted to increase competition among providers of video, voice, and, eventually, Internet services. The CCPA established policies that promoted competition in the industry, addressing ownership, channel use, franchising, subscriber privacy, service rates, authorization of services, and equal employment opportunity, among other topics. Though the industry’s total subscriptions and capacity grew as a result of the new legislation, competition among cable service providers did not increase, resulting in higher service rates for many. The law had failed to effectively promote competition, so Congress went further, enacting the 1992 Cable Television Consumer Protection and Competition Act, which promoted “availability of diverse views and information.” The Telecommunications Act of 1996 was created to provide a framework for competition and further remove regulatory barriers to entry, promoting the development of technology in the industry. To facilitate the entrance of new players, the 1996 Act mandated interconnection of telecommunications networks, unbundling, non-discrimination, and cost-based pricing of leased parts of the network.\footnote{Telecommunication services are subject to traditional common carriage regulation under Title II of the Communications Act. A common carrier is defined as “(a)ny person engaged in rendering communications service for hire to the public.” A common carrier cannot discriminate within its area of service, except in specific circumstances where there is potential for damage, unreasonable level of risk, or it is beyond a reasonable capacity. Common carriage, as applied to telecommunications, promotes interconnection, enhances

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competition, and assists in the provision of universal service. Unlike legacy telephone services, cable broadband services like Internet and voice are not classified as “telecommunication services,” whereby the FCC has authority to regulate customer rates and prohibit or restrict arrangements between internet service providers and content and network providers. The FCC released the Open Internet Order in 2010, establishing transparency rules and promoting an open market in broadband Internet connections while allowing for some degree of management of congestion, traffic, and security. However, in January 2014 the U.S. Court of Appeals vacated the parts of the open Internet access, or net neutrality, rule on prohibition of blocking and unreasonable discrimination. The decision now allows Internet service providers to differentiate transmission speed based on the type of content. Companies have started to enter into agreements with content providers like Netflix to provide fast connection to its content.

On May 15, 2014, the FCC launched a rulemaking process and sought public comments on protecting and promoting an open Internet. One way to ensure open Internet access would be to classify cable broadband as a telecommunication service under Title II. The FCC is currently in the rule making process to ensure that broadband companies, which provide the only access consumers and business have to the Internet, are non-discriminatory. In addition, in November 2011, the FCC initiated a rulemaking on Internet provider interconnection issues that may have an impact on backend interconnection arrangements with other network operators.

The concept of universal service, originating in the context of the regulation of natural monopolies, is a central tenet of the Telecommunications Act of 1996, and it is evolving as technology evolves. The Act and subsequent actions by the FCC emphasize access to new communications technology such as high-speed Internet for all consumers at just, reasonable, and affordable rates. Universal service principles within the Act are specifically focused on rural and insular areas and low-income consumers. To implement provisions of the 1996 Act, the FCC uses contributions based on end-user revenues from telecommunication providers, including wireline, wireless, and VoIP providers like cable companies that provide voice service.

In 1999, Congress passed the Satellite Home Viewer Improvement Act, which introduced satellite network providers to the market. Under this law, the FCC issues satellite companies licenses for 10- and 15-year terms. As satellites are not confined to one nation, international standards have been put in place by the International Telecommunication Union UN Convention on the Registration of Objects Launched into Outer Space and the Open-Market Reorganization for the Betterment of International Telecommunications (ORBIT) Act.
of 2000. Like the communications acts in the U.S., ORBIT promotes competition in the global satellite services market through licensing of orbital locations for satellites.48

Programming is a central offering of the industry, and regulations encourage competition to ensure end-users have a variety of choices for their television services.49 Programming is usually protected under intellectual property (IP) law, including copyright law. The 1976 Copyright Act and the Berne Convention Implementation Act protect authors of material and grant exclusive rights to the use and distribution of the work for a limited or unlimited period of time. The Berne Convention was an international agreement first established in 1886, requiring its signatories to recognize the copyright of works of authors from other signatory countries.50 For example, Sirius XM Radio, Inc. states in its regulatory filings that it must enter into an agreement with copyright holders of musical works and copyright holders of sound recordings. Performing rights organizations represent these copyright holders. Large record companies negotiate fees and licenses with copyright users, and collect royalties and distribute them to the rights holders.51

In addition, certain content providers can require satellite and cable companies to acquire consent for the transmission of their content. Content providers are increasingly demanding inflated payments for retransmission consent, increasing programming costs or sometimes forcing networks to stop transmitting the station’s content, potentially leading to a loss of customers in affected markets.52 For example, TWC lost more than 300,000 subscribers largely due to a dispute between the company and CBS over retransmission costs. The month long dispute left CBS channels blacked out, causing many customers to end their cable subscriptions.53

In 2013, Senator John McCain proposed the Television Consumer Freedom Act to encourage the “unbundling” of cable TV packages. The proposed legislation addresses growing cable bills and the problem of consumers paying for cable channels that they do not watch. It allows customers to pick and choose which television channels they are willing to pay for.54 Recently, many large companies in the industry were defendants in a class action lawsuit that alleged violations of antitrust laws, arguing that cable and satellite companies conspired to provide customers with only bundled packages and not “a la carte” options. This case was dismissed by the District Court for the Central District of California and was denied review by the Supreme Court.55 Although legislation and litigation have stalled, the industry continues to face external competition, for example from Internet media companies, to deliver value commensurate price.

As operators in the industry maintain sensitive personal information, privacy has been the focus of a number of existing and proposed laws.56 Several laws related to data privacy,
cyber security, and government access to user data affect the industry. The FCC regulates the collection of information by Cable and satellite companies. The FCC determines how companies can use such information, known as Customer Proprietary Network Information (CPNI), and what actions they need to take to protect it, including specific requirements for customers opting into or out of companies’ use of CPNI.57

The Federal Trade Commission monitors compliance with privacy laws. Cyber security regulations have been rising in the United States, as hackers get more sophisticated in their attacks and attacks become more frequent and high profile. The Data Security and Breach Notification Act of 2013, introduced to the Senate in June 2013, would require companies that collect and store personal information to protect that information and provide individuals with a notice in the case of security breach.58

Furthermore, on February 13th 2013, President Obama issued an executive order that aims to establish a framework under which the private sector can work with the government to share information about cyber-attacks and threats that might undermine the broader population, the economy, or other nations.59, 60

Finally, like any business with a physical footprint, companies in the industry are subject to federal, state, local, and international regulations on air and water quality and waste management. The increasing concern over greenhouse gases driving climate change has also spurred new policies around carbon emissions and fossil fuel energy use. For example, a California cap-and-trade law that took effect on January 1, 2013 limits companies’ carbon emissions. Although there is no cap-and-trade system or carbon pricing at the federal level, the President proposed new legislation to limit greenhouse gas emissions from new power plants in 2012. Laws such as these place pressure on energy-intensive activities like operating data centers by making them more costly for cable and satellite companies to operate.61, 62

SUSTAINABILITY-RELATED RISKS AND OPPORTUNITIES

Industry drivers and recent regulations suggest that traditional value drivers will continue to impact financial performance. However, intangible assets such as social, human, and environmental capitals, company leadership and governance, and the company’s ability to innovate to address these issues are likely to increasingly contribute to financial and business value.

Broad industry trends and characteristics are driving the importance of sustainability performance in the Cable & Satellite industry:

- **Natural monopoly:** While the industry is facing some external competition, the extremely high fixed cost of
distribution has resulted in a limited number of companies serving each market, hence posing antitrust risks. Dominant positions by a few players create concerns about terminal access monopolies in the absence of “net neutrality.”

- **Growing data transmission**: As the Cable & Satellite industry increasingly provides Internet services, giving companies greater access to consumer information, public concern heightens the need for strong data privacy and security policies.

- **Digital interconnectedness of the economy**: With enterprises, governments, and individual consumers increasingly depending on cable and satellite providers for Internet services, a robust communications infrastructure becomes important to avoid systemic or economy-wide disruptions.

As described above, the regulatory and legislative environment surrounding the Cable & Satellite industry emphasizes the importance of sustainability management and performance. Specifically, recent trends suggest a regulatory emphasis on consumer privacy and competitive behavior, which will serve to align the interests of society with those of investors.

The following section provides a brief description of each sustainability issue that is likely to have material implications for companies in the Cable & Satellite industry.

This includes an explanation of how the issue could impact valuation and evidence of actual financial impact. Further information on the nature of the value impact, based on SASB’s research and analysis, is provided in Appendix IIA and IIB. Appendix IIA also provides a summary of the evidence of investor interest in the issues. This is based on a systematic analysis of companies’ 10-K and 20-F filings, shareholder resolutions, and other public documents. It also based on the results of consultation with experts participating in an industry-working group convened by SASB.

A summary of the recommended disclosure framework and accounting metrics appears in Appendix III. The complete SASB standards for the industry, including technical protocols, can be downloaded from www.sasb.org. Finally, Appendix IV provides an analysis of the quality of current disclosure on these issues in SEC filings by the leading companies in the industry.

### ENVIRONMENT

The environmental dimension of sustainability includes corporate impacts on the environment. This could be through the use of natural resources as inputs to the factors of production (e.g., water, minerals, ecosystems, and biodiversity) or environmental externalities and harmful releases in the environment, such as air and water pollution, waste disposal, and GHG emissions.
Although the environmental footprint of the Cable & Satellite industry remains limited relative to other industries, the industry’s energy use is increasing and becoming more material, as additional traffic drives the need for new network capacity and data facilities. Energy consumption translates into companies’ direct and indirect contribution to greenhouse gas (GHG) emissions through large vehicle fleets and electricity consumption in data centers and network equipment, respectively. Carbon pricing has potential cost implications, as pricing of GHG emissions could be passed on to companies purchasing fossil fuel-based electricity. Energy management can influence reputation and attractiveness to customers in the medium- to long-term (as public concerns drive a closer inspection by business customers of the environmental impacts of their supply chains).

Infrastructure Energy Use & Fleet Fuel Consumption

Management of electricity usage, particularly within data centers, and fuel consumption related to operating large fleets of service vehicles are concerns for companies in the Cable & Satellite industry. A large part of the energy consumed by the industry is used to power critical network and data center infrastructure that supports the transmission of video, Internet, and VoIP services. As industry players are increasingly supplying broadband data connections, the need for data centers and related infrastructure will increase.

Such infrastructure needs to be powered continuously; disruptions to energy supply can have a material impact on operations, depending on the magnitude and timing of the disruption. At the same time, cable and satellite companies operate large fleets of customer service vehicles, so managing fuel consumption may be a material issue, as fuel prices tend to rise over the long term.

Managing the environmental footprint of the significant infrastructure of cable and satellite companies is important for managing costs, obtaining reliable supplies of energy, and lowering reputational risks. With an increasing global focus on climate change, regulatory and customer actions place greater emphasis on resource conservation, and innovations in energy efficiency and renewable energy provide new avenues for energy management. With the growth of high-speed data and VoIP services, companies are likely to continue expanding their data-center infrastructure. Cable and satellite companies can pursue various strategies to achieve energy efficiency. To minimize electricity consumption by data centers, companies can purchase more efficient equipment, optimize data center locations, manage energy “hotspots” in data centers, and implement server virtualization, which can reduce the need to install more physical servers. The use of efficient routing and dispatching,
higher fuel economy, and cleaner vehicles could reduce companies’ scope 1 GHG emissions and fuel costs.

Company performance in this area can be analyzed in a cost-beneficial way internally and externally through the following direct or indirect performance metrics (see Appendix III for metrics with their full detail):

- Operational energy consumed, percentage grid electricity, and percentage renewable; and
- Fleet fuel consumed, percentage renewable.

Evidence

Individual cable and satellite companies consume substantial amounts of energy, with impacts on both operations and the environment. Given that large corporations in this industry amass more than $300 million annually in energy bills,63 there is an opportunity for companies to provide value to shareholders by promoting energy efficiency measures throughout their operations. As traffic over Internet networks has increased, so has the need for data centers. In 2008, the median Comcast residential broadband user consumed 2.5 GB of data per month.64 Four years later, Comcast reported that this number had quadrupled to a median monthly usage of 8-10 GB per consumer.65 Although network equipment and data centers are becoming more energy-efficient, their overall energy consumption is increasing with the expansion in cable infrastructure and data traffic. According to the Electric Power Research Institute, data centers use between 10 and 20 times more energy than an average commercial building.66 In 2013, U.S. data centers consumed 91 billion kWh of electricity, equivalent to an annual output of 34 large (500-megawatt) coal-fired power plants. That consumption is expected to increase to 140 billion kWh by 2020, which would amount to $13 billion in electricity bills annually. Such consumption would result in 150 million metric tons of CO2 emissions per year.67

Cable and satellite companies may operate their own data centers or rent space in multi-tenant data centers. Cable & Satellite industry players are expanding their market share for high-speed Internet. In the U.S., the seventeen largest cable and telephone providers added more than 2.6 million high-speed Internet subscribers in 2013. Eighty two percent of added broadband connections came from cable companies; Comcast, TWC, and Charter alone accounted for almost 1.9 million new subscribers. As of 2013, top cable companies had a broadband subscriber base of 49.3 million.68 Increasing data use is likely to drive a higher demand for data centers. The North American multi-tenant data center market is expected to hit $14.8 billion by 2016, a 32 percent increase. To capture that growth, some cable companies are expanding to the data center segment. In 2014, Shaw Communications, a Canadian communications
company, acquired ViaWest, a Colorado-based data center provider. 69

While regulatory incentives related to GHG emissions mitigation have not been implemented consistently across the world or continuously over time, they are likely to increase costs of fossil fuel-based energy and make renewable energy options more attractive in the medium- to long-term. In the U.S., the average retail price of electricity for the commercial end-use sector has increased from 7.9 cents per kilowatt-hour (kWh) in 2001 to 10.3 cents per kWh in 2013. 70 The U.S. Energy Information Administration’s (EIA’s) long-term projections show that nominal electricity prices paid by the commercial end-use sector will increase to around 18 cents per kWh by 2040. 71 It is critical for cable and satellite companies to provide uninterrupted service, which may require additional capital expenditures as their networks expand. As the impacts of climate change intensify, electrical grid disruptions are likely to increase, impacting network operations. Weather-related significant grid disturbances have been steadily increasing in the U.S., from just over 20 incidents in 2003 to almost 140 incidents in 2011. 72

Some states require that renewable energy account for a certain percent of a utility company’s total energy provided. Companies in the Cable & Satellite industry may purchase electricity in those states. In its 2013 CDP report, DIRECTV states that the company may be exposed to rising prices of renewable energy if state and/or federal tax incentives are not available to the owners of the renewable energy generating facilities. 73

Companies in this industry are addressing and providing insight into many energy management issues that are currently impacting or may impact their operations in the future. For example, Comcast’s efforts to improve air flow and cooling methods in its data centers are expected to save the company more than $2 million over a 5-year period. 74 Furthermore, by virtualizing physical servers, Comcast was able to reduce the number of physical servers significantly and lower power consumption by 11 percent. 75 DIRECTV used 171,200 MWh of electricity in 2012. The company was able to reduce its Scope 2 emissions by upgrading essential equipment in broadcasting operations as well as installing efficient lighting and pumps. Upgrading remote broadcast equipment helped to reduce annual Scope 2 emissions by 2,500 metric tons of CO2e. 76 By upgrading older power supply systems to more energy efficient ones, Telenet, a Belgium-based provider of media and communication services, improved efficiency by 10 percent, reduced annual Scope 2 emissions by 431 metric tons of CO2e, and achieved €285,000 in annual savings. 77

Many companies in this industry also own large commercial vehicle fleets for work related to installation, infrastructure maintenance, and customer service. Emissions from such vehicles represent a significant portion of a company’s
overall carbon footprint. More than half of DIRECTV’s total emissions (scopes 1 and 2) of 215,000 metric tons of carbon dioxide equivalent (CO₂e) were generated by mobile sources. In 2012, the company purchased 432,127 MWh of energy in fuel, which is almost three times the amount of their electricity purchases. In 2013, Comcast operated more than 37,000 vehicles in its fleet, making it the fourth largest vehicle fleet in the U.S. that year. Other companies in the industry also have large fleets – TWC had about 19,000 vehicles, Charter Communications 8,000, DIRECTV 6,000, Dish Network 5,000, and Cablevision 3,500 fleet vehicles. These six cable and satellite companies accounted for 6.6 percent of the vehicles of the top 500 largest fleet owners in 2013.

Companies are evaluating the current structure and operations of their service vehicle fleets to better respond to volatile fuel costs and reduce carbon emissions. For example, Dish Network introduced a new fleet of 200 propane gas automobiles, which it expects will save the company 55 percent in fuel costs, more than $2,500 annually per vehicle or $12.5 million, assuming savings across its entire fleet. In 2011, TWC implemented a program to reduce the amount of time its fleet vehicles are allowed to idle. The initiative saved the company $3.3 million in 2011 and reduced the company’s carbon emissions per vehicle by more than 60 percent. By improving routing and dispatching in its fleet operation, DIRECTV was able to reduce Scope 1 emissions by approximately 13,000 metric tons of CO₂e in 2012. In the same year, the company also added 37 lower emission alternative fuel vehicles to its fleet and committed funds to testing cleaner vehicle technologies such as propane, compressed natural gas, and biodiesel.

Value Impact
Continuing growth of high-speed Internet subscriptions requires cable and satellite companies to expand their data centers and other network infrastructure. At the same time, operating a larger number of data centers requires companies to increase their operating and capital expenditures in order to ensure uninterrupted delivery of services and mitigate the risks of disruptions, which, in turn, indicates that materiality of the issue is likely to increase in the near to medium term. Cable & Satellite companies that implement initiatives aimed at reducing energy consumption and GHG emissions may achieve significant cost savings and improve their operational efficiency over time. Changes in the total amount of energy and fuel consumed by a company in comparison to revenues indicate changes in operational efficiency. At the same time, given the volatility of electricity and fuel prices, these metrics give analysts an ability to assess a company’s risk exposure to energy price shocks over time.
Social capital relates to the perceived role of business in society, or the expectation of business contribution to society in return for its license to operate. It addresses the management of relationships with key outside stakeholders, such as customers, local communities, the public, and the government. It includes issues around access to products and services, affordability, responsible business practices in marketing, and customer privacy.

Cable and satellite companies have access to growing volumes of customer data. Proper management of data privacy and security will enable companies to be well positioned to deal with emerging regulations and concerns about the use and protection of customer data. Performance on the issues of data privacy and cyber security is likely to influence whether companies can attract and retain customers and build brand value.

Data Privacy

Through the services that they provide, Cable and satellite companies have access to growing volumes of customer data. Companies are increasingly looking to monetize such data, which may include web-browsing history, behavioral, and demographic information. One popular use for the data is to provide targeted advertising to customers.87 Cable and satellite companies having access to an expanding range of customer information is increasing privacy concerns. This is particularly relevant as third parties also gain access to such information, although it is generally provided to them at an aggregate level for groups of retail consumers. These concerns have led to regulatory scrutiny from the FCC and other authorities.

These trends are increasing the importance to Cable and satellite companies of adopting and communicating in a transparent manner policies on providing customer data to third parties, including the amount and type of data provided and the nature of its use (for example, for commercial purposes).

Collection of personal and content data is also a concern for invasion of privacy by governments, as accentuated by the recent national debate on the Foreign Intelligence Surveillance Act (FISA) and the role of the NSA in surveillance activities in the U.S. NSA surveillance of communications networks, including Cable and satellite companies’ alleged sharing of customer data (such as number called, time of the call, and data about email and website visits), and associated reputational risks highlight the growing importance of protecting customer data.88 When companies are required to track user information or share data with governments, transparency about their privacy practices and the degree to which they comply with government requests will enhance their
reputation and lower the risk of legal actions or customer backlash against them.

Company performance in this area can be analyzed in a cost-beneficial way internally and externally through the following direct or indirect performance metrics (see Appendix III for metrics with their full detail):

- Discussion of policies and practices relating to collection, usage, and retention of customer information and personally identifiable information;
- Percentage of users whose customer information is collected for secondary purposes, percentage who have opted in;
- Amount of legal and regulatory fines and settlements associated with customer privacy; and
- Number of government or law enforcement requests for customer information, percentage resulting in disclosure.

Evidence

Evolving laws on data privacy and protection in the U.S. and abroad pose regulatory risks for Cable & Satellite service providers and demonstrate public concern about privacy laws. Investigations and enforcement actions by the FCC highlight industry practices leading to data privacy breaches and potential additional costs of ensuring regulatory compliance. Previously the amounts of some of the fines and settlements were small relative to company revenues, but a recent investigation into Verizon’s failure to comply with privacy protection regulations resulted in a $7.4 million settlement. Investigations revealed in failing to notify 2 million new customers of their privacy and opt-out rights, Verizon had violated Consumer Proprietary Network Information (CPNI) rules. Over the past few years, the FCC has been vigilant in enforcing CPNI rules. Although most enforcement cases have involved traditional telecom carriers, the FCC has asserted that the rules also apply to interconnected Voice over Internet Protocol (VoIP) providers. Furthermore, a dynamic regulatory environment can increase penalties for data privacy violations.

In addition to regulatory investigations, lawsuits over privacy issues have plagued many of the largest competitors in the industry, including Comcast, DIRECTV, Dish Network, and TWC. Comcast and TWC have faced class action lawsuits for collecting and retaining customer credit card and social security information even after services were canceled. It is unclear as to the financial impact of these lawsuits but under the Cable Communication Policy Act, which the plaintiffs argue has been violated, individuals are allowed to collect over $100 per day the violation continues. The reputational harm may be much greater than any cost to conform to regulation or fines from violations.

The Financial Times reported in August 2013 that cable and telecom companies were lobbying Congress to relax FCC control over
communications industry data and instead grant the Federal Trade Commission greater reach within the industry. The FCC has the authority to limit the types of information that can be sold. The sale of user data for marketing or consumer-behavior analysis is a potential area of growth in the industry. Sale of user data was a $5.5 billion industry in 2012, and is expected to reach $9.6 billion in 2016. Cellular service companies like Verizon and Sprint already sell customer data such as user location and web surfing and application history to third parties.

In order to be able to capitalize on this growth opportunity, Cable and satellite companies will need to ensure they adopt best practices in privacy protection, and are transparent about their privacy policies. Some of these companies allow customers to opt-in to share their personally identifiable information, in order to protect user privacy. For example, Comcast’s XFINITY Internet support page mentions that “No Personally Identifiable Information will be shared with other companies for advertising unless you tell us that you agree to share that information.” However, for information that is not personally identifiable, company policies may be different – Comcast states that it “may share your Non-Personally Identifiable Information with other companies that we trust to help us provide content and advertising that is more interesting and relevant to our users.”

Furthermore, revelations of a broad surveillance program conducted by the U.S. government have raised concerns over user data privacy within corporations and the general public. Until recently, companies were not allowed to disclose certain types of data requests by the U.S. government. However, a recent ruling by the U.S. Department of Justice allows disclosures in broad ranges. After being pressurized from civil rights groups, Cable and satellite companies started issuing ‘Transparency Reports’ in order to improve their reputation. Companies like Comcast and TWC disclose requests for customer information received from government and law enforcement agencies. Comcast reported that it received 24,698 criminal requests and between 0 and 999 National Security Letters in the first half of 2013. Companies are not allowed to disclose the exact number of National Security Letter and FISA Orders but can report them in ranges. During the same period, TWC received 6,474 requests from government entities and 0-249 National Security Orders.

Value Impact

In order to generate profits, retain existing customers, and attract new ones, industry players rely on innovative new services that

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iv The Federal Bureau of Investigation issues national Security Letters. The FBI issues these in connection with counter-terrorism or counter-intelligence matters; national security letters are limited to seeking non-content information like customer account information.

v The Foreign Intelligence Surveillance Court issues FISA Orders and Warrants. These orders and warrants typically seek both content and non-content information relating to national security matters, such as international terrorism or espionage.
increasingly rely on the use of customer data, leveraging such data with user networks to sell targeted advertising or selling the data to third parties. The changing regulatory landscape in the U.S. and the E.U. concerning consumer privacy and the use of personal information could affect the ability of cable and satellite companies to use customer data for commercial purposes. At the same time, new and emerging data privacy regulations are likely to affect the operational expenses of companies through increased costs of compliance. As customers and regulators begin to understand the privacy implications of the use of customer data in the Internet and voice services segments, the probability and magnitude of these impacts are likely to increase in the future.

Breaches of data privacy or unclear communication to users regarding privacy policies and the use of data for advertising purposes are likely to affect company reputation and brand value, with long-term impact on market share and revenue growth potential. Discussion around policies and practices relating to the collection, use, and retention of customer information is useful to an assessment of the magnitude of possible impacts if data breaches are to occur. Even though material security breaches may be infrequent in nature, the magnitude of their impacts may be significant.

Companies’ exposure to data privacy risks can be assessed through the percentage of users whose information is collected for secondary purposes. Further insight can be gained from the percentage of consumer information collected that is based on informed consent, as opt-in approaches can shield cable and satellite companies from consumer backlash.

The amount of legal and regulatory fines and settlements associated with consumer privacy is a lagging indicator of how well cable and satellite companies have been managing this issue. It also indicates the probability and magnitude of direct costs associated with large penalties, fines, and remediation activities. Lastly, it is a proxy measure for the effectiveness of a company’s privacy policies and practices, and it indicates potential long-term impacts on reputation and a firm’s ability to attract or retain clients.

Data Security

As cable and satellite companies increasingly provide Internet and voice services, they are entrusted with more and more customer data. Companies in many industries, including Cable & Satellite, are facing increasing risks from security breaches and other malicious activities. Companies need to ensure that policies and processes are in place to manage these risks and that they use hardware or software systems that enable them to tackle data security threats both to their own operations, as well as those of their customers. As hackers get more sophisticated, companies’ security systems will also need to evolve.
Cable and satellite companies are providers of critical infrastructure serving several sectors including finance, infrastructure, and government agencies, in addition to retail customers. If sensitive data of such entities is exposed due to failings on the part of Cable and satellite companies, there could be repercussions for the wider economy and reputational risks for Cable and satellite companies. The National Institute of Standards and Technology’s (NIST) cyber security framework of February 2014 highlights the risks to the nation’s security, economy, and public safety, as well as the risks to companies’ bottom lines.  

Company performance in this area can be analyzed in a cost-beneficial way internally and externally through the following direct or indirect performance metrics (see Appendix III for metrics with their full detail):

- Number of data security breaches, percentage involving customers’ personally identifiable information; and
- Discussion of management approach to identifying and addressing data security risks.

Evidence

A recent U.S. study on the cost of cybercrime found that the cost, frequency, and time to resolve cyber-attacks had increased for four consecutive years. The study found that the average annualized cost of cybercrime incurred per organization ranged from $1.3 million to $58 million. The average time it took to resolve a cyber-attack was 32 days, with an average cost to organizations of just over $1 million during this period. The 2014 global Cost of Data Breach Study conducted by IBM and Ponemon found that the average cost of a data breach had increased to $3.5 million. The average per capita cost of data breaches varies widely between countries, but at $201, the average cost in the U.S. was among the highest.

Providing Internet and voice services makes the Cable & Satellite industry vulnerable to cyber security threats. According to the study, the communications industry was among the top five industry sectors in terms of average annualized costs incurred over a four-year period to FY 2013. Furthermore, according to Mandiant’s 2013 Threat Report, six percent of all advanced cyber-attacks target the telecommunications industry.

Companies with access to large amounts of customer financial data are a target for data theft by hackers. Retail company Target recently had data from more than 70 million of its customers stolen. Target faced several analyst downgrades on the news, as investors feared the company might lose customers. Some analysts believed the breach could cost the company over $1 billion. In 2009, Comcast experienced a small breach by hackers that exposed more than 4,000 customer usernames and passwords. Although the consequences were not as severe as the breach
at Target, where customers’ credit card information was stolen, cable and satellite company data breaches have the potential to effect many more Americans due to the high level of market penetration by the top players.

According to a survey of 405 investors, released in February 2013 by security firm HBGary Inc., more than 70 percent of investors are interested in reviewing company cyber security practices. VI The U.S. Securities and Exchange Commission (SEC) issued guidance in October 2011 asking all companies to disclose any material information on cyber-attacks or risks. Furthermore, the SEC has asked companies in several sectors for more information than they provided in their initial 10-K filings. 107

Cable and satellite companies recognize the risks to their business from security breaches. Liberty Global states in its FY2013 Form 10-K that “(a)ny disruptive problem that causes loss, misappropriation, misuse or leakage of data could damage our reputation and the credibility of our operations.” 108 Additionally, the company recognizes the potential impacts from non-compliance with data security laws, stating that “(f)ailure to comply with these data protection laws may result in, among other consequences, fines.” 109 Comcast adds that data breaches could require companies like theirs to make significant capital expenditures and use other resources to remedy security breaches and that “occurrence of any such events or security breaches could have a material adverse effect on our businesses.” 110

Value Impact
Cable and satellite companies manage an increasing volume of customer data, including personally identifiable information as well as demographic, behavioral, and location data. Therefore, companies’ ability to combat cyber-attacks is likely to affect their reputation and brand value, with a long-term impact on market share and revenue growth potential. Additionally, companies may face acute impacts through significant costs associated with managing the consequences of a breach and preventing future cyber-attacks or other data breaches, which could result in increased capital and operating expenditures as well as regulatory penalties and contingent liabilities. As customers and regulators begin to understand the security implications of the increasing volume of customer data managed by cable and satellite companies, the probability and magnitude of these impacts are likely to increase in the future.

Companies at greater risk of breaches, particularly high-impact ones, due to improper data management policies or systems could face higher costs of capital. The number of data security breaches is a lagging indicator of how well cable and satellite companies have been managing this issue. At the same time, it

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VI Note that the survey does not refer only to companies in this industry, but to all companies.
can serve as a proxy for an assessment of the magnitude of long-term impacts on customer retention. Discussion of the management approach to identifying and addressing data security risks, including policies and procedures as well as training of personnel, would help analysts assess a company’s exposure to potential data breaches. As companies in the industry manage increasing amounts of data and hackers get more sophisticated, the probability and magnitude of impacts related to data breaches may increase in the future. Public concerns around the issue are likely to continue, pushing governments to implement stricter cyber-security regulations.

**BUSINESS MODEL & INNOVATION**

This dimension of sustainability is concerned with the impact of environmental and social factors on innovation and business models. It addresses the integration of environmental and social factors in the value creation process of companies, including resource efficiency and other innovation in the production process. It also includes product innovation and efficiency and responsibility in the design, use-phase, and disposal of products. It includes management of environmental and social impacts on tangible and financial assets—either a company’s own or those it manages as the fiduciary for others.

The ability of cable and satellite companies to ensure innovation in business models and services in the face of changing competitive forces and regulatory drivers will be crucial to future success. In particular, innovations that revolve around protecting customer data and mitigating risks of network disruption are important. These topics are discussed under the Social Capital and Leadership and Governance sections.

**LEADERSHIP AND GOVERNANCE**

As applied to sustainability, governance involves the management of issues that are inherent to the business model or common practice in the industry and are in potential conflict with the interest of broader stakeholder groups (government, community, customers, and employees). They therefore create a potential liability, or worse, a limitation or removal of license to operate. This includes regulatory compliance, lobbying, and political contributions. It also includes risk management, safety management, supply chain and resource management, conflict of interest, anti-competitive behavior, and corruption and bribery.

In the context of the Cable & Satellite industry, governance issues manifest themselves in the form of antitrust concerns and business disruptions that may have systemic impacts,
particularly as the industry serves as critical infrastructure for the economy.

Managing Systemic Risks from Technology Disruptions

Cable and satellite companies own or operate critical infrastructure that forms the basis of modern communications and business processes. Additionally, they provide communications services that form the basis for emergency communication systems, including broadcast or cable television station news and updates, emergency alert systems, and 911 call processing.1 Systemic or economy-wide disruption may occur if their network infrastructure is unreliable and prone to business continuity risks, or if they are not prepared to handle major emergencies. Apart from the Data Privacy and Security issues discussed above, disruptions can occur in the form of network downtime due to technical errors, impacts of extreme weather events, natural disasters, or electric grid disruptions.

As the frequency of extreme weather events associated with climate change continues to increase, cable and satellite companies will face physical threats to network infrastructure and will need to be prepared to convey emergency communications. Long-term climate change could also affect network equipment. This could result in frequent or significant service disruptions, outages, and the need to upgrade or repair damaged or compromised equipment.

As cable and satellite companies expand their offerings and increasingly provide Internet and VoIP services, they need to ensure the reliability and resilience of their systems so as not to disrupt key services. Significant growth in data volumes and the increasing complexities of network management could pose risks for service continuity and quality. Companies could protect shareholder value by minimizing the probability and magnitude of systemic impacts and by actively investing in improving the reliability, resilience, and quality of their infrastructure and services.

Company performance in this area can be analyzed in a cost-beneficial way internally and externally through the following direct or indirect performance metrics (see Appendix III for metrics with their full detail):

- Average Interruption Frequency and Average Interruption Duration; and
- Description of systems to provide unimpeded service.

Evidence

Given the systemic importance of communication networks, the FCC has recently taken several steps to ensure their resilience, posing regulatory risks for cable and satellite companies. The FCC is working to improve the reliability of networks used to originate emergency calls. Between 2008 and 2010,
residential and business interconnected voice over Internet protocol (VoIP) services rose by 46 percent, and the FCC estimated that 31 percent of residential wireline 9-1-1 calls were made using VoIP service.\textsuperscript{112}

In 2011, the FCC proposed rules regarding outage reporting for interconnected VoIP and broadband Internet, as cable and satellite companies increasingly are offering both services. In February 2012, the agency implemented the rules for interconnected VoIP service providers, while deferring a decision on broadband Internet service providers. As a result, VoIP providers are required to notify the FCC within two hours of a discovery of major service disruptions.\textsuperscript{113} The FCC requires VoIP providers to meet Enhanced 911 obligations, whereby emergency service personnel can automatically receive a 911 caller’s call back number and, in most cases, their location.\textsuperscript{114} The FCC also proposed rules to ensure that wireline providers that route emergency calls implement best practices in network design, operations, and maintenance. Furthermore, a public-private federal advisory committee to the FCC has been asked to recommend best practices for cooperation among network providers during emergencies, including sharing infrastructure and back-up power assets.\textsuperscript{115}

According to the FCC, recent events have exposed weaknesses in the infrastructure of some Cable & Satellite providers. In March 2011, a Comcast outage in 19 communities in New Hampshire resulted in those customers being unable to make calls for hours.\textsuperscript{116} Furthermore, the FCC has noted that inadequate back-up power and communications backhaul redundancy were key contributors to congestion or failure of communication networks, particularly during large-scale natural and man-made disasters.\textsuperscript{117}

Regarding the need for new technology and systems to maintain high standards of reliability, the FCC states, “As the communications infrastructure migrates from older technologies to broadband technology, critical communications services will be carried over a communications network infrastructure that may or may not be built to the high carrier grade standards of legacy wireline systems. This potential for differences in service reliability could be a major source of concern for critical sectors, such as energy and public safety, and for consumers in general.”\textsuperscript{118}

The above discussion highlights the potential for systemic impacts affecting individuals and the economy, and also exposes risks that Cable and satellite companies face in relation to the resilience of their network infrastructure. In the aftermath of Hurricane Sandy, Cablevision reported 2012 Q3 losses of $3.8 million and a decline in share price that stemmed from concerns over losing video subscribers and the financial impact of the hurricane. The loss is significant, especially compared to 2011 Q3 profits of $39.3 million. The company estimated that damages from Hurricane Sandy...
would exceed the $16 million loss from Hurricane Irene in 2011.\textsuperscript{119}

In response to Hurricane Sandy, the City of New York produced a plan to bolster the city’s infrastructure and protect communities from the impacts of climate change. Communication infrastructure was specifically addressed in the plan, and faces challenges such as risks from flooding by oceanic storm surges and extreme heat waves, which damage electronic equipment.\textsuperscript{120} A 2010 report commissioned by the U.K. Department for Environment, Food, and Rural Affairs looked at the information and communications technology industry’s climate change adaptation. Broad, long-term climatic changes, such as higher temperature, precipitation, and wind variation can affect infrastructure on a large scale. They can, for example, accelerate damage to equipment, which raises maintenance and replacement costs, and affect the reliability of networks. Extreme weather events such as hurricanes tend to severely impact communication infrastructure on a local geographic scale.\textsuperscript{121}

Leading Cable and satellite companies generally provide disclosures in their 10-K filings highlighting the risks associated with technology and network disruptions. Comcast outlines in its Form 10-K for FY 2012 the financial exposure from such disruptions, stating “(t)hese events also could result in large expenditures to repair or replace the damaged properties, networks or information systems or to protect them from similar events in the future.”\textsuperscript{122}

Additionally, compliance costs for emergency communications may be significant. DIRECTV discloses that in addition to existing regulations on Emergency Alert Systems, the FCC “may also mandate that satellite carriers interrupt programming for local emergencies and weather events. Any such requirement would be very difficult to implement, would require costly changes to our DBS/DTH system (…)FCC is also considering whether to require that EAS alerts be provided in multiple languages or via text messages, which could also prove difficult and costly.”\textsuperscript{123}

**Value Impact**

Customers of cable and satellite companies expect uninterrupted and reliable access to such services as broadcast or cable television station news and updates, emergency alert systems, and 911 call processing. Therefore, network disruptions can lead to reputational damage and loss of customers, with long-term impact on market share and revenue. As communication services are becoming essential for many personal and business activities, acute disruptions can have a systemic impact that could endanger a company’s license to operate and affect its risk profile and cost of capital. Given the increasingly systemic impact of technology disruptions on society, combined with the adoption of new technologies and additional infrastructure by cable and satellite companies, the probability and magnitude of
the value impact on industry players are likely to increase in the future.

Network disruptions can also lead to extraordinary expenses related to contractual liability or claims for damages from customers. In addition, technology and system upgrades may be necessary to address the causes of disruptions, resulting in additional operating and capital expenditures. Average interruption frequency and duration can be a proxy for assessing the magnitude of losses associated with a failure to provide reliable services. Description of systems to provide uninterrupted service can serve as a leading indicator of performance, as robust management systems and alignment with industry best practices suggest a stronger ability to manage internal risk factors as well as a better position to manage externalities.

**Competitive Behavior & Open Internet**

The Cable & Satellite industry is a classic example of a natural monopoly, where high capital costs lead to a monopoly having the most efficient production. A larger subscriber base allows companies to offer lower prices and gain higher margins due to economies of scale. This, in turn, allows carriers to invest in upgrading infrastructure to deliver better services. Large-scale infrastructure and capital requirements for both cable and satellite providers also create barriers to entry, so the first supplier to the market usually remains in dominant position.

While the video\(^{124}\) and Internet\(^{125}\) provider markets are highly concentrated, the competitive behavior topic focuses on the providing of Internet as a vital service in modern society. It is the backbone of most communications and is increasingly the preferred method of delivery for media over traditional delivery via cable or satellite. Specifically, it explores the concept of open Internet access, the associated social externalities, and the financial risk to cable companies mismanaging this issue.

Open Internet access is the concept that owners of last-mile broadband access infrastructure or Internet service providers (ISPs) should not impair end user access to lawful online applications, content, or services.\(^{126}\) The Internet, as it is aptly named, connects a vast network of content and service providers, like Internet media and e-commerce companies, to consumers. This exchange of Internet traffic between content providers and end users happens through various arrangements that include, among others, transit, paid peering, settlement-free peering, and content delivery networks (CDNs).\(^{127}\) On the backend are transit network providers that provide peering\(^{31}\) connections for anyone to use. On the

\(^{VI}\) Peering is the direct connection between Internet operations, for example, the connection between a content provider and a transit network provider or between a content provider and a last-mile ISP.
consumer facing side, ISPs provide last-mile delivery to consumers. Traditionally, all network traffic would pass through these transit networks, but major content providers are now peering or connecting directly with ISPs to hasten content delivery. Additionally, content providers are also running content delivery networks (CDNs) inside ISPs to streamline delivery of popular content to the ISPs’ subscribers. ISPs have the technical ability to monitor and filter network traffic and so can act as gatekeepers.  

Since the market for Internet service provision is so concentrated in the U.S., ISPs have the potential to act as terminating access monopolies, which is the cause of both public and regulatory concern. Because of this, the focus of the FCC’s net neutrality debate has been on last-mile access. While some argue that direct peering between content providers and ISPs creates additive gains to network capacity and efficiency, the FCC is also looking into peering agreements between content providers and ISPs.

ISPs, both cable and telecommunications companies, are under increasing pressure to ensure net neutrality, or open Internet access, where all data on the Internet is treated equally in terms of performance and access. By having the technical ability to speed up, slow down, or throttle content delivery, Internet providers may have an unfair advantage in terms of access to consumers. There are concerns that ISPs may charge content providers high fees to access their networks and reach end-users. Together with natural monopoly, the vertical integration of cable providers with media producers creates conditions for potential discrimination of lawful content.

Cable and satellite companies therefore face heightened regulatory risks from anti-trust regulation and legislative changes aimed at fostering competition and ensuring universal service as technology advances. These have the potential to impact market share and profitability for dominant players.

Given the continued focus of regulations on facilitating competition, cable and satellite companies must balance two aspects in order to protect shareholder value: the need to expand market share and generate revenues in an increasingly competitive market, and the need to ensure that they do not engage in unfair practices to restrict competition by using their network advantages. In addition, companies that are able to develop unique pricing structures and ensure high quality of service for rural and insular areas will be able to expand their subscriber base while maintaining their license to operate.

Company performance in this area can be analyzed in a cost-beneficial way internally and externally through the following direct or indirect performance metrics (see Appendix III for metrics with their full detail):
• Amount of legal and regulatory fines and settlements associated with anti-competitive practices;
• Revenue from paid peering agreements with content providers and other networks and service providers;
• Average actual sustained download speed of owned and commercially-associated content and non-affiliated associated content; and
• Discussion of risks and opportunities associated with Open Internet Principles and other potential regulation.

Evidence

The changing dynamics of technology and communications markets, in particular the rapid expansion of the Internet, pose challenges to the industry in terms of competitive behavior. Cable and satellite companies maintain costly infrastructure to enable communications services and make continuous improvements to ensure access to an increasing number of products and services over communication networks, including Internet. Consequently, some Cable and satellite companies are seeking ways to share the cost of maintaining the infrastructure with Internet content providers, who use telecom networks to deliver their services. At the same time, Cable and satellite companies could face regulations to ensure net neutrality, restricting their ability to recover costs and potentially limiting market share.

Natural monopoly conditions have led to high market shares for the top carriers, creating competition concerns. The top four providers - Comcast, DIRECTV, Dish Network, and TWC - account for 78.2 percent of video subscribers and 56.6 percent of industry revenue.131 Though providing Internet services is not limited to Cable and satellite companies, the market for Internet service is also concentrated. According to Leichtman Research Group, seventeen of the largest cable and telecommunications providers in the U.S. represent 93 percent of the market,132 with the top four – Comcast, TWC, AT&T, and Verizon – accounting for 68 percent of Internet subscribers.133 Due to the lack of competition and perceived anti-competitive business practices of dominant companies in the industry, consumers are becoming displeased with the price and quality of service.

Consumers continually voice their opinions over cable and satellite companies’ pricing policies and the topic has gotten a lot of media coverage.134, 135, 136 This dissatisfaction is evident in the poor reputational rankings received by Internet service providers in the 2012 American Customer Satisfaction Index. ISPs ranked lower than airlines and health insurance companies. Among ISPs, Comcast ranked the lowest, followed closely by TWC. According to the survey, customers were unhappy with ISPs’ call center service, their Internet plans, and the quality of online video streaming.137
Cable companies have been losing video subscribers to satellite companies and telecoms. Additionally, there is an overall decline in television subscribers, a trend that is expected to continue with the rise in Internet media services.\textsuperscript{138} Cable companies are making up for lost video subscribers,\textsuperscript{139} by making gains in the Internet segment. Customers have filed antitrust lawsuits against many of the major companies in the industry, including Comcast, DIRECTV, Dish Network, and Charter.\textsuperscript{140, 141} In one of the antitrust cases brought against Comcast in 2003, plaintiffs argued that Comcast’s share of subscribers in the Philadelphia area increased by “impermissible means,” from 23.9 percent in 1998 to 77.8 percent in 2002. They alleged that Comcast gained dominant market position by “clustering,” or driving out competition and gaining market share in a defined geographic area by strategically giving up or swapping holdings elsewhere.\textsuperscript{142} If companies do not ensure competitive business practices, the trend of customer frustration can result in the continued loss of TV subscribers, which can materially harm the industry’s core business.\textsuperscript{143, 144}

The industry faces ongoing legislative and regulatory actions aimed at ensuring competition, which could limit the market share and growth potential of some of the larger players. M&A activity by dominant market players has come under regulatory scrutiny. Telecom giant AT&T has made a bid to acquire DIRECTV. They are competitors in the video segment, but DIRECTV’s 38 million satellite TV subscribers would be a significant addition to AT&T 5.5 million video subscribers.\textsuperscript{145} Also noteworthy is the proposed merger by the two largest cable providers, Comcast and TWC, which is pending approval from the FCC. The combined company would provide video services to a third of American homes and Internet service to nearly 40 percent.\textsuperscript{146} However, Comcast is confident that its acquisition of TWC will be approved since the two companies do not serve the same geographic markets, and so a merger would likely not result in less competition in individual markets.\textsuperscript{147} This claim is aligned with an FCC analysis that found 64 percent of households had between one and two choices for high-speed Internet service in 2012.\textsuperscript{148} Since the companies do not compete in the same markets, the limited consumer choice would not be diminished further. It is unclear how the deal will impact consumers, but it would undoubtedly provide Comcast with substantial purchasing power over cable networks\textsuperscript{149} and greater terminal access monopoly.

Regardless, the FCC weighs concerns of various parties in proposed mergers and many are opposed to Comcast’s acquisition of TWC, including competitors and content providers. Further industry consolidation may put even greater power in the hands of a few companies to act as terminal access monopolies. Netflix, whose content dominates as much as a third of bandwidth on broadband networks during peak hours,\textsuperscript{150} and Dish Network, a satellite
video provider, are among those opposed to
the acquisition. Netflix has already signed
contracts with Comcast, TWC, Verizon, and
AT&T to ensure that the company can easily
stream its content to subscribers through these
networks.

The FCC’s open Internet, or net neutrality, rules
included three key requirements for broadband
providers: “1) a prohibition against blocking
websites or other online applications; 2) a
prohibition against unreasonable discrimination
among Internet users or among different
websites or other sources of information; and
3) a transparency requirement compelling the
disclosure of network management policies.”

In January 2014, the D.C. Circuit Court of
Appeals struck down all but the transparency
rule, citing that Internet provision was classified
as an information service and so was not bound
by the common carrier rules governing
telecommunications services. The
classification of Internet services and the fate of
open Internet rules are currently under debate
by regulators, adding to uncertainty and risks
around this issue. According to telecom analyst
and former FCC official Paul Gallant, “Under
Title II, cable and phone companies would
probably end up paying higher borrowing rates
for future network investments that [sic] they
pay today.”

There are concerns that in the absence of open
Internet rules, Internet providers would favor
certain content. For example, they may lower
transmission speeds or provide poor quality
service to certain content providers and
increase the speed for their own content or
affiliated content. The absence of rules could
create an unequal playing field where larger
content providers are able to pay higher prices
to ensure faster speeds, but smaller
competitors or Internet media startups would
face difficulty in reaching end users.

Internet and video service providers may
continue to acquire content in order to lower
programming costs and gain competitive
advantage. Comcast owns the NBC and
Telemundo broadcast networks and Universal
Studios and DIRECTV has its own
professional and collegiate sports
programming. Vertical integration, with cable
and satellite video providers acquiring media
production companies, has also garnered
regulatory attention due to concerns over
differentiated Internet speeds. As part of the
consent decree when Comcast acquired
NBCUniversal, the company is required to
adhere to FCC open Internet rules.

The FCC may want more authority to regulate
Internet broadband provision if the Commission
feels that it is not being deployed quickly
throughout the U.S. In April 2012, the FCC
requested comments on a proposal to tax both
cable and telecom broadband Internet services.
Similar to fees currently attached to both
landline and cellular telephone bills, the
revenue would be used to support universal
access by contributing to the newly created
Connect America Fund, which aims to subsidize
the construction of high-speed Internet networks to the 19 million Americans who currently lack access.159

Value Impact

With increasing regulatory scrutiny from the FCC, more public attention has been focused on cable and satellite companies’ ability to ensure competition and access to services they provide. Involvement in cases of antitrust violation may result in extraordinary expenses and contingent liabilities and could lead to reputational damage. Due to high concentration within the Cable & Satellite industry, antitrust authorities can impact companies’ ability to raise prices, with subsequent impact on revenue. As customers and regulators begin to understand the implications of net neutrality, the probability and magnitude of these impacts are likely to increase in the future.

Heavy reliance on arrangements with content providers such as paid peering exposes companies to the risk of losing a substantial portion of revenue if new regulations make these types of arrangements illegal. Failure to meet customer expectations around download and upload speed may result in customer backlash and may open service providers to the risk of class action lawsuits. Differences in download speeds between owned and commercially associated content and non-associated content would indicate prioritization of specific content. Such prioritization could result in additional regulatory scrutiny and may be prohibited under open Internet principles.

Discussion of risks and opportunities associated with net neutrality regulation is a leading indicator of a company’s positioning to best enable growth and new revenue streams in an evolving market.
REFERENCES

3 Kahn, “IBISWorld Industry Report 51711a: Cable Providers in the US.” p. 5.
5 Data from Bloomberg Professional service accessed on October 1, 2014, using the ICS <GO> command. The data represents global revenues of companies listed on global exchanges and traded over-the-counter from the Cable & Satellite industry, using Levels 3 and 4 of the Bloomberg Industry Classification System.
6 Kahn, “IBISWorld Industry Report 51711a: Cable Providers in the US.” p. 4.
8 Data from Bloomberg Professional service accessed on October 1, 2014, using the ICS <GO> command, representing of companies listed on global exchanges and traded over-the-counter from the Cable & Satellite industry, using Levels 3 and 4 of the Bloomberg Industry Classification System.
9 Author’s analysis of annual SEC filings by top companies in the Cable & Satellite industry.
11 Kahn, “IBISWorld Industry Report 51711a: Cable Providers in the US.” p. 22.
13 Author’s calculation based on Consolidated Balance Sheet from DIRECTV FY2013 Form 10-K for the fiscal year ending December 31, 2013 (filed February 24, 2014) p. 73.
15 Author's calculation based on data from Bloomberg Professional service, accessed on September 30, 2014 using Equity Screen (EQS) for U.S.-listed companies (including those traded primarily OTC) that generate at least 20 percent of revenue from their Cable & Satellite segment and for which Cable & Satellite is a primary SICS industry.
19 Kahn, “IBISWorld Industry Report 51711a: Cable Providers in the US.” p. 23.
20 Kahn, “IBISWorld Industry Report 51711a: Cable Providers in the US.” p. 11.
23 Kahn, “IBISWorld Industry Report 51711a: Cable Providers in the US.” p. 23.
24 Kahn, “IBISWorld Industry Report 51711b: Satellite TV in the US.” p. 4
25 Kahn, “IBISWorld Industry Report 51711a: Cable Providers in the US.” p. 24

74 Bushaus, “Comcast Goes Green.”

75 Comcast - NBC Universal - 2012 CSR Report. p.74


78 DIRECTV, Corporate Social Responsibility 2011-2012, p. 58, Comcast 2012 CSR Report

79 DIRECTV, Corporate Social Responsibility 2011-2012, p. 58.


84 Author’s calculations based on fleet size of 5,000.


103 Jia Lynn Yang, and Amrita Jayakumar, “Target says up to 70 million more customers were hit by December data breach,” Washington Post, last modified January 10, 2014. Accessed January 24, 2014.


110 Comcast Corp, FY2013 Form 10-K for the period ending December 31, 2013 (filed Feb 21, 2014) p. 34


122 Comcast Corp., FY2012 Form 10-K for the fiscal year ending December 31, 2012 (filed Feb 21, 2013), p. 34.


130 Comcast Corp., FY2013 Form 10-K for the period ending December 31, 2013 (filed Feb 12, 2014) p. 20


157 DIRECTV, FY2013 Form 10-K for the period ending December 31, 2013 (filed Feb 24, 2014), p. 2
158 Comcast Corp., FY2013 Form 10-K for the period ending December 31, 2013 (filed Feb 12, 2014) p. 20
## APPENDIX I:
Five Representative Cable & Satellite Companies

<table>
<thead>
<tr>
<th>COMPANY NAME (TICKER SYMBOL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comcast Corporation (CMCSA)</td>
</tr>
<tr>
<td>DIRECTV (DTV)</td>
</tr>
<tr>
<td>Time Warner Cable (TWC)</td>
</tr>
<tr>
<td>Liberty Global (LBTYA)</td>
</tr>
<tr>
<td>Dish Network (DISH)</td>
</tr>
</tbody>
</table>

This list includes five companies representative of the Cable & Satellite industry and its activities. This includes only companies for which the Cable & Satellite industry is the primary industry, companies that are U.S.-listed but are not primarily traded Over-the-Counter, and for which at least 20 percent of revenue is generated by activities in this industry, according to the latest information available on Bloomberg Professional Services. Retrieved on September 30, 2014.
**APPENDIX IIA: Evidence for Sustainability Disclosure Topics**

<table>
<thead>
<tr>
<th>Sustainability Disclosure Topics</th>
<th>EVIDENCE OF INTEREST</th>
<th>EVIDENCE OF FINANCIAL IMPACT</th>
<th>FORWARD-LOOKING IMPACT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HM (1-100)</td>
<td>IWGs</td>
<td>Ei</td>
</tr>
<tr>
<td>Infrastructure Energy Use &amp; Fleet Fuel Consumption</td>
<td>33</td>
<td>75</td>
<td>3</td>
</tr>
<tr>
<td>Data Privacy</td>
<td>88*</td>
<td>83</td>
<td>1t</td>
</tr>
<tr>
<td>Data Security</td>
<td>88*</td>
<td>83</td>
<td>1t</td>
</tr>
<tr>
<td>Managing Systematic Risks from Technology Disruptions</td>
<td>25^</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Competitive Behavior &amp; Open Internet</td>
<td>69*</td>
<td>75</td>
<td>2</td>
</tr>
</tbody>
</table>

**HM:** Heat Map, a score out of 100 indicating the relative importance of the topic among SASB’s initial list of 43 generic sustainability issues; asterisks indicate “top issues.” The score is based on the frequency of relevant keywords in documents (i.e., 10-Ks, 20-Fs, shareholder resolutions, legal news, news articles, and corporate sustainability reports) that are available on the Bloomberg terminal for the industry’s publicly-listed companies; issues for which keyword frequency is in the top quartile are “top issues.”

**IWGs:** SASB Industry Working Groups

**%:** The percentage of IWG participants that found the disclosure topic to likely constitute material information for companies in the industry. (-) denotes that the issue was added after the IWG was convened.

**Priority:** Average ranking of the issue in terms of importance. One denotes the most important issue. (-) denotes that the issue was added after the IWG was convened.

**EI:** Evidence of Interest, a subjective assessment based on quantitative and qualitative findings.

**EFI:** Evidence of Financial Impact, a subjective assessment based on quantitative and qualitative findings.

**FLI:** Forward Looking Impact, a subjective assessment on the presence of a material forward-looking impact.

^ The Heat Map score only covers the climate change adaptation angle discussed under this disclosure topic.
# APPENDIX IIB:
Evidence of Financial Impact for Sustainability Disclosure Topics

<table>
<thead>
<tr>
<th>Evidence of Financial Impact</th>
<th>REVENUE &amp; EXPENSES</th>
<th>ASSETS &amp; LIABILITIES</th>
<th>RISK PROFILE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Revenue</td>
<td>Operating Expenses</td>
<td>Non-operating Expenses</td>
</tr>
<tr>
<td>Market Share</td>
<td>New Markets</td>
<td>Pricing Power</td>
<td>Cost of Revenue</td>
</tr>
<tr>
<td>Infrastructure Energy Use &amp; Fleet Fuel Consumption</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Data Privacy</td>
<td>•</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>Data Security</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Managing Systematic Risks from Technology Disruptions</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Competitive Behavior &amp; Open Internet</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>

- **MEDIUM IMPACT**
- **HIGH IMPACT**
# APPENDIX III:
Sustainability Accounting Metrics | Cable & Satellite

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>ACCOUNTING METRIC</th>
<th>CATEGORY</th>
<th>UNIT OF MEASURE</th>
<th>CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Infrastructure Energy Use &amp; Fleet Fuel Consumption</strong></td>
<td>Operational energy consumed, percentage grid electricity, percentage renewable</td>
<td>Quantitative</td>
<td>Gigajoules, Percentage (%)</td>
<td>SV0303-01</td>
</tr>
<tr>
<td></td>
<td>Fleet fuel consumed, percentage renewable</td>
<td>Quantitative</td>
<td>Gigajoules, Percentage (%)</td>
<td>SV0303-02</td>
</tr>
<tr>
<td><strong>Data Privacy</strong></td>
<td>Discussion of policies and practices relating to collection, usage, and retention of customer information and personally identifiable information</td>
<td>Discussion and Analysis</td>
<td>n/a</td>
<td>SV0303-03</td>
</tr>
<tr>
<td></td>
<td>Percentage of users whose customer information is collected for secondary purposes, percentage who have opted in</td>
<td>Quantitative</td>
<td>Percentage (%)</td>
<td>SV0303-04</td>
</tr>
<tr>
<td></td>
<td>Amount of legal and regulatory fines and settlements associated with customer privacy*</td>
<td>Quantitative</td>
<td>U.S. Dollars ($)</td>
<td>SV0303-05</td>
</tr>
<tr>
<td></td>
<td>Number of government or law enforcement requests for customer information, percentage resulting in disclosure</td>
<td>Quantitative</td>
<td>Number, Percentage (%)</td>
<td>SV0303-06</td>
</tr>
<tr>
<td><strong>Data Security</strong></td>
<td>Number of data security breaches, percentage involving customers’ personally identifiable information**</td>
<td>Quantitative</td>
<td>Number, Percentage (%)</td>
<td>SV0303-07</td>
</tr>
<tr>
<td></td>
<td>Discussion of management approach to identifying and addressing data security risks</td>
<td>Discussion and Analysis</td>
<td>n/a</td>
<td>SV0303-08</td>
</tr>
<tr>
<td><strong>Managing Systemic Risks from Technology Disruptions</strong></td>
<td>(1) Average Interruption Frequency and (2) Average Interruption Duration***</td>
<td>Quantitative</td>
<td>Disruptions per customer, Hours per customer</td>
<td>SV0303-09</td>
</tr>
<tr>
<td></td>
<td>Description of systems to provide unimpeded service</td>
<td>Discussion and Analysis</td>
<td>n/a</td>
<td>SV0303-10</td>
</tr>
<tr>
<td><strong>Competitive Behavior &amp; Open Internet</strong></td>
<td>Amount of legal and regulatory fines and settlements associated with anti-competitive practices****</td>
<td>Quantitative</td>
<td>U.S. Dollars ($)</td>
<td>SV0303-11</td>
</tr>
</tbody>
</table>

---

*Note to SV0303-05 - Disclosure shall include a description of fines and settlements and corrective actions implemented in response to events.

** Note to SV0303-07 - Disclosure shall include a description of corrective actions implemented in response to data security incidents or threats.

*** Note to SV0303-09 - Disclosure shall include a description of each significant performance issue or service disruption and any corrective actions taken to prevent future disruptions.

****Note to SV0303-11 - Disclosure shall include a description of fines and settlements and corrective actions implemented in response to events.
# APPENDIX III:
Sustainability Accounting Metrics | Cable & Satellite (cont.)

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>ACCOUNTING METRIC</th>
<th>CATEGORY</th>
<th>UNIT OF MEASURE</th>
<th>CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Competitive Behavior &amp; Open Internet</strong></td>
<td>Revenue from paid peering agreements with (1) content providers and (2) other networks and service providers</td>
<td>Quantitative</td>
<td>U.S. Dollars ($)</td>
<td>SV0303-12</td>
</tr>
<tr>
<td></td>
<td>Average actual sustained download speed of (1) owned and commercially-associated content and (2) non-associated content</td>
<td>Quantitative</td>
<td>Mbps</td>
<td>SV0303-13</td>
</tr>
<tr>
<td></td>
<td>Discussion of risks and opportunities associated with Open Internet Principles and other potential regulation</td>
<td>Discussion and Analysis</td>
<td>n/a</td>
<td>SV0303-14</td>
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</table>
The following graph demonstrates an aggregate assessment of how representative U.S.-listed Cable & Satellite companies are currently reporting on sustainability topics in their SEC annual filings.

### TYPE OF DISCLOSURE ON SUSTAINABILITY TOPICS

<table>
<thead>
<tr>
<th></th>
<th>0%</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>50%</th>
<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
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<tbody>
<tr>
<td>Infrastructure Energy Use &amp; Fleet Fuel Consumption</td>
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<td></td>
<td>75%</td>
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<tr>
<td>Managing Systematic Risks from Technology Disruptions</td>
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<td>75%</td>
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<td></td>
<td></td>
<td></td>
<td>75%</td>
<td></td>
</tr>
</tbody>
</table>

IWG Feedback*:

*Percentage of IWG participants that agreed topic was likely to constitute material information for companies in the industry.