C0. Introduction

C0.1

(C0.1) Give a general description and introduction to your organization.

Founded in 1870 by George H. Tennant, Tennant Company, a Minnesota corporation incorporated in 1909, began as a one-man woodworking business, evolved into a successful wood flooring and wood products company, and eventually into a manufacturer of floor cleaning equipment. Throughout its history, Tennant Company has remained focused on advancing our industry by aggressively pursuing new technologies and creating a culture that celebrates innovation.

Today, Tennant Company is a recognized leader of the cleaning industry. We are passionate about developing innovative and sustainable solutions that help our customers clean spaces more effectively, addressing indoor and outdoor cleaning challenges. Tennant Company operates in three geographic business units including the Americas, Europe, Middle East and Africa (EMEA) and Asia Pacific (APAC).

Tennant Company is committed to empowering our customers to create a cleaner, safer and healthier world with high-performance solutions that minimize waste, reduce costs, improve safety and further sustainability goals.

The Company offers products and solutions consisting of mechanized cleaning equipment, detergent-free and other sustainable cleaning technologies, aftermarket parts and consumables, equipment maintenance and repair service, specialty surface coatings, and business solutions such as financing, rental and leasing programs, and machine-to-machine asset management solutions.

The Company's products are used in many types of environments including: retail establishments, distribution centers, factories and warehouses, public venues such as arenas and stadiums, office buildings, schools and universities, hospitals and clinics, parking lots and streets, and more. The Company markets its offerings under the following brands: Tennant®, Nobles®, Alfa Uma Empresa Tennant™, IRIS®, VLX™, Superior Anodes, Orbio®, IPC brands and private-label brands. The Company's customers include contract cleaners to whom organizations outsource facilities maintenance, as well as businesses that perform facilities maintenance themselves. The Company reaches these customers through the industry's largest direct sales and service organization and through a strong and well supported network of authorized distributors worldwide.

Form 10-K (Annual Report) filed February 28, 2019, for the period January 1, 2018 to December 31, 2018 is available here:

http://investors.tennantco.com/reports/sec-filings/sec-filings-details/default.aspx?FilingId=13262420

NOTE: For 2018 we have included the Scope 1+2 carbon emissions from IPC Group, an acquisition which closed in April 2017. IPC entities and emissions are not within the boundary for our existing two target base years; 2012 for the Int 1 target, and 2016 for the Abs 1 science-based target. The acquisition of Gaomei closed in early 2019. We intend to make 2019 or 2020 the base year for new science-based targets, which will include both IPC and Gaomei.

C0.2

(C0.2) State the start and end date of the year for which you are reporting data.

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Row 1	January 1, 2018	December 31, 2018	Yes	1 year

C0.3

(C0.3) Select the countries/regions for which you will be supplying data.

Australia
Belgium
Brazil
Canada
China
France
Germany
India
Italy
Japan
Mexico
Netherlands
Norway
Portugal
Spain
United Kingdom of Great Britain and Northern Ireland
United States of America

C0.4

(C0.4) Select the currency used for all financial information disclosed throughout your response.

USD

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should

align with your consolidation approach to your Scope 1 and Scope 2 greenhouse gas inventory.

Operational control

C1. Governance

C1.1

(C1.1) Is there board-level oversight of climate-related issues within your organization?

Yes

C1.1a

(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual(s)	Please explain
Chief Executive Officer (CEO)	Tennant Company's President and CEO is also a member of the Board of Directors. The CEO is ultimately responsible for overall financial, environmental, and social governance of the business including climate-related issues. The Sustainable Enterprise group reports directly to the CEO. The CEO provides required oversight for the Sustainable Enterprise group. The CEO also advocates for action toward climate-related objectives and goals across all of the business units, geographic locations, and functional groups which comprise the business. The Sustainable Enterprise group is responsible for setting and making progress toward environmental performance targets. These targets include carbon emission reductions for Scope 1+2, along with Scope 3, Category 11 - Use of sold products.

C1.1b

(C1.1b) Provide further details on the board's oversight of climate-related issues.

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
Scheduled – some meetings	Reviewing and guiding strategy Reviewing and guiding risk management policies	The CEO and Senior Management Team prepare and present company strategies and the operating plan to the Board of Directors. Business and functional unit leaders also present specific elements of strategy and plans.

	Reviewing and guiding annual budgets Overseeing major capital expenditures, acquisitions and divestitures	As part of the annual planning cycle, consideration is given to whether initiatives match up with our Stewardship Guiding Principle - "We will use our core value of stewardship to guide our actions. We are accountable to our colleagues, our customers, our investors and our communities. We care for one another and work together for our mutual safety." The Board review includes strategies, objectives and budgets. The Board guides the strategy and approves the operating plan. Strategy reviews are typically scheduled for the August Board meeting, but also as important matters arise. Operating plan review and approval for the next fiscal year is typically completed at the December Board meeting. The Board reviews the annual Enterprise Risk Assessment (ERA) which identifies, defines, and ranks the company's annual risks. The ERA review is scheduled for the December Board meeting. The Board monitors progress toward specific risk mitigation action plans. For 2018, six of the twelve top risks mapped to climate-related issues. Full detail is provided in C2.2b. The Board also oversees and approves major capital expenditures, acquisitions and divestitures. For example, a major real estate transaction to acquire and remodel a building as new corporate headquarters was reviewed and approved in 2018. This HQ project will enable closing several older, less efficient facilities. It will also enable a project to make the Minneapolis manufacturing facility much more efficient. Completion of these projects over 2019-2021 will provide substantial energy savings and emissions reduction. When the Board reviews acquisitions, risks related to the acquired venture's properties and other assets are reviewed. This may include vulnerability to extreme weather events and other potential business disruptions connected to long-term climate change. Board oversight of major capital expenditures, acquisitions and divestitures is scheduled as these important matters arise. An example is the Gaomei acquisition where a definitive agreement was approved by the Board in Q3 2018.

C1.2

(C1.2) Provide the highest management-level position(s) or committee(s) with responsibility for climate-related issues.

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Chief Executive Officer (CEO)	Both assessing and managing climate-related risks and opportunities	As important matters arise
Other, please specify Director, Sustainable Enterprise	Both assessing and managing climate-related risks and opportunities	As important matters arise

C1.2a

(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored (do not include the names of individuals).

The President and Chief Executive Officer (CEO) is ultimately responsible for all aspects of company performance, including climate-related issues. The President and CEO reports directly to the Board of Directors. The President and CEO works closely with the Lead Director to set and approve the agenda of Board meetings, to ensure that there is an appropriate flow of information to and from the Board, and to ensure that management properly and adequately addresses matters of interest to the Board.

Tennant Company recognizes that climate-related issues require the attention of an ***enterprise level team*** working across all company business units and functions. In 2013, we established a strong governance framework by creating a new position, Director of Sustainable Enterprise (SE). This position reports directly to the President and CEO. The SE Director has oversight on climate-related issues and oversees the Sustainable Enterprise Team, which is responsible for all climate-related issues within Tennant Company. With the SE Director and Team reporting directly to the CEO, the organization understands the importance of our commitments to reduce carbon emissions. The SE Team monitors climate-related issues and how they may affect the company. The SE Director and Team interact with all functional and business units to plan and execute projects which capitalize on climate-related opportunities and mitigate climate-related risks. The SE Director and Team provide periodic updates to the CEO and Senior Management, along with project-specific updates as required. Two specific examples from 2018 are: 1) reviewing and gaining approval for the science-based target submission package in Q1; and 2) reviewing and gaining CEO, CFO, and Director, Investor Relations approval for a multi-year, comprehensive project on ESG Raters and Ratings in Q4.

Areas of specific responsibility for the SE Director and Team include Tennant Company's SE Focus Areas, one of which is Greenhouse Gas (GHG) Emissions/Energy. This Focus Area

includes facility and fleet energy efficiency, energy supply arrangements, renewable energy purchasing, carbon emissions and emission-reduction targets for Scope 1, 2, and 3.

Our short- and long-term goals for the GHG Emissions/Energy Focus Area include: 1) broadening and accelerating energy and fuel-reduction initiatives; 2) developing and entering into more renewable energy supply arrangements; 3) developing products and technology with reduced environmental impact including carbon emissions; 4) achieving progress toward our approved Science-Based Targets for emission reduction. Progress on all these fronts represents Tennant Company's spectrum of effort toward mitigation of long-term climate-related risks.

The SE Director and Team are also responsible for objectives, goals and metrics in the Products, Waste, and People & Communities Focus Areas.

Climate-related issues within Tennant Company are monitored by the SE Director and addressed by direct engagement with Senior Management on relevant initiatives and projects. Specific examples include reviewing the Annual Operating Plan for climate-related issues addressed by the capital investment profile. Also, capital investment projects are reviewed during the approval cycle for climate-related issues. For projects applicable to climate-related issues, the carbon emission impacts are quantified.

One way climate-related issues and trends which affect Tennant Company from the outside are monitored is by participation in external organizations. Example organizations include CDP, SBTi, the Minnesota Sustainable Growth Coalition, and the University of Minnesota Institute on the Environment.

C1.3

(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?

Yes

C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).

Who is entitled to benefit from these incentives?

Other, please specify

Director, Sustainable Enterprise

Types of incentives

Monetary reward

Activity incentivized

Emissions reduction target

Comment

In 2018 the Director, Sustainable Enterprise had performance goals tied to specific projects in the four Sustainable Enterprise Focus Areas. GHG Emissions/Energy is one Focus Area, along with Products, Waste, and People & Communities.

Performance goals are defined annually and reviewed at least quarterly. In 2018, performance goals related to the management of climate-related issues included:
- Making progress toward the Scope 1+2 intensity target (Int 1) set in 2014. Through 2018 we achieved 84.6% of target progress in 75% of time to target.
- Updating and gaining approval for Scope 1+2 and Scope 3, Category 11 “Use of sold products" Science-Based Targets. SBTi approval was received in early 2018.
- Completing and gaining approval for the 2018 CDP Climate Change Questionnaire and Supply Chain response.
- Evaluating renewable energy options for U.S.-based facilities and expanding Renewable Energy Certificate (REC) purchases. In 2018, US-based REC purchases were increased by more than 260%.
- Continuing the existing renewable energy agreements in The Netherlands.
- Developing, introducing, and validating internal accounting processes for renewable electric energy at our two primary Minneapolis facilities. Supply agreements in the form of Community Solar Garden (CSG) subscriptions were signed in 2016. A total of nine CSGs were on-line at 2018 year-end. These CSGs generated over 6,300 MWh of electricity, providing additional renewable capacity on the grid. Renewable Energy Certificates (RECs) for electricity generated by these CSGs go to the local, fully regulated utility - Xcel Energy.

More detail on these and other projects appears throughout this response.

Who is entitled to benefit from these incentives?

Chief Executive Officer (CEO)

Types of incentives

Monetary reward

Activity incentivized

Other, please specify

Achieving long-term operating goals and financial success

Comment

Tennant Company's executive compensation program is designed to align our short- and long-term operating goals and the interests of our shareholders. We seek to offer a comprehensive compensation package that is competitive with those of similarly sized U.S. durable goods manufacturing companies. Our compensation programs take into account that an executive’s actual compensation level may be greater or less than average competitive levels based on our annual and long-term financial performance

against pre-established goals, the individual's performance and the individual's scope of responsibilities.

Specifically, our compensation programs adhere to the following design philosophy and principles:
- create a relationship between pay and performance by providing a strong link between our short- and long-term business goals and executive compensation;
- attract and retain high-caliber key executive officers who can create long-term financial success for the company and enhance shareholder return;
- motivate executive officers to achieve our goals by placing a significant portion of pay at risk;
- align the interests of executive officers with those of our shareholders by providing a significant portion of compensation in stock-based awards; and
- discourage risk-taking behavior that would likely have a material adverse effect on the company.

Our vision is "We will lead our global industry in sustainable cleaning innovation that empowers our customers to create a cleaner, safer and healthier world." To achieve this vision, the CEO takes carbon emissions and climate-related issues into account when considering how to achieve long-term financial success.

Who is entitled to benefit from these incentives?

All employees

Types of incentives

Monetary reward

Activity incentivized

Other, please specify

Stewardship - Reduce environmental impact

Comment

The APPLAUSE program rewards employees for going above and beyond their assigned duties or tasks. One APPLAUSE award category is 'Stewardship,' which is Tennant Company's core value and one of nine Guiding Principles. We define Stewardship as leaving things in better condition than when we found them. In 2018, more than 530 employees received monetary rewards for Stewardship via APPLAUSE. Total monetary value of these awards was more than $60,000. As one example, three employees received awards for personal sacrifice and effort toward resolving a Headquarters facility heating system issue in November 2018. During a four-day holiday weekend, an employee visited HQ and noted interior temperatures were nearly 90 degrees F (32 C). Three employees from Facility Maintenance spent a good portion of the next two days (scheduled holidays) resolving the heating system problem. Their personal sacrifice and effort avoided significant energy waste and prevented work disruption to scheduled shifts after the holiday weekend. These employees exemplify our strong Stewardship culture.

Who is entitled to benefit from these incentives?

All employees

Types of incentives

Recognition (non-monetary)

Activity incentivized

Other, please specify

Stewardship - Reduce environmental impact

Comment

Our annual Leading Edge program recognizes employees who have made significant contributions toward Tennant Company's Strategic Priorities. Leading Edge awards have recognized employees who develop innovative products with reduced environmental footprint; minimize or reduce GHG emissions, energy consumption, and costs; reduce waste; and make positive contributions in our communities.

Twenty-seven (27) employees were recognized under Leading Edge in 2018. More than 270 individuals were nominated. One 2018 Leading Edge award went to a Netherlands employee who led the team creating an improved master production scheduling system. The manufacturing facility in Uden, The Netherlands, is one of our largest plants. While we do not have complete year-over-year data, early indications are very positive and we expect the new system will improve plant efficiency. The end result should be increased output per unit energy consumed. Standardized production volumes and processes will enable these efficiency gains.

The Leading Edge program is recognition based, but includes an element of monetary reward in the form of a three-day trip with partner/spouse to a destination. The 2018 Leading Edge recognition event was held in Panama City, Panama.

C2. Risks and opportunities

C2.1

(C2.1) Describe what your organization considers to be short-, medium- and long-term horizons.

	From (years)	To (years)	Comment
Short-term	0	2	
Medium-term	2	5	
Long-term	5	100	

C2.2

(C2.2) Select the option that best describes how your organization's processes for identifying, assessing, and managing climate-related issues are integrated into your overall risk management.

Integrated into multi-disciplinary company-wide risk identification, assessment, and management processes

C2.2a

(C2.2a) Select the options that best describe your organization's frequency and time horizon for identifying and assessing climate-related risks.

	Frequency of monitoring	How far into the future are risks considered?	Comment
Row 1	Six-monthly or more frequently	>6 years	Identifying and assessing climate-related risks and opportunities is an ongoing, regular activity - part of the Enterprise Risk Assessment (ERA) process. The process begins with the annual ERA survey in our fiscal year fourth quarter (Oct-Dec). Once updated information is collected, the risk prioritization, risk remediation planning, senior management and Board review steps are completed. Risks, and their associated remediation action plans, are monitored and reviewed quarterly. Monitoring continues until the annual ERA update begins again in Q4. Climate-related risks have short- and long-term implications. Consideration beyond six years is important.

C2.2b

(C2.2b) Provide further details on your organization's process(es) for identifying and assessing climate-related risks.

Climate-related risks and opportunities are identified and assessed as part of the annual Enterprise Risk Assessment (ERA) process. We do not use distinct processes to identify and/or assess any sub-categories of company and asset level risks.

The ERA is performed annually at the company level beginning with a survey process which includes leaders from all business units (geographic and product type) and functions (Finance, Global Engineering, Global Marketing, Operations, Legal, Human Resources, Sustainable Enterprise, etc.). For 2018, the ERA process involved approximately 90 senior management and key employees throughout the world. The scope of the ERA includes all significant sites or

assets. For example, key Operations group employees identify and assess risks associated with individual manufacturing facilities at the asset level (Holland, MI; Limeira, Brazil; Minneapolis, MN; Qingpu, China; Uden, The Netherlands; and Venice, Cremona and Reggio Emilia (Province of Padua), Italy.

The overall process is led by our outsourced Internal Audit firm, which begins by refreshing the enterprise risk assessment framework. The next step in the process involves survey participants being specifically asked to identify the most significant risks to the organization. The prior-year risk profile is provided to survey participants, along with risk assessment criteria, and examples of specific Strategic, External, and Operationally Driven (Operations, Compliance and Financial) risks.

The ERA completed in Q4 2018 includes twelve top risks, six of which encompass climate-related risks. Climate-related risks and opportunities are identified and embedded within these six ERA risk/opportunity categories: Supply Chain & Operations; Macroeconomic Factors (e.g., Recession, Geopolitical Unrest, Taxes and Tariffs, etc.); Market Responsiveness, Product Development and Technology Innovation; Competition and Disruption; Business Continuity/Interruption; and Regulatory Compliance. Additional detail on risk mapping follows and more detail is provided in C2.2c.

Within the Supply Chain & Operations and Business Continuity/Interruption categories we assess the risks associated with extreme weather that could adversely impact our facilities and employees, as well as those of our supply chain partners.

Within the Macroeconomic Factors category we assess the positive and negative impact of events which could strengthen or weaken local and global economies.

Within the Market Responsiveness, Product Development and Technology Innovation and Competition and Disruption categories, we assess the risks and opportunities around Tennant Company’s commitment to industry innovation leadership and providing products that clean in a more sustainable, environmentally friendly manner.

Within the Regulatory Compliance category we assess potential reputation- and litigation-related risks. We also identify and assess risks and opportunities related to changing regulations that may impact our products. Our products use batteries, engines, and other regulated items which are associated with product use-phase carbon emissions. Our Product Regulatory Group is responsible for monitoring this sub-category of regulatory risks and issues.

Overall materiality, or "substantive financial impact," is calculated using a combination of 0.5% of revenue and 5% of adjusted pre-tax income and applying judgment to determine the definition of substantive impact. For 2018, substantive financial impact was $4,500,000.

C2.2c

(C2.2c) Which of the following risk types are considered in your organization's climate-related risk assessments?

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	We include the Current regulation risk type in the Regulatory Compliance category of our Enterprise Risk Assessment (ERA). Due to the international scope of Tennant Company operations, we are subject to a complex system of commercial, tax and trade regulations around the world. Tennant Company has business entities in a number of countries including Australia, Belgium, Brazil, Canada, China, France, Germany, India, Italy, Japan, Mexico, The Netherlands, Norway, Portugal, Spain, United Kingdom of Great Britain and Northern Ireland, and United States of America. Recent years have seen an increase in the development and enforcement of laws regarding carbon taxes and emissions trading schemes (ETS), trade, tax compliance, labor and safety and anti-corruption - for example the United States (U.S.) Foreign Corrupt Practices Act, and similar laws from other countries. Our numerous foreign subsidiaries and affiliates are governed by laws, rules and business practices that differ from those of the U.S., but because we are a U.S.-based company, oftentimes they are also subject to U.S. laws which can create a conflict. Despite our due diligence, there is a risk that we do not have adequate resources or comprehensive processes to stay current on changes in laws or regulations applicable to us worldwide and maintain compliance with those changes. Increased compliance requirements may lead to increased costs and erosion of desired profit margin. As a result, it is possible that the activities of these entities may not comply with U.S. laws or business practices or our Business Ethics Guide. Violations of the U.S. or local laws may result in severe criminal or civil sanctions, could disrupt our business, and result in an adverse effect on our reputation, business and results of operations or financial condition. We cannot predict the manner in which existing laws might be administered or interpreted. Tennant Company products are complex, mechanized cleaning equipment like the internal combustion powered rider M30 integrated sweeper/scrubber-drier. A number of regulations apply to these products including engine emissions regulations for the M30. U.S. EPA internal combustion engine regulation 40 CFR Part 1039—CONTROL OF EMISSIONS FROM NEW AND IN-USE NONROAD COMPRESSION-IGNITION ENGINES applies to several product models including M30 and Sentinel.

Emerging regulation	Relevant, always included	We include the Emerging regulation risk type in the Regulatory Compliance category of Tennant Company's Enterprise Risk Assessment (ERA). Due to the international scope of our operations, we are subject to a changing system of commercial, tax and trade regulations around the world. Recent years have seen an increase in the discussion and development of laws regarding carbon taxes and emissions trading schemes, trade, tax compliance, labor and safety and anti-corruption. Increased compliance requirements for Emerging regulation may lead to increased costs and erosion of desired profit margin. We cannot predict the nature, scope or effect of future regulatory requirements to which our operations might be subject. For example, the reformed EU Emissions Trading System (ETS) will take effect in 2021. Tennant Company's 2017 acquisition of IPC Group resulted in a broader set of EU direct operations including those in Norway and Italy. However no Tennant Company operations are included in Phase 4 of EU ETS. Assessing the scope of future EU ETS Phases, before they take effect, is an example of considering future or Emerging regulation risk. Tennant Company products are complex, mechanized cleaning equipment like the internal combustion powered rider M30 integrated sweeper/scrubber-drier or the battery powered rider T16 scrubber-drier. A number of regulations apply to these products including engine emissions regulations for the M30. Tennant Company monitors Emerging regulations closely. Internal combustion engine regulations like U.S. EPA 40 CFR Part 1039—CONTROL OF EMISSIONS FROM NEW AND IN-USE NONROAD COMPRESSION-IGNITION ENGINES were under review and consideration for years before they went into effect on 1 January 2019. Another regulation example relevant to battery powered equipment sold in the EU, like Model T16, is Machinery Directive 2006/42/EC. We also see Emerging regulation as an area of tremendous opportunity via increased demand for lower emissions products and services.
Technology	Not relevant, explanation provided	No climate-related Technology risk types are currently assessed as relevant. Technological improvements or innovations that support the transition to a lower-carbon, energy-efficient economic system are something Tennant Company sees as an area of tremendous opportunity via increased demand for lower emissions products and

		services. For example, electrification of our product line portion which employs internal combustion engines is an area of current investment. This could include product models like S30, M30, and 800.
Legal	Not relevant, explanation provided	No climate-related Legal risk types are currently assessed as relevant, beyond those mentioned in Current and Emerging regulation risk types. Tennant Company's business model is to develop, manufacture, sell, and service capital goods products. This includes mechanized cleaning equipment, detergent-free and other sustainable cleaning technologies, aftermarket parts and consumables, equipment maintenance and repair service, specialty surface coatings, and business solutions such as financing, rental and leasing programs, and machine-to-machine asset management solutions. Through the 2017 acquisition of IPC Group, our product portfolio expanded to include cleaning tools and supplies, such as multi-purpose cleaning trolleys, window-washing systems, antibacterial microfiber mops and cloths, and a wide array of consumables. Given our business model, we have not identified any climate-related litigation claim risks.
Market	Relevant, always included	We include this risk type in the Competition and Disruption and Market Responsiveness, Product Development, and Technology Innovation categories of our Enterprise Risk Assessment (ERA). Climate-related Market risk types may include competitor products and technologies which are market advantaged due to lower carbon emissions or other environmental impact reduction. Tennant Company products ranging from canister vacuum cleaners like Model V-CAN-10 to rider integrated sweeper/scrubber-drier Model M30, are sold in competitive markets throughout the world. Competition is based on product features and design, brand recognition, reliability, durability, technology, breadth of product offerings, price, customer relationships and after-sale service. These features can include environmental footprint improvements such as carbon emission reduction. Although we believe that the performance and price characteristics of our products will produce competitive solutions for our customers' needs, our products are generally priced higher than our competitors' products. This is due to our dedication to innovation and continued investments in research, technology, and product development. We know that customers will pay for the innovations which include environmental benefits (for example, the ec-H2O™ family of products including models from T300 to M30) and the quality in our products.

		It may be difficult for us to compete with lower-priced products offered by our competitors and there can be no assurance that our customers will continue to choose our products over products offered by our competitors. If our products, markets and services are not competitive, we may experience a decline in sales volume, an increase in price discounting and a loss of market share, which adversely impacts revenues, margin and the success of our operations. For example, a competitor could launch a lower-cost stand-on scrubber-drier that results in reduced sales of our T350 model.
Reputation	Not relevant, explanation provided	No climate-related Reputation risk types are currently assessed as relevant. Tennant Company's business model is to develop, manufacture, sell, and service capital goods products. This includes mechanized cleaning equipment, detergent-free and other sustainable cleaning technologies, aftermarket parts and consumables, equipment maintenance and repair service, specialty surface coatings, and business solutions such as financing, rental and leasing programs, and machine-to-machine asset management solutions. Through the 2017 acquisition of IPC Group, our product portfolio expanded to include cleaning tools and supplies, such as multi-purpose cleaning trolleys, window-washing systems, antibacterial microfiber mops and cloths, and a wide array of consumables. Tennant Company's commitment to science-based targets, demonstrated Scope 1+2 emission reduction progress, and continued investment in eco-advantaged products and technology are actions we believe enhance our strong reputation. Many of our largest customers undertake similar actions. When competing for business, we have noted these customers seek business partners that will not detract from their own reputations.
Acute physical	Relevant, always included	We include this risk type in the Business Continuity/Interruption category of our Enterprise Risk Assessment (ERA). An Acute physical event like a tornado could cause a business disruption. Extreme weather events continue to increase in both severity and frequency. The 14 separate U.S. billion-dollar disasters in 2018 represent the fourth highest total number of events, behind only the years 2017 (16 events), 2011 (16) and 2016 (15). The most recent years of 2018, 2017 and 2016 have all been historic in the number of billion-dollar disasters that have impacted the U.S. – totalling 45 separate events. Source: https://www.climate.gov/news-features/blogs/beyond-data/2018s-billion-dollar-disasters-context

		As examples, our facilities in Texas and Minnesota are exposed to greater tornado risk compared to our facilities in other U.S. states and countries. And our facility in Louisville, KY, is exposed to greater flood risk. While these tornado and flood risks are relatively low, they must be considered. We rely on our computer systems, ERP software such as SAP, manufacturing plants and distribution facilities to efficiently operate our business. If we experience an interruption in the functionality in any of these items for a significant period of time for any reason, including climate-related events, we may not have adequate business continuity planning contingencies in place to continue our normal business operations on a long-term basis. In addition, the increase in customer-facing technology raises the risk of a lapse in business operations. Therefore, significant long-term interruption in our business could cause a decline in sales, an increase in expenses and could adversely impact our financial results.
Chronic physical	Not relevant, explanation provided	No climate-related Chronic physical risk types are currently assessed as relevant. We do not believe any Tennant Company direct operations are located in high-risk areas from the Chronic physical risk perspective. For example, no manufacturing or logistics facilities are located in low sea level or subsidence-prone areas; i.e., gradually caving in or sinking. Longer-term shifts in climate patterns (e.g., sustained higher temperatures) that may cause sea level rise or chronic heat waves are not currently as likely to affect our locations as Acute physical risks. This assessment could change over time, so Chronic physical risk types are reviewed for relevance on an ongoing basis.
Upstream	Relevant, always included	Tennant Company includes this risk type in the Supply Chain & Operations category of our Enterprise Risk Assessment (ERA). Upstream type risks could be realized from several of the underlying risk types as listed here in Table 2.2c including Emerging Regulation, Market, and Acute physical. Many of our products are highly complex, with riding models like M20, T20, M30, 800, IPC 161 and 191 as good examples. With such complex products (more complex than lift trucks or transit vans) we have many different suppliers across the world. Realizing upstream risk may in turn have a negative impact on revenue and/or profit, operations, and overall financial condition.

		A good example of Upstream risk would be an extreme weather event one of our supplier's production facilities. This would be a realized Acute physical risk in our Upstream supply chain. Such an event could cause supplier delivery disruption, which in turn creates material or part shortages. Those types of problems could prevent us from manufacturing complete products and delivering them to customers on a timely basis. We do not have a past or present, company-specific, example of realizing this category of climate-related risk. We did recently have a supplier production facility that was negatively affected by fire. This Upstream event was disruptive to our business. A climate-related facility event could create similar disruption.
Downstream	Not relevant, explanation provided	No climate-related Downstream risk types are currently assessed as relevant. Our downstream value chain involves customers using Tennant Company's capital goods products and solutions to clean industrial and commercial surfaces. We see an opportunity for more frequent sales and use of these products, if and when acute or chronic physical risks are realized by our customers.

C2.2d

(C2.2d) Describe your process(es) for managing climate-related risks and opportunities.

Our process for managing climate-related risks and opportunities is dovetailed with the Enterprise Risk Assessment (ERA) process. The Tennant Company Risk Committee reviews the annual ERA survey results, including prioritization and comments provided by all participants, to confirm or adjust risk prioritization. Prioritization takes the following significance factors into account: 1) Impact (financial, operational/technology, disruption, compliance and strategic/reputational perspectives); 2) Likelihood; and 3) Management Preparedness. Risks are first mapped by Impact and Likelihood, before considering our controls and control environment; i.e., management preparedness, to define the inherent risk profile. Next, our controls and control environment are considered to define the residual risk profile. Responsibility for each risk is assigned to Executive Sponsor(s) and the appropriate senior management team member(s). Remediation plans and action plans are then developed or updated with a goal of mitigating risk exposures.

The completed ERA is approved by senior management, presented to and reviewed by the Board of Directors Audit Committee each December, and a copy is provided to the full Board of Directors. All Board Members are invited to attend this meeting and typically all attend. The ERA and progress against remediation action plans are reviewed each quarter. Any significant changes in the ranking of risks, mitigation efforts, or identification of new risks are discussed

with the Board of Directors Audit Committee and provided to the full Board of Directors. Comparing our 2018 and 2017 inherent risk profiles (Impact and Likelihood), we made significant progress on remediation/action plans in 2018.

The company manages climate-related and other risks in many ways outside of the ERA. A good example of how we manage Physical risk is the use of site-specific business continuity plans (BCP). A BCP provides the recovery path should an Acute physical risk like an extreme weather event be realized. These events can be caused or amplified by climate change. Initial response and crisis management are known to be key success determinants in mitigating risk. For example, an extreme weather event at our Minneapolis, MN, manufacturing facility would invoke a prepared set of initial response actions by specific action owners. In 2018, we began expanding the Business Continuity Management System (BCMS) to additional facilities beyond our largest one in Minneapolis.

Examples of how we manage Transition risks include our Product Regulatory Group and Senior Product Stewardship Engineer (SPSE). The Product Regulatory Group monitors and anticipates regulations which currently affect our product categories or could in the future. A number of environmental regulations apply to our product categories like engine emissions, product take-back (recycling), etc. The Product Regulatory Group helps anticipate needed compliance actions before the regulations take effect. This group also influences the product development road map, which outlines future resource commitments against opportunities. The SPSE works closely with the Global Engineering group on technology risks. The goal is to turn technology risks into opportunities. Electrification is a good example. We have been shifting our product lines away from internal combustion and toward battery power for many years. Advances in battery technology, like new lithium chemistries, provide future growth opportunities. The SPSE also works with the Global Marketing/Product Management group on commercial viability of new concepts. Finally, the SPSE works with the Global Strategic Supply group on supplier engagement and risk mitigation/management.

Climate-related opportunities are also managed through our Strategic Planning and Business Development processes, the Advanced Products and Technology group, and Market Research group. We consider potential investments and acquisitions which will enable future growth. Monitoring general technology trends plus adjacent industry trends is a mechanism we use to manage such opportunities. Once identified, we closely watch technologies with potential to reduce environmental impact of our products. One example is the general desire for many customers to reduce Scope 1+2 carbon emissions. We have conducted Life-Cycle Assessments on several of our products. We partner with existing and potential customers to determine how much they can reduce emissions by adapting our new products and technologies.

With our premium, lower total life-cycle cost product line we serve customers that are often trying to reduce their environmental impacts and related risks.

C2.3

(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.3a

(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Risk 1

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Transition risk

Primary climate-related risk driver

Policy and legal: Mandates on and regulation of existing products and services

Type of financial impact

Other, please specify

Reduced demand for products and services due to higher product cost and/or inability to sell if non-compliant

Company- specific description

There are many areas of regulation which affect Tennant Company products. Recent regulations from the EPA and EU have affected internal combustion engines and fuel delivery systems which we use in our products. These regulations have the potential to increase product cost and reduce revenue from the sale of our products. We must monitor the regulatory climate closely and take action in advance to be prepared.

Such regulations also have the potential to impact material selection and costs. Those impacts can apply to all products and all manufacturers in certain industries. The financial impact could be lost sales, along with both cost of compliance and opportunity cost from diversion of key resources from new product development to compliance programs.

As mentioned, some of our products use internal combustion engines. Specific examples include the M30 and Sentinel models. On January 1, 2019, Tier 4 and Stage V emissions regulations took effect in the USA and EU, respectively. These standards were adopted to reduce pollution in the form of particulate matter, hydrocarbons, and NOx. Engine manufacturers utilize various combinations of exhaust after-treatment technologies. In order to have our products updated and ready for sale, we must work in advance of the effective date to manage this type of transition risk.

Total company revenue from internal combustion products continues to decline slowly due to advances in battery and other power source technologies. But internal

combustion products make up a material portion of our revenue/profit. Certain customer needs and situations (runtime, lack of access to charging, etc.) cannot be addressed without an internal combustion power supply.

Time horizon

Medium-term

Likelihood

Likely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

2,599,650

Potential financial impact figure – maximum (currency)

21,663,750

Explanation of financial impact figure

Our Sentinel product model has an internal combustion engine and is a good company-specific example. The list price for a Sentinel is $173,310. The cited range of potential revenue impact ($2,599,650 - $21,663,750) reflects selling between 15 and 125 fewer Sentinel products. This could happen if the engine price increased significantly ($3,000 - $6,000) due to a regulatory mandate.

Such a cost increase could make customers decide to temporarily forego new equipment purchases. They could choose to repair an existing machine or choose to rent equipment for the short term.

Financial impact would depend on the specific mandate and/or regulation, the product elements affected, and number of models affected.

Management method

Our Director of Product Regulatory Affairs, along with staff members, address product regulatory issues in all regions in which we conduct business. Our management method to address this risk is active engagement. We strive to understand potential regulatory implications well before they take effect. By proactively engaging, alternatives can be developed and tested, before regulatory change takes effect. This ensures compliance and reduced risk across our value chain. Product Regulatory Affairs personnel are involved in each product development project, as well as governance of our product development process and roadmap. This provides long-term regulatory insight on product roadmap.

Management method examples include ensuring our products are compatible with compliant engines available in the broadest markets. Another method is to seek cost-reduction ideas and concepts to partially or fully offset added costs from more complex internal combustion systems. For example, if a regulatory-driven change causes a $500 increase in engine cost, we would review product design in depth to seek offsetting cost reductions. A more expensive air pollution control system could be offset by improved production efficiency from lean manufacturing or other continuous improvement initiatives. This risk affects a number of our product models with internal combustion engines including M20, T20, M30, S20 (some variants), S30, 4300, 800, Sentinel, 1050, 1450, 161 and 191.

Cost of management

200,000

Comment

Cost noted above is a fraction of Product Regulatory Affairs group budget.

Precise cost of management would include other employee compensation and project costs (hardware, testing, etc.). The precise cost depends on the scope of mandate and/or regulatory change.

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Transition risk

Primary climate-related risk driver

Policy and legal: Increased pricing of GHG emissions

Type of financial impact

Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

Company- specific description

There are externalized, societal costs from the use of fossil fuels. Explicit carbon pricing (carbon tax) along with cap and trade have been implemented in some markets around the world to address these externalities. Tennant Company expects this trend to continue. Quantifying this risk, and updating the risk picture at least annually, is important work.

Tennant Company's largest manufacturing facilities are located in advanced economies such as Italy, The Netherlands and USA. These facilities use substantial amounts of electricity and natural gas. We have direct Sales and Service operations in many more advanced economies such as Australia, Canada, France, Germany, Italy, Japan, Spain,

and UK. These operations have vehicle fleets which use substantial amounts of gasoline and diesel fuel.

The International Energy Agency (IEA) maintains the estimated $63 mT CO2 and $140 mT CO2 for 2025 and 2040, respectively, for advanced economies in the Sustainable Development Scenario. Source: "World Energy Outlook 2018."

This overall risk (Increased pricing of GHG emissions) has both direct and indirect (supply chain and client) implications. Risk 2 captures the direct operations portion of the overall risk.

Time horizon

Long-term

Likelihood

About as likely as not

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

2,331,693

Potential financial impact figure – maximum (currency)

5,181,450

Explanation of financial impact figure

This operational cost impact estimate is based on 2018 total Scope 1+2 GHG emissions (market-based) of 37,011 mT CO2e and the IEA 2025 and 2040 carbon price estimates in advanced economies.

$2,331,693 = 37,011 mT CO2e * $63
$5,181,540 = 37,011 mT CO2e * $140

Management method

Our management approach to this risk is monitoring utility usage by facility and focusing more effort on emissions reduction activities including energy supply projects, energy efficiency, and fleet fuel use efficiency. Benefits include reduced current operating costs and mitigating the longer term risk. For example, we achieved 861 mT CO2e absolute emission reduction in 2018 to 29,566 mT CO2e, 2.83% less than 2017 emissions (30,427 mT CO2e). The reduction noted here is for our SBTi approved target reporting boundary (not including 2017 IPC acquisition).

Cost of management

0

Comment

No additional direct cost

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Physical risk

Primary climate-related risk driver

Acute: Increased severity of extreme weather events such as cyclones and floods

Type of financial impact

Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

Company- specific description

Extreme weather events, such as tornadoes, hurricanes, typhoons and flooding, present a global business continuity risk to Tennant Company.

With a global manufacturing model, we have production locations in Brazil, China, Italy, The Netherlands and the United States. Therefore, we face a possibility of extreme weather causing interruption at one or more manufacturing locations.

Our direct operations are mainly located in low-risk areas from the perspective of floods, hurricanes and cyclones. Our Grand Prairie, TX, and Minneapolis, MN, operations are located in states with a higher-than-average likelihood of tornadoes. Our distribution center in Louisville, KY, is located in a flood-prone area.

Time horizon

Current

Likelihood

Unlikely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

1,000,000

Potential financial impact figure – maximum (currency)

25,000,000

Explanation of financial impact figure

Revenue impact could exceed $1,000,000 and range to $25,000,000 or more, depending on affected facility locations. Total replacement of our largest manufacturing facility (in Minneapolis, MN) would cost over $100 million. All material properties and physical assets are insured, but long recovery times could drive significant revenue impact.

Management method

Tennant Company manages this risk by insuring all our facilities to cover losses from extreme weather events. This is integral to our annual risk assessment and the responsibility of our Environmental Health and Safety, Tax and Treasury, and Legal Departments. A register of properties is maintained by the Tax and Treasury Department, as a checkpoint on current and appropriate types of insurance coverage. We also manage this risk by business continuity planning.

In 2016, we identified the need for more robust business continuity plans. The plan for Minneapolis operations was put in place in 2017. Other location operations plans were in development during 2018 and will continue. The improved business continuity plans will address the initial response phase more robustly. Initial response and crisis management are known to be key success determinants in mitigating risk. For example, an extreme weather event (caused or amplified by climate change) at one of our manufacturing facilities will invoke a prepared set of initial response actions by action owners.

Tennant Company also has multiple, redundant, off-site data centers to minimize the probability of business system unavailability.

Cost of management

200,000

Comment

The $200,000 is approximate direct cost - not including the total cost of property insurance. Annual property insurance cost is more than $670,000 for the most recent term. This includes a flood policy for our Louisville, KY, location.

Identifier

Risk 4

Where in the value chain does the risk driver occur?

Supply chain

Risk type

Physical risk

Primary climate-related risk driver

Acute: Increased severity of extreme weather events such as cyclones and floods

Type of financial impact

Reduced revenue from decreased production capacity (e.g., transport difficulties, supply chain interruptions)

Company- specific description

Extreme weather events, such as tornadoes, hurricanes, typhoons and flooding, present a global business continuity risk to Tennant Company.

With our complex and broad product line, we have many different direct supply categories like batteries & chargers, castings, engines, motors & drives, and some third-party products. Along with these varying categories, we have a number of direct material suppliers in most categories. Our direct material suppliers are located in many parts of the world including Brazil, China, European countries, Mexico, and the United States.

We also have a number of indirect supplier partners providing services like transportation/distribution, vehicle fleet management, etc. Example partners include Kuehne + Nagel, our primary international freight forwarder, and ARI, our U.S. & Canada fleet management partner.

Therefore, we face a possibility of extreme weather causing interruption at one or more direct or indirect material supplier locations.

Time horizon

Current

Likelihood

Unlikely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

1,000,000

Potential financial impact figure – maximum (currency)

25,000,000

Explanation of financial impact figure

Revenue impact could range from $1,000,000 to $25,000,000 depending on the direct or indirect suppliers affected. Problems in our supply chain could make us unable to produce and ship finished goods. The potential financial implications range widely, depending on particular suppliers and the number of product lines affected. Long recovery times could drive significant revenue impact.

Management method

Management methods include assessing our supply chain for risks and identifying critical suppliers. Critical suppliers include single sources and those producing items with high complexity and/or long lead times. We are planning to formalize business continuity discussions with these suppliers. Good business continuity planning addresses the initial response phase robustly. Initial response and crisis management are known to be key success determinants in mitigating risk. For example, an extreme weather event (caused or amplified by climate change) at one of our critical suppliers would invoke a prepared set of initial response actions by action owners at the supplier.

We require all suppliers to carry insurance for property damage with all risks covered at replacement cost.

Cost of management

200,000

Comment

Less than $200,000 in direct cost

Identifier

Risk 5

Where in the value chain does the risk driver occur?

Supply chain

Risk type

Transition risk

Primary climate-related risk driver

Policy and legal: Increased pricing of GHG emissions

Type of financial impact

Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

Company- specific description

There are externalized, societal costs from the use of fossil fuels. Explicit carbon pricing (carbon tax) along with cap and trade have been implemented in some markets around the world to address these externalities. Tennant Company expects this trend to continue. Quantifying this risk, and updating the risk picture at least annually, is important work.

With Tennant Company's complex and broad product line, we have many different direct material supplier groupings like batteries & chargers, castings, engines, motors & drives. We have a number of suppliers in most direct material groups and many of these suppliers have some facilities in advanced economies like the EU, U.S., Japan, etc. Sole source creates risk and more diverse sourcing creates complexity so a strategic supplier approach is required to achieve good balance.

We consider our supply chain partnerships confidential and, in general, chose not to disclose details on specific suppliers. We have supplied this detailed, confidential data to Trucost for calculation of Purchased goods and services carbon emissions. The resulting financial impact ranges are based on detailed confidential data including Tennant Company spend by supplier, supplier names and locations, and items purchased.

The International Energy Agency (IEA) maintains the estimated $63 mT CO2 and $140 mT CO2 for 2025 and 2040, respectively, for advanced economies in the Sustainable Development Scenario. Source: "World Energy Outlook 2018."

This overall risk (Increased pricing of GHG emissions) has both direct and indirect (supply chain & client) implications. Risk 3 captures the indirect portion of the overall risk.

Time horizon

Long-term

Likelihood

About as likely as not

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

7,679,511

Potential financial impact figure – maximum (currency)

17,065,580

Explanation of financial impact figure

This impact estimate is based on 2018 total Scope 3, Category 1 - Purchase goods and services emissions of 121,897 mT CO2e and the IEA 2025 and 2040 carbon price estimates in advanced economies.

$7,679,511 = 121,897 mT CO2e * $63
$17,065,580 = 121,897 mT CO2e * $140

Management method

Tennant Company manages this risk via dialogue with our suppliers. For example, the Global Supply function held a Supplier Summit in 2017. The event included participants from more than 10% of our global suppliers, representing approximately 80% of global supplier spend. The Summit included a presentation to all attendees on Tennant Company's Sustainable Enterprise strategy. The presentation included facts and data about our carbon emissions, targets and emission-reduction activities. Raising supplier awareness is an important management method.

In 2018, Tennant Company created the Operations Center of Excellence group. One benefit of this organizational adjustment is improved risk management. This group is working to achieve global, consistent, disciplined execution in areas such as Global Supply, Global Operations Launch (new products), Global Continuous Improvement, Enterprise Business Improvement, and Global Quality. These centralized resources serve each of our manufacturing facilities.

The Global Supply group is responsible for our global supply chain, which includes: developing and implementing company-specific strategies for direct and indirect supply while driving continuous improvement throughout the supply chain; collaborating with manufacturing location based groups; coordinating the global transportation network, contracts and spend; and collaborating with global material control teams to manage supplier performance through key performance metrics.

Cost of management

0

Comment

No additional direct cost

C2.4

(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.4a

(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Opp1

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Type of financial impact

Increased revenue through demand for lower emissions products and services

Company-specific description

Extreme weather events, such as tornadoes, hurricanes, typhoons and flooding, may increase awareness of climate change as a serious issue. In turn, this awareness may drive increased demand for Tennant Company products and solutions that offer customers the ability to reduce carbon emissions.

Many of our company-specific products and solutions are proprietary and patented, making them differentiated and unique. These products include battery-powered scrubber-driers, both walk-behind and rider with patented ec-H2O™ technology. Another company-specific example is IRIS® Asset Manager technology, offered on many types of products. These technologies can help customers avoid carbon emissions.

For example, Tennant Company's ec-H2O™ technology can be added to most of our scrubber-drier models. These models range in size from T300 (17-inch cleaning path) to T20 (56-inch cleaning path). Revenue from this technology has exceeded $1,340,000,000 revenue over an eleven (11) year time period (2008-2018). And customers have avoided emissions amounting to more than 88,000 mT CO2e over that same time period.

Customers continue to ask for much more detailed information in solicitations and Requests for Proposal as they drive toward their own carbon emission reduction goals and other environmental objectives. Providing environmental and performance advantaged products, with lower total life-cycle cost, is core to Tennant Company's value proposition. We have a broad line of eco-advantaged products (described in company-specific terms above), backed up by independent Life Cycle Assessment data.

Tennant Company products are generally some of the highest performing, highest quality and lower total life-cycle cost in the industry.

Tennant Company sees this as an opportunity for increasing existing product demand, compared to our competitors, as well as higher margins through the development of new, differentiated solutions.

NOTE: We cannot share specific information about products and technology that are in development. The Model 1610 ReadySpace® example provided below is a product we have already introduced.

Time horizon

Current

Likelihood

More likely than not

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

5,442,000

Potential financial impact figure – maximum (currency)

54,420,000

Explanation of financial impact figure

We expect to realize incremental sales ranging from $5,442,000 - $54,420,000 for one new, patented product or technology. As an example, we could introduce another eco-advantaged product like ReadySpace® which allows customers to reduce their carbon emissions, water use and waste. The model 1610 ReadySpace product has a list price of $13,605 and 400 units could be sold on the low end to 4,000 units on the high end. This would yield $5,442,000 - $54,420,000 of incremental revenue.

Strategy to realize opportunity

Realizing this opportunity was a consideration when our Sustainable Enterprise strategy work identified Products as one of four Focus Areas and we set objectives, goals, and metrics.

We prioritize technology and product development, which includes carbon emissions avoidance and other environmental improvements in "Use of sold products" (our Scope 3). Examples of eco-advantaged products we developed and commercialized include ec-H2O™ technology, ReadySpace®, and IRIS®. These products help our customers reduce their Scope 1+2 carbon emissions, water use and waste. Revenue from the ec-H2O technology family has exceeded $1,340,000,000 revenue over an eleven (11) year time period (2008-2018).

In 2017, we added a dedicated Senior Product Stewardship Engineer (SPSE) who is embedded with the Global Engineering group. The SPSE also works closely with Global Marketing/Product Management and Global Strategic Supply groups. The additional SPSE resource enhances our ability to pursue and advance technologies which lead to future eco-advantaged products.

Cost to realize opportunity

150,000

Comment

Cost is approximate for additional resource. Total Research and Development investment in 2018 was more than $30.7 M and this is applied across a broad array of initiatives.

Project level investment is confidential information.

Identifier

Opp2

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Type of financial impact

Increased revenue through demand for lower emissions products and services

Company-specific description

Regulations to keep grounds and facilities clean, free of debris and safe for employees and occupants may drive increased demand for Tennant Company products. For example, recent regulations like OSHA Respirable Crystalline Silica Standards are targeting worker safety via improved air quality (reduced particulates). This regulation has driven increased demand for some of our sweeper products. One specific example of developing to address emerging regulations is the advanced air filtration systems for Tennant Models 800, S30, S20, 6100, and S10. These models have dry sweeping with HEPA filtration available, which increases worker safety by reducing exposure to hazardous particulates (silica dust). We also have Tennant products which can employ wet sweeping and water flooding as effective dust control methods.

NOTE: We cannot share specific information about products and technology that are in development. The Model S20 example provided below is a product we introduced in late 2017 ahead of the silica dust regulation effective date.

Time horizon

Short-term

Likelihood

Very likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

1,880,550

Potential financial impact figure – maximum (currency)

9,402,750

Explanation of financial impact figure

For example, the S20 sweeper product has a list price of $37,611 and between 50 and 250 incremental units could be sold.

This yields a range of $1,880,550 - $9,402,750 incremental revenue.

Strategy to realize opportunity

Tennant Company's Product Regulatory Affairs team actively engages to understand regulatory implications before they take effect. Being proactive on regulations enables product and solution introduction before regulatory change takes effect. The team is involved in each product development project, as well as product development roadmap governance. This provides long-term regulatory insight to the product planning process.

One example is anticipating the OSHA Respirable Crystalline Silica Standards now applied in a number of U.S. industries (General Industry and Maritime, Construction). We developed and validated products and solutions to help businesses limit worker exposure to crystalline silica - before the standards took effect. We launched the products in 2017, before the first steps of industry compliance were required in 2018. We are working to educate customers on how they can reduce environmental impact and improve worker safety via our direct sales force, marketing campaigns, blogs and website. We have realized incremental revenue from launching these products to address the need but cannot disclose specific amounts. While this environmental improvement does not involve carbon emissions directly, it is a good example of the strategies we use to realize opportunities which are climate-related.

When customers buy new models like those equipped to handle silica dust, they are typically more energy and fuel efficient than displaced models, avoiding future emissions.

Cost to realize opportunity

0

Comment

Total Research and Development investment in 2018 was more than $30.7 M and was applied across a broad array of initiatives.

Project level investment is confidential information.

Identifier

Opp3

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity driver

Development of new products or services through R&D and innovation

Type of financial impact

Increased revenue through demand for lower emissions products and services

Company-specific description

Tennant Company strives to create innovative, new products to meet customer needs. Our existing products are typically lower total life-cycle cost, with both environmental and performance advantages. We have a broad line of eco-advantaged products, backed up by independent Life Cycle Assessment data. These models include ec-H2O equipped scrubber-driers ranging from T300 to T20, ReadySpace 1610 & R14, and Orbio os3. We see this as a continuing opportunity for increased future product demand, compared to our competitors. We have a number of technologies in development with potential to significantly increase revenue. We cannot publicly disclose specific proprietary technologies when they are still in development. A company-specific past example is the ec-H2O™ technology which has generated more than $1,340,000,000 in sales over the past eleven years. Over that same time period, customers have avoided emissions amounting to more than 88,000 mT CO2e.

A future company-specific example might be a large, rider integrated scrubber/sweeper with patented features like the Model M30 that also has an electric power system replacing internal combustion. This type of innovation could reduce customer carbon emissions.

NOTE: We cannot share specific information about products and technology that are in development. The Model M30 example provided is a product we have already introduced.

Time horizon

Medium-term

Likelihood

Very likely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

16,975,750

Potential financial impact figure – maximum (currency)

54,322,400

Explanation of financial impact figure

For example, we introduced an eco-advantaged, large rider scrubber/sweeper like the M30 with patented features that allow customers to reduce their carbon emissions. The M30 product has a list price of $67,903 and between 250 and 800 units could be sold. This yields $16,975,750 to $54,322,400 incremental revenue.

Strategy to realize opportunity

Tennant Company's strategy to realize this opportunity is to actively and directly engage with our customers. We determine their evolving needs and expectations and also consider general societal trends. Having direct Sales and Service personnel in the field, in both developing and developed economies, helps this process immensely. Active and direct engagement enables Tennant Company to develop industry-leading products and services as well as continuously develop innovative sustainable solutions for customer facility maintenance needs. For example, our new products like the T600 scrubber-drier product family (launched in 2018) will likely result in greater revenue and profit for the company. This product provides customers the opportunity to reduce environmental impacts, including the benefits of ec-H2O NanoClean.

Cost to realize opportunity

0

Comment

Total Research and Development investment in 2018 was more than $30.7 M and was applied across a broad array of initiatives.

Project level investment is confidential information.

Identifier

Opp4

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity driver

Development of new products or services through R&D and innovation

Type of financial impact

Better competitive position to reflect shifting consumer preferences, resulting in increased revenues

Company-specific description

Tennant Company strives to create innovative, new technologies to meet customer needs. Trend and voice of customer research indicate customers desire more efficient and sustainable products which use fewer chemicals. Developing environmental and performance advantaged technology, with lower total life-cycle cost, is core to Tennant Company's value proposition. We see this as an opportunity for increased new technology product demand in the future, compared to our competitors.

We actively track 'mega-trends' including: population demographics, environmental pressures, new technologies, etc. Observations and potential impacts are fed to Strategic Planning, Business Development, and the Advanced Products and Technology Groups to identify potentially disruptive, far-term business opportunities. This enables development of innovative sustainable solutions for future customer needs.

We cannot publicly disclose specific proprietary technologies when they are still in development.

Time horizon

Long-term

Likelihood

Likely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

11,125,000

Potential financial impact figure – maximum (currency)

56,250,000

Explanation of financial impact figure

For example, we introduced an eco-advantaged, Tennant-branded, large rider sweeper in the size range of the current Model S30. The new product allows customers to reduce their carbon emissions. The product has a selling price of $45,000 and between 250 and 1,250 units are sold. This yields $11,125,000 - $56,250,000 incremental revenue.

Strategy to realize opportunity

Tennant Company's strategy to realize this opportunity is to be on track to commercialization before competitors.

One trend we watch closely is regulations & laws related to climate change. Since 1997, there has been a 20-fold increase in the number of global climate change laws. This is according to a comprehensive database of relevant policy & legislation, produced by Grantham Research Institute on Climate Change and the Environment and the Sabin Center on Climate Change Law. The database includes more than 1,200 relevant policies across 164 countries accounting for more than 95% of global GHG emissions.

Another trend is mobile robotics & autonomous vehicles. We have been working with this technology for a several years and are moving to commercialization. Our work to integrate Autonomous Mobile Robot (AMR) technologies has enabled new products and services and produced incremental revenue. In Q4 2018, we introduced and began shipments of our first commercial AMR product, the T7AMR. In Q1 2019, we announced an agreement to supply T7AMR scrubber-driers to a major retailer, Walmart. Walmart has been a leader in carbon emissions reduction across their value chain and worked to shape Project Gigaton along with CDP, the World Wildlife Fund, TSE, and Sustainability Consortium.

http://investors.tennantco.com/news-and-events/press-releases/press-release-details/2019/Tennant-Company-Announces-Agreement-with-Major-US-Retailer-to-Supply-Fleet-of-Robotic-Floor-Cleaners/default.aspx

Cost to realize opportunity

0

Comment

Total Research and Development investment in 2018 was more than $30.7 M and was applied across a broad array of initiatives.

Project level investment is confidential information.

Identifier

Opp5

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Use of more efficient production and distribution processes

Type of financial impact

Reduced operating costs (e.g., through efficiency gains and cost reductions)

Company-specific description

Buildings such as Tennant Company's logistics center in Louisville, KY, use significant amounts of electricity and natural gas.

Our manufacturing facilities in Limeira, Brazil; Holland, MI; Qingpu, China; Minneapolis, MN; and Uden, The Netherlands include several energy-intense processes such as laser cutting and bending metal, welding, painting, and rotomolding. Each of these facilities has one or more of the processes mentioned.

Time horizon

Current

Likelihood

Virtually certain

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

100,000

Potential financial impact figure – maximum (currency)

1,000,000

Explanation of financial impact figure

We expect to realize energy savings ranging from $100,000 - $1,000,000, depending on the particular year and specific projects completed.

This is one year savings range for projects implemented. For example, in 2018 the annualized savings rate for implemented projects, building and vehicle fleet combined, is more than $225,000.

Strategy to realize opportunity

As Tennant Company upgrades manufacturing processes and facilities, we shift to more efficient equipment. These life-cycle upgrades includes a broad array of building service type improvements (lighting, HVAC, etc.) as well as production equipment (press brakes, lathes, assembly tools, etc.).

Cost to realize opportunity

0

Comment

In many cases there is no incremental cost to adopt more efficient process equipment.

For example, a press brake used in metal parts fabrication was replaced in one facility over 2017-2018. The old press brake was powered by electricity and the hydraulic pump ran constantly. The new press brake has a hydraulic pump which runs on an as-needed basis. This single machine replacement project will yield annual electricity savings of at least 80,000 kWh and cost savings of more than $8,000.

We have included all these types of opportunities as part of the detailed Emissions Reduction Initiatives reported in Section C4.3.

Identifier

Opp6

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Use of more efficient modes of transport

Type of financial impact

Reduced operating costs (e.g., through efficiency gains and cost reductions)

Company-specific description

Sales & Service vehicle fleets Tennant Company operates in Canada, Mexico, Spain, the USA, and many other countries.

Time horizon

Current

Likelihood

Virtually certain

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

100,000

Potential financial impact figure – maximum (currency)

1,000,000

Explanation of financial impact figure

Tennant Company expects to realize fuel cost savings ranging from $100,000 - $1,000,000, depending on the particular year. For example, U.S. fleet changes made in 2017 yielded an estimated $138,120 in annual savings for 2018. These particular projects were reported as part of our 2018 CDP response. There are projects with greater savings potential underway in 2018-2019 in the U.S. and other countries.

This is one year savings range for projects implemented. For example, in 2018 the annualized savings rate for implemented projects, building and vehicle fleet combined, is more than $225,000.

Strategy to realize opportunity

Tennant Company continuously upgrades Sales and Service fleets and business practices. This includes a shift to more efficient vehicles, advanced telematics, more efficient Service dispatch, and increased frequency of completing service calls with one customer site visit. The result is reduced fuel usage and cost savings. For example, these shifts produced a 599 mT CO2e reduction and $163,200 in cost savings for the U.S. Sales and Service business unit in 2018 (see C4.3b).

Cost to realize opportunity

Comment

Cost depends on specifics of each project and there are many projects. No single figure can be cited.

We have included all these types of opportunities as part of the detailed Emissions Reduction Initiatives reported in Section C4.3.

C2.5

(C2.5) Describe where and how the identified risks and opportunities have impacted your business.

	Impact	Description
Products and services	Impacted for some suppliers, facilities, or product lines	One climate change opportunity Tennant Company has seen in products and services is increased demand for technologies that reduce emissions. One company-specific example is our proprietary, patented ec-H2O™ category of eco-advantaged products and services. This technology can be added to most of our scrubber-driers including models ranging in size from T300 (17-inch cleaning path) to T20 (56-inch cleaning path). Revenue from this technology has exceeded $1,340,000,000 revenue over an eleven year time period (2008-2018). Profit margins for this technology have been greater than company average margins. Next generation ec-H2O NanoClean® was added to some models

		in 2015. Sales of the ec-H2O product category for 2018 were greater than 90% of peak year sales. This type of sales vs. time curve is an indication of true, customer-valued innovation. Cumulative revenue ($1.34 B) over the technology lifetime is greater than total 2018 company revenue ($1.12 B). We estimate our customers have avoided more than 88,000 mT CO2e emissions from all ec-H2O™ and ec-H2O NanoClean® equipped scrubber-driers sold to date, in comparison to packaged chemicals. Avoided emissions are the result of significant reductions of input materials, elimination of packaging, and elimination of emissions from transportation. In 2018 alone, we estimate our customers avoided more than 13,400 mT CO2e emissions by using this group of products. These estimates are based on independent LCAs performed by EcoForm, total ec-H2O™ and ec-H2O NanoClean® equipped scrubber-drier units sold to date, and the installed base operating in 2018.
Supply chain and/or value chain	Impacted	Customer use of Tennant Company products is the largest element at more than 65% of our value chain carbon emissions in 2018. Customers have realized emission reduction by adapting eco-advantaged products like ec-H2O™ and ec-H2O NanoClean®, which are patented and unique to Tennant Company. We estimate our customers have avoided more than 88,000 mT CO2e emissions from all ec-H2O™ and ec-H2O NanoClean® equipped scrubber-driers sold to date, in comparison to packaged chemicals. This estimate is based on independent LCAs performed by EcoForm and total unit sales. Avoided emissions are the result of significant reductions of input materials, elimination of packaging, and elimination of emissions from transportation. In 2018 alone, we estimate our customers avoided more than 13,400 mT CO2e emissions by using this group of products. This estimate is based on independent LCAs performed by EcoForm and the installed base operating in 2018.
Adaptation and mitigation activities	Impacted	Tennant Company has increased our focus on energy reduction and renewable energy purchasing as mitigation toward some of the identified climate-related risks. Our management approach to this risk is monitoring utility usage by facility and focusing more effort on emissions reduction

		activities and energy supply projects. Impacts include reduced current operating costs and mitigating the longer term risk. For example, we achieved an 861 mT CO2e absolute emission reduction in 2018 down to 29,566 mT CO2e, which is 2.83% less than 2017 emissions (30,427 mT CO2e). The emission reduction noted here is for our SBTi approved target reporting boundary (not including 2017 IPC acquisition). At our Holland, MI, manufacturing facility, energy reduction projects have reduced electrical consumption by 41.6% from 2007 to 2018. Cumulative avoided electricity is 14,000 MWh, with cumulative cost savings greater than $1,430,000.
Investment in R&D	Impacted	Another climate change related opportunity for Tennant Company is accelerating product development cycle time and reducing time to market for eco-advantaged products. For example, ec-H2O NanoClean® technology was accelerated to replace the original ec-H2O™ technology on certain product models. ec-H2O NanoClean® technology electrically converts water into an innovative, detergent-free, solution that cleans effectively, saves money, and reduces environmental impact compared to daily floor cleaning chemicals. This converted water is created by an on-board e-cell that generates millions of tiny microscopic bubbles known as nanobubbles that promote the cleaning efficacy of the solution. This next generation solution offers the same great benefits of the first generation and now cleans better by cleaning more soils in more applications. Since Tennant Company introduced the proprietary ec-H2O™ technology in 2008, advances in nanobubble technology led to ec-H2O NanoClean®. This technology delivers next generation cleaning with nano-scale bubbles that break down dirt, food greases, and other challenging soils, then suspend them in the cleaning water where the squeegee can easily remove soil from the floor. ec-H2O NanoClean® cleans more soils in more applications than the original ec-H2O™. ec-H2O NanoClean® technology is not suitable for all soils, including heavy concentrations of fats and oils. Depending on the type of soil, conventional chemical cleaners may still be required. The impact of faster time to market for ec-H2O NanoClean® was sustained sales and profit for a technology that had already been in the market for over seven years. A typical product might reach peak sales in four to five years, then begin to decline. The ec-H2O

		product family reached peak sales in Year eight, also the same year next-generation NanoClean was introduced. The result has been sustained high sales and profit. In 2018 (Year eleven), ec-H2O product family sales remain greater than 85% of peak sales.
Operations	Impacted	Tennant Company has reduced operating costs for both manufacturing facilities and sales/service vehicle fleets by adapting energy- and fuel-saving technologies. Impacts include reduced current operating costs and mitigating the longer term risk. For example, we achieved 861 mT CO2e absolute emission reduction in 2018 to 29,566 mT CO2e, 2.83% less than 2017 emissions (30,427 mT CO2e). The reduction noted here is for our SBTi approved target reporting boundary (not including 2017 IPC acquisition). A specific example is consolidation of Minneapolis facilities, allowing us to vacate a leased building. We estimate this move reduced our 2018 carbon emissions by at least 55 mT CO2e. Annual cost savings on energy alone are estimated at more than $8,500.
Other, please specify		No other climate-related risks have been identified.

C2.6

(C2.6) Describe where and how the identified risks and opportunities have been factored into your financial planning process.

	Relevance	Description
Revenues	Impacted	When deciding where to invest for revenue growth, Tennant Company considers eco-advantaged technologies and products, (including those which reduce carbon emissions) as favorable. We expect the trend to electrification and other carbon emission reducing solutions will continue. When deciding where to invest, we consider trends, the current level of customer interest, and the competitive playing field. Anticipated revenue gains are an important consideration in financial planning. As an example, the category of eco-advantaged products and services known as ec-H2O™ and ec-H2O NanoClean® has exceeded $1.34 billion in revenue over an eleven year time period (2008-2018). Developing this solution was a strategic investment which we began in late 2005. The revenue impact has been significant.
Operating costs	Impacted	Tennant Company's work to reduce carbon emissions has resulted in significant electricity, natural gas and vehicle fuel cost savings.

		Impacts include reduced current operating costs and mitigating the longer term risk. We have reduced operating costs for both manufacturing facilities and sales/service vehicle fleets by adapting energy- and fuel-saving technologies. For example, we achieved an 861 mT CO2e absolute emission reduction in 2018 down to 29,566 mT CO2e, which is 2.83% less than 2017 emissions (30,427 mT CO2e). The emission reduction noted here is for our SBTi approved target reporting boundary (not including 2017 IPC acquisition). Emission-reduction projects (see S4.3b), which contributed to the company-wide 861 mT CO2e reduction, are projected to save more than $225,000 annually. A specific example is consolidation of Minneapolis facilities, allowing us to vacate a leased building. We estimate this move reduced our 2018 carbon emissions by at least 55 mT CO2e. Annual cost savings on energy alone are estimated at more than $8,500.
Capital expenditures / capital allocation	Impacted	Tennant Company considers long-term energy and fuel cost savings in capital expense financial analysis. This is part of the financial model required for capital planning and approval. One example is the replacement of electrical switchgear at our Minneapolis, MN, facility. A rigorous cost benefit analysis was conducted to define the best system in terms of total cost and ROI. The first phase of the project was approved in December 2016 and the long lead time gear was ordered in Q2 2017. The final detailed engineering plan was approved in February 2018. The multi-million dollar investment will reduce facility risk and provide much greater insight on energy usage. The project will be completed in 2019. We estimate this investment will reduce carbon emissions by more than 57 mT CO2e per year.
Acquisitions and divestments	Not yet impacted	Tennant Company has not undertaken any recent investments or divestments which relate directly to, or have impacted, any identified risks and opportunities. In 2017, Tennant Company acquired IPC Group, but determined no impact. The IPC Group business is very similar to legacy Tennant business. In late 2018, the board approved acquiring Gaomei, a Chinese manufacturer of mid-tier mechanized cleaning equipment. Given the Gaomei business model, we anticipate no impact. This acquisition closed on 4 January 2019. The integration process began after the end of reporting year 2018.

Access to capital	Not yet impacted	To date, Tennant Company has not seen any of the risks and opportunities identified in C2.3a and C2.4a impact our access to capital. We have strong cash flow and good access to capital. If we required greater access to capital, we believe investors would be more likely to commit given our CDP engagement and demonstrated improvement over time.
Assets	Not yet impacted	Tennant Company has not seen any of the identified risks and opportunities impact our assets to date. Our main manufacturing and logistics facilities are insured and located in areas with relatively low flooding and hurricane risk. We do not see any change in this assessment for the next 5-10 years, but continue to monitor each location situation.
Liabilities	Not impacted	Tennant Company has not identified risks and opportunities which may impact liabilities. We do not currently see any liability obligations in the future.
Other		No other climate-related risks or opportunities have been identified.

C3. Business Strategy

C3.1

(C3.1) Are climate-related issues integrated into your business strategy?

Yes

C3.1a

(C3.1a) Does your organization use climate-related scenario analysis to inform your business strategy?

Yes, quantitative

C3.1c

(C3.1c) Explain how climate-related issues are integrated into your business objectives and strategy.

One of Tennant Company's Guiding Principles is "Stewardship" - also known as our core value. Our Vision is: "lead our global industry in sustainable cleaning innovation that empowers our customers to create a cleaner, safer, and healthier world." We have integrated climate-related issues into our business objectives and strategy as follows:

i. Climate-related issues continue as a growing global trend. Tennant Company (TNC) actively tracks 'mega-trends' like population demographics, environmental pressures including climate change, mechanization, new technologies, etc., as part of our strategic planning process. Observations and information are fed into the process to identify potentially disruptive risks and far-term business opportunities. Observations and potential impacts are also fed into our technology and product planning and the business development processes. Like other trends,

the increase in climate-related issues has definitely influenced TNC business objectives and strategy.

ii. TNC's business strategy is linked to emissions reduction targets. While energy reduction is good, we believe looking at carbon emissions in an enterprise-wide, strategic way is critically important for prioritizing investments. The Sustainable Enterprise group operates at the corporate level, reporting directly to the President and CEO. Carbon emissions reduction is a key focus of this group. We encourage business units and functions to focus on cost and efficiency, which results in both energy use and carbon emissions reduction. Renewable energy purchase and supply side agreements are done at the corporate level.

iii. The most substantial business decisions in reporting year 2018 driven by climate change involve energy purchasing and capital investments. TNC has made consistent progress on energy and fuel efficiency initiatives which are frequently longer term capital investments. Replacing electrical switchgear at our Minneapolis, MN, manufacturing facility is a company-specific, multi-year capital investment. The multi-million dollar investment reduces facility risk and provides much greater insight on energy usage. The project will be completed in 2019. We estimate this investment will reduce carbon emissions by more than 57 mT CO2e per year. As we pursue emission reduction targets, we are applying more effort on energy purchasing. After signing two energy purchasing agreements in 2016 and one in 2017, we added one more agreement in 2018. Total renewable energy purchased in 2018 was 5,100 MWh, a 79% increase over 2017. In 2016, we made a long-term subscriber commitment to Minnesota Community Solar Gardens (CSGs). Our commitment, along with those of other subscribers, enabled developer NextEra Energy Resources to add significant capacity to the local grid in 2018. Our subscription capacity is 6.1 MW AC, which will yield more than 11,900 MWh in annual production. As these CSGs came on-line in 2018, our total 2018 allocated production was more than 6,300 MWh. The RECs for our allocated production go to the publicly regulated utility, Xcel Energy. The RECs contribute to reducing Xcel's Upper Midwest Region emission factor, which we use for our market-based Scope 2 reporting. Renewable energy contributes directly toward progress on our two Scope 1+2 emission reduction targets.

Additional renewable energy alternatives will be investigated in 2019. We plan to increase purchasing significantly in 2019.

iv. Several aspects of climate change have influenced TNC strategies including: 1) the need to take a long-term, holistic look at our business and commit to both long-term success and short-term quarterly earnings to maximize stakeholder value; 2) the need for robust business continuity plans; 3) the opportunity to reduce costs via energy/fuel efficiency improvement; and 4) revenue growth opportunities from developing and commercializing sustainable cleaning innovation.

v. The most important short-term (0-2 yrs, consistent w/ C2.1 time horizon) strategy component influenced by climate change is TNC's energy and fuel use. Large cost savings are possible by identifying and implementing energy-saving projects. Over the years, we have become more systematic in managing these projects. The approach that has produced the greatest gains is having an efficiency 'champion' in each facility, function and/or business unit. Developing and maintaining the network of energy 'champions' is an example of a short-term business strategy influenced by climate change. Our goal is to have a key, engaged person embedded in each significant GHG emitting entity. These entities include major facilities, i.e., manufacturing sites and business units with sales/service vehicle fleets. This network results in faster potential project identification, knowledge leverage via sharing among locations, and faster project extension across the company. The result is consistent carbon emission reduction.

vi. The most important medium- to long-term (2-5 yrs. to 100 yrs., consistent w/ C2.1 time horizon) strategy component influenced by climate change is TNC's product and technology strategy. "Use of sold products" is, by far, the largest part of our Scope 3 emissions. In 2017, we significantly increased our efforts in this area by adding a dedicated resource - Sr. Product Stewardship Engineer. The resource focuses on new technologies and products. Part of the increased effort in 2017 was development of a long-term, science-based target for Scope 3, Category 11 - Use of sold products emissions. This target, along with Scope 1+2 target (Abs 1) was submitted in 2017 and approved by SBTi in early 2018.
vii. Introducing eco-advantaged products like ec-H2O NanoClean® continues to provide TNC strategic business advantages over competitors. Since the 2008 introduction of ec-H2O™, over 110,000 units have been sold. Revenue from ec-H2O over 2008-2018 is more than $1.34 billion. We estimate the installed base of ec-H2O has enabled our customers to avoid > 88,000 mT CO2e, when compared to packaged chemicals. The large reduction exceeds two years of TNC Scope 1+2 emissions (2.38=88,000/37,011). Customer preference for solutions which help reduce their environmental impact, including carbon emissions, continues to grow and create demand for such products. We continue to invest in technologies and products that reduce customer carbon emissions.
viii. The 2015 drive toward COP21 and The Paris Agreement led TNC to commit to set science-based emission reduction targets under SBTi led by CDP, UNGC, WRI, and WWF. These targets were finalized and submitted in 2017, then approved in February 2018. We also joined more than 700 of America's largest companies in signing The Climate Declaration, a call to action urging the public, policymakers and business leaders to seize the economic opportunity in tackling climate change. The Climate Declaration asserts that tackling climate change is America's greatest economic opportunity of the 21st century.

C3.1d

(C3.1d) Provide details of your organization's use of climate-related scenario analysis.

Climate-related scenarios	Details
IEA Sustainable development scenario	Tennant Company uses the International Energy Agency (IEA) Sustainable Development Scenario CO2 prices to assess transition risks from the growing trend toward carbon market mechanisms. There are externalized, societal costs from the use of fossil fuels. Explicit carbon pricing (carbon tax) along with cap and trade have been implemented in some markets around the world to address these externalities. We expect this trend to continue. We chose this scenario because the IEA has a global view which matches our global business footprint. The inputs used were our current carbon emissions profile and the assumptions are described below. The IEA has estimated the externalized cost as $63 mT CO2 and $140 mT CO2 for 2025 and 2040, respectively, in advanced economies. Source: "World Energy Outlook 2018"

	According to our defined time horizons this scenario is considered long-term (3-100 years), given the IEA's 2025 to 2040 framework. This time horizon is relevant to our business strategy as it aligns with our long term 2030 targets approved by SBTi. This scenario has both direct and indirect (supply chain and client) implications. Direct impact ranges from $2,331,693 to $5,181,540 in annual operational cost. This impact estimate is based on 2018 total Scope 1+2 GHG emissions (market-based) of 37,011 mT CO2e and the IEA carbon price estimates. This level of impact represents as much as 16% of 2018 net earnings. We expect to continue reducing emissions each year, so this annual range of cost is representative for the 2025 to 2040 timeframe. Indirect impact ranges from $7,679,511 to $17,065,580 in operational cost. This impact estimate is based on 2018 total Scope 3, Category 1 emissions of 121,897 mT CO2e and IEA carbon price estimates. This level of impact represents as much as 51% of 2018 net earnings. We expect indirect emissions to increase each year as our business grows, likely faster than our supply chain can reduce emissions. Therefore, this annual range of cost may be understated for the 2025 to 2040 timeframe. We did not consider any changes from the reference scenario. The results are shared internally with the Senior Management Team. Increased leadership commitment to a long-term view, setting aggressive targets to reduce carbon emissions, and leading the transition to a low carbon future is a good example of how scenario analysis results directly influenced our objectives and strategy. The results strengthened internal motivation for setting and achieving aggressive emission reduction targets. We intend to employ broader scenario analysis in the future, including specific emission reduction pro forma assumptions sets for both the direct and indirect portions.

C4. Targets and performance

C4.1

(C4.1) Did you have an emissions target that was active in the reporting year?

Both absolute and intensity targets

C4.1a

(C4.1a) Provide details of your absolute emissions target(s) and progress made against those targets.

Target reference number

Abs 1

Scope

Scope 1 +2 (market-based)

% emissions in Scope

80

Targeted % reduction from base year

25

Base year

2016

Start year

2017

Base year emissions covered by target (metric tons CO2e)

32,480

Target year

2030

Is this a science-based target?

Yes, this target has been approved as science-based by the Science-Based Targets initiative

% of target achieved

36

Target status

Underway

Please explain

The 25% absolute reduction target (Abs 1) was approved by Science Based Targets initiative (SBTi) in early 2018. The reduction achieved through 2018, compared to base year 2016, was 9% ((32,480 - 29,566) / 32,480). As of 12/31/18, we had achieved 36% (9% / 25%) of progress toward the Abs 1 target in 14.3% (2 / 14 years) of time to target.

This target includes at least 99% of the company's total, global gross Scope 1+2 emissions for base year 2016.

What is not covered by this target are small facilities and facilities scheduled for

demolition. We reassess our operational control boundary annually and did so in Q1 2019. We have a number of small facilities along with several unoccupied facilities scheduled for demolition. All emissions from these facilities are less than 1% of total emissions covered by the target reporting boundary. When conducting the annual boundary assessment, if we identify relevant emissions not previously reported we restate prior year emissions to include them.

IPC Group (acquired in April 2017) emissions are reported as part of 2018 total Scope 1+2 emissions. IPC Group represents 20% of our 2018 market-based Scope 1+2 emissions, but IPC is not part of 2016 base year emissions for the Abs 1 target.

We intend to make 2019 or 2020 the base year for new SBTs which will include IPC, as well as Gaomei - acquired in early 2019.

C4.1b

(C4.1b) Provide details of your emissions intensity target(s) and progress made against those target(s).

Target reference number

Int 1

Scope

Scope 1 +2 (market-based)

% emissions in Scope

80

Targeted % reduction from base year

25

Metric

Metric tons CO2e per unit revenue

Base year

2012

Start year

2013

Normalized base year emissions covered by target (metric tons CO2e)

31,515

Target year

2020

Is this a science-based target?

No, but we are reporting another target that is science-based

% of target achieved

84.6

Target status

Underway

Please explain

The 25% revenue intensity reduction (Int 1) is our first target and was set in early 2014. As of 12/31/18, we had achieved a 21.2% reduction in revenue-based emissions intensity. We had achieved 84.6% (21.2% / 25%) of progress toward the Int 1 target in 75% (6 / 8 years) of time to target. We expect to achieve the Int 1 target by or before 2020 target year.

If we were to continue absolute emission reduction at the rate of the past three years (2016-2018), we will achieve 14.9% absolute emission reduction by 2020. We expect that rate to be maintained or accelerated for the Int 1 target boundary.

As of 12/31/18, an absolute emissions reduction of 6.2% and 1949 mT CO2e had been achieved, compared to base year 2012. 6.2% = ((31,515 - 29,566)) / 31,515).

This target includes at least 99% of the company's total, global gross Scope 1+2 emissions for base year 2012.

What is not covered by this target are small facilities and facilities scheduled for demolition. We reassess our operational control boundary annually and did so in Q1 2019. We have a number of small facilities along with several unoccupied facilities scheduled for demolition. All emissions from these facilities are less than 1% of total emissions covered by the target reporting boundary. When conducting the annual boundary assessment, if we identify relevant emissions not previously reported we restate prior year emissions to include them.

IPC Group (acquired in April 2017) emissions are reported as part of 2018 total Scope 1+2 emissions. IPC Group represents 20% of our 2018 market-based Scope 1+2 emissions, but IPC is not part of 2016 base year emissions for the Int 1 target.

We intend to make 2019 or 2020 the base year for new SBTs which will include IPC, as well as Gaomei - acquired in early 2019.

% change anticipated in absolute Scope 1+2 emissions

-14.9

% change anticipated in absolute Scope 3 emissions

0

Target reference number

Int 2

Scope

Scope 3: Use of sold products

% emissions in Scope

80

Targeted % reduction from base year

50

Metric

Other, please specify

mT CO2e per $M of equipment revenue

Base year

2016

Start year

2017

Normalized base year emissions covered by target (metric tons CO2e)

374,655

Target year

2030

Is this a science-based target?

Yes, this target has been approved as science-based by the Science Based Targets initiative

% of target achieved

27.4

Target status

Underway

Please explain

The 50% equipment revenue intensity target (Int 2) covers Scope 3, Category 11 - Use of sold products. The Int 2 target was approved by Science Based Targets initiative (SBTi) in early 2018.

2018 emissions intensity was 704 mT CO2e / $ M in equipment revenue (343,575 mT CO2e / $ 488 M).

2016 base year emissions intensity was 816 mT CO2e / $ M in equipment revenue (374,655 mT CO2e / $ 459 M). The intensity reduction achieved as of 12/31/18 was 13.7% ((816-704) / 816)).

As of 12/31/18, we had achieved 27.4% (13.7% / 50%) of progress toward the Int 2 target in 14.3% (2 / 14 years) of time to target.

Start year (2017) emissions for the Int 2 target were reported as 347,474 mT CO2e. Since our 2018 CDP response, we discovered one product was mis-categorized and therefore restate 2017 Category 11 emissions under the Int 2 target to 346,969 mT CO2e.

This target includes at least 95% of the company's total, global gross Scope 3, Category 11 emissions in base year 2016. The target does not include intermediate products, floor coatings, reconditioned equipment, or third-party products which are outside of our design control.

IPC Group (acquired in April 2017) emissions are reported as part of 2018 total Scope 1+2 emissions. IPC Group products are not part of the 2016 base year emissions for the Use of sold products target. IPC Group product emissions are not reported as part of 2018 Scope 3 emissions.

We intend to make 2019 or 2020 the base year for new SBTs which will include IPC, as well as Gaomei - acquired in early 2019.

Based on product mix, we estimate IPC Group products represent 15-20% of our 2018 Scope 3, Category 11 - Use of sold products emissions. As noted, IPC products are not part of 2016 base year emissions for the Int 2 target.

% change anticipated in absolute Scope 1+2 emissions

% change anticipated in absolute Scope 3 emissions

-24

C4.2

(C4.2) Provide details of other key climate-related targets not already reported in question C4.1/a/b.

C4.3

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.

Yes

C4.3a

(C4.3a) Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)

Under investigation	19	
To be implemented*	17	5,611
Implementation commenced*	5	476
Implemented*	14	2,008.1
Not to be implemented	4	

C4.3b

(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.

Initiative type

Energy efficiency: Building services

Description of initiative

Lighting

Estimated annual CO2e savings (metric tonnes CO2e)

7.7

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

840

Investment required (unit currency – as specified in C0.4)

1,516

Payback period

1-3 years

Estimated lifetime of the initiative

6-10 years

Comment

Qingpu, China - LED lighting in warehouse

Initiative type

Energy efficiency: Building services

Description of initiative

Other, please specify

Material handling equipment upgrades

Estimated annual CO2e savings (metric tonnes CO2e)

2.3

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

600

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

11-15 years

Comment

Minneapolis, MN, U.S. - Material handling equipment upgrades

Initiative type

Energy efficiency: Building services

Description of initiative

Other, please specify

Data center upgrade

Estimated annual CO2e savings (metric tonnes CO2e)

131.9

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

35,000

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

Ongoing

Comment

Minneapolis, MN, U.S. - Move data center offsite

Initiative type

Energy efficiency: Building services

Description of initiative

Lighting

Estimated annual CO2e savings (metric tonnes CO2e)

4.9

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

1,000

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

6-10 years

Comment

Grand Prairie, TX, U.S. - LED lighting in RECON shop. Building owner investment, as part of lease renewal terms.

Initiative type

Energy efficiency: Building services

Description of initiative

Other, please specify

Material handling equipment upgrades

Estimated annual CO2e savings (metric tonnes CO2e)

1.4

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

243

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

11-15 years

Comment

Louisville, KY, U.S. - Material handling equipment upgrades

Initiative type

Energy efficiency: Building services

Description of initiative

Lighting

Estimated annual CO2e savings (metric tonnes CO2e)

4.5

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

2,364

Investment required (unit currency – as specified in C0.4)

3,500

Payback period

1-3 years

Estimated lifetime of the initiative

6-10 years

Comment

Zaragoza, Spain - LED in EMEA RECON Center

Initiative type

Other, please specify

Transportation: Fleet

Description of initiative

Estimated annual CO2e savings (metric tonnes CO2e)

599

Scope

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

163,200

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

Ongoing

Comment

U.S. Sales & Service fleet - continuing transition to more efficient vehicles

Initiative type

Other, please specify

Transportation: Fleet

Description of initiative

Estimated annual CO2e savings (metric tonnes CO2e)

9.3

Scope

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

3,900

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

Ongoing

Comment

Canada Sales and Service fleet - continuing transition to more efficient vehicles

---

Initiative type

Other, please specify

Transportation: Fleet

Description of initiative

Estimated annual CO2e savings (metric tonnes CO2e)

20.2

Scope

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

8,393

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

Ongoing

Comment

Australia Sales & Service fleet - transition away from self-delivery of products to customers

---

Initiative type

Low-carbon energy purchase

Description of initiative

Wind

Estimated annual CO2e savings (metric tonnes CO2e)

896

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

0

Investment required (unit currency – as specified in C0.4)

838

Payback period

No payback

Estimated lifetime of the initiative

Ongoing

Comment

Purchased 1,675 incremental ERCOT wind RECs. These wind RECs were used to compensate for energy used at our Louisville, KY, and Chicago, IL, U.S. locations.

The total purchased in 2018 was 2,525 ERCOT wind RECs, with 850 ERCOT wind RECs purchased in 2017.
1,675 = 2,525 - 850

Initiative type

Low-carbon energy purchase

Description of initiative

Other, please specify

Captured Methane

Estimated annual CO2e savings (metric tonnes CO2e)

269

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

0

Investment required (unit currency – as specified in C0.4)

3,019

Payback period

No payback

Estimated lifetime of the initiative

1-2 years

Comment

Purchased 575 incremental Ohio Compliance RECs in 2018. These RECs were used to compensate for energy used at our Parkman, OH, U.S. location.

In Q3 2018, we divested the Waterstar business located in Parkman, OH, US. The leased facility was retained throughout 2018 and we remain responsible for electricity and other utilities, until the lease is transferred or expires. Electricity consumption was significantly less after the physical assets were transferred to buyer. We may or may not continue purchasing RECs for this facility. A decision will be made in Q3 2019.

Initiative type

Energy efficiency: Processes

Description of initiative

Process optimization

Estimated annual CO2e savings (metric tonnes CO2e)

2.9

Scope

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

1,827

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

Ongoing

Comment

Limeira, Brazil - Cycle schedule adjustments to reduce LPG gas used for oven pre-heat between cycles

Initiative type

Energy efficiency: Building services

Description of initiative

Lighting

Estimated annual CO2e savings (metric tonnes CO2e)

0.2

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

1,371

Investment required (unit currency – as specified in C0.4)

1,721

Payback period

1-3 years

Estimated lifetime of the initiative

6-10 years

Comment

Sao Paulo, Brazil - LED lighting in office area

Initiative type

Other, please specify

Facility consolidation - avoided electricity use

Description of initiative

Estimated annual CO2e savings (metric tonnes CO2e)

21.5

Scope

Scope 2 (market-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

5,130

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

Ongoing

Comment

Minneapolis, MN, U.S. - Consolidation of Orbio Technologies SLP facility assets and personnel into GV campus facilities

Initiative type

Other, please specify

Facility consolidation - avoided natural gas use

Description of initiative

Estimated annual CO2e savings (metric tonnes CO2e)

37.3

Scope

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

3,640

Investment required (unit currency – as specified in C0.4)

0

Payback period

<1 year

Estimated lifetime of the initiative

Ongoing

Comment

Minneapolis, MN, U.S. - Consolidation of Orbio Technologies SLP facility assets and personnel into GV campus facilities

C4.3c

(C4.3c) What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Compliance with regulatory requirements/standards	Regulatory requirements and standards related to energy and fuel efficiency continue to help drive emissions reduction. The Renewable Energy Standard (RES) in Minnesota is a good example. The RES has significantly increased the percentage of renewable energy sources on the grid supplying our largest electrical demands (Minneapolis campus). We also see electricity demand reduction benefit from standards driven upgrades to devices we regularly replace. These devices include computers, monitors, printers, etc.
Employee engagement	Employees are encouraged to submit all improvement ideas, including energy reduction and efficiency, under Continuous Improvement (CI) programs. There are many different CI programs globally, tailored to function and/or location activities. One example program is the Value Stream Tier Boards in our largest manufacturing facility, Minneapolis, MN. Value streams include fabrication, assembly, etc. All employees in each particular value stream can add improvement ideas to the Tier Board. Ideas are evaluated and prioritized by a Process Engineer.
Financial optimization calculations	Estimating energy/fuel reduction for building upgrades, new equipment and process investments was added to the Annual Operating Plan-Capital Planning template in 2014. Additional detail is required in Capital Expenditure Requests (CERs), via a template update made in 2015. The CER is used to analyze and justify capital investments. Each CER is routed through required approvers before a project can start.
Internal incentives/recognition programs	Employees can be nominated by their peers and leadership for APPLAUSE and Leading Edge Awards. These programs can provide both recognition and monetary rewards for work toward energy/fuel efficiency and emissions reductions.
Internal finance mechanisms	The Annual Operating Plan process was revised so Capital Equipment projects which yield GHG emission reductions are distinctly identified. Beginning in Q4 2014, all of these Capital Equipment projects are viewed as a company-wide portfolio to ensure we are making the best investments.
Internal price on carbon	We use an internal price on carbon (shadow price) to assess future enterprise risk from market mechanisms addressing external costs of fossil fuels. These market mechanisms are expanding globally and we expect this expansion to continue over the long term.
Other	We employ independent energy assessment organizations to identify energy reduction and efficiency opportunities. We also regularly engage our business partners, including utilities and fleet management companies, to identify new opportunities and best practices around energy/fuel efficiency improvements and emissions reductions.

C4.5

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products or do they enable a third party to avoid GHG emissions?

Yes

C4.5a

(C4.5a) Provide details of your products and/or services that you classify as low-carbon products or that enable a third party to avoid GHG emissions.

Level of aggregation

Group of products

Description of product/Group of products

Detergent-free products including ec-H2O and ec-H2O NanoClean scrubber-driers.

Are these low-carbon product(s) or do they enable avoided emissions?

Avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify

Product Life Cycle Assessments (LCAs)

% revenue from low carbon product(s) in the reporting year

12.7

Comment

1) We estimate our customers have avoided more than 88,000 mT CO2e emissions from all ec-H2O and ec-H2O NanoClean equipped scrubber-driers sold to date, in comparison to packaged chemicals. This estimate is based on independent LCAs performed by EcoForm and total unit sales. Avoided emissions are the result of significant reductions of input materials, elimination of packaging and elimination of emissions from transportation.

2) In 2018 alone, we estimate our customers avoided more than 13,400 mT CO2e emissions by using this group of products. This estimate is based on independent LCAs performed by EcoForm and the installed base operating in 2018.

Level of aggregation

Group of products

Description of product/Group of products

Reconditioned equipment (RECON)

Are these low-carbon product(s) or do they enable avoided emissions?

Avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Other, please specify

Estimate based on screening level, process Life Cycle Assessment (LCA)

% revenue from low carbon product(s) in the reporting year

2.1

Comment

Our reconditioned (RECON) equipment business avoids carbon emissions, primarily upstream (Purchased goods and services) and to a lesser extent downstream (End-of-life treatment of sold products). We estimate that Tennant Company and our customers avoided at least 800 mT CO2e emissions from all RECON machines sold in 2018, in comparison to purchasing new equipment.

We completed a screening level process Life Cycle Assessment (LCA) in 2018 on Certified Pre-Owned and Used RECON variants of the T300 product. This avoided emissions estimate is based on findings of the screening LCA and total RECON unit sales. The estimate is conservative because:
1) most RECON machines sold are larger and more complex than the T300, and
2) we did not include used machines, sold in "as-is" condition, as part of RECON unit volume.

C5. Emissions methodology

C5.1

(C5.1) Provide your base year and base year emissions (Scopes 1 and 2).

Scope 1

Base year start

January 1, 2012

Base year end

December 31, 2012

Base year emissions (metric tons CO2e)

21,062.5

Comment

2012 is base year for Int 1, our 2020 Scope 1+2 intensity target. This target is market-based.

2016 is base year for Abs 1 and Int 2, our 2030 Science-Based Targets. Both targets are market-based. 2016 emissions are reported in C7 - Emissions Breakdown.

Scope 2 (location-based)

Base year start
January 1, 2012

Base year end
December 31, 2012

Base year emissions (metric tons CO2e)
14,034.5

Comment
2012 is base year for Int 1, our 2020 Scope 1+2 intensity target. This target is market-based.

2016 is base year for Abs 1 and Int 2, our 2030 Science-Based Targets. Both targets are market-based. 2016 emissions are reported in C7 - Emissions Breakdown.

Scope 2 (market-based)

Base year start
January 1, 2012

Base year end
December 31, 2012

Base year emissions (metric tons CO2e)
10,452.9

Comment
2012 is base year for Int 1, our 2020 Scope 1+2 intensity target. This target is market-based.

2016 is base year for Abs 1 and Int 2, our 2030 Science-Based Targets. Both targets are market-based. 2016 emissions are reported in C7 - Emissions Breakdown.

C5.2

(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions.

The Climate Registry: General Reporting Protocol
The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

C6. Emissions data

C6.1

(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO2e?

Reporting year

Gross global Scope 1 emissions (metric tons CO2e)

27,403.2

Start date

January 1, 2018

End date

December 31, 2018

Comment

2018 reported emissions include all relevant IPC Group business entities.

Past year 1

Gross global Scope 1 emissions (metric tons CO2e)

23,059

Start date

January 1, 2016

End date

December 31, 2016

Comment

2016 is the base year for our Science-Based Targets (SBTs) - Abs 1 and Int 2.

The Abs 1 and Int 2 targets are market-based and do not include the IPC acquisition.

C6.2

(C6.2) Describe your organization's approach to reporting Scope 2 emissions.

Row 1

Scope 2, location-based

We are reporting a Scope 2, location-based figure

Scope 2, market-based

We are reporting a Scope 2, market-based figure

Comment

C6.3

(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?

Reporting year

Scope 2, location-based

14,384.8

Scope 2, market-based (if applicable)

9,608.1

Start date

January 1, 2018

End date

December 31, 2018

Comment

2018 reported emissions include all relevant IPC Group business entities.

Past year 1

Scope 2, location-based

13,204

Scope 2, market-based (if applicable)

9,421

Start date

January 1, 2016

End date

December 31, 2016

Comment

2016 is the base year for our Science-Based Targets (SBTs) - Abs 1 and Int 2.

The Abs 1 and Int 2 targets are market-based and do not include the IPC acquisition.

C6.4

(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

Yes

C6.4a

(C6.4a) Provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure.

Source

Small facilities and facilities scheduled for demolition

Relevance of Scope 1 emissions from this source

Emissions are not relevant

Relevance of location-based Scope 2 emissions from this source

Emissions are not relevant

Relevance of market-based Scope 2 emissions from this source (if applicable)

Emissions are not relevant

Explain why this source is excluded

We reassess our operational control boundary annually and did so in Q1 2019. We have a number of small facilities along with several unoccupied facilities scheduled for demolition. All emissions from these facilities are less than 1% of total reported emissions. When conducting the annual boundary assessment, if we identify relevant emissions not previously reported we restate prior year emissions to include them.

C6.5

(C6.5) Account for your organization's Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

Evaluation status

Relevant, calculated

Metric tonnes CO2e

121,897

Emissions calculation methodology

Trucost, part of S&P Global, (Trucost) used its Environmentally Extended Input-Output (EEI-O) model to calculate the supply chain GHG emissions through all tiers up to and including raw material extraction, based on Tennant's spend data for FY2018 and the previous analyses. Trucost scaled emissions from FY2017 to the 2018 spend amount, assuming the same proportional spend and exclusions.

For 2018, we expanded the boundary for Scope 3, Category - Purchased goods and services to include our Brazil operations. The Brazil spend is approximately 1.33% of total 2018 Purchased goods and services spend.

GHG emissions associated with purchased goods and services have increased by 10% compared to a 5% increase in spend. This is mostly attributed to a general sector intensity increase as Tennant spend data is extrapolated based on historic emission profile review. In addition, the inclusion of Brazil spend has resulted in a small increase in intensity. Brazil is associated with 1% of spend, but 2% of the total emissions footprint for the category.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

7

Explanation

The Trucost EEI-O life cycle based model uses sector data along with companies' public disclosure of environmental performance indicators. An estimated 7% of total Category 1 emissions are from Tennant supplier data which is built into the Trucost model.

Capital goods

Evaluation status

Not relevant, explanation provided

Explanation

Working with Trucost, we calculated emissions from the Capital goods category for 2014. We determined this category is not relevant (less than 1% of total GHG emissions), based on quantitative analysis of 2014 data. There have been no significant changes in our business models since this 2014 analysis.

Fuel-and-energy-related activities (not included in Scope 1 or 2)

Evaluation status

Not relevant, explanation provided

Explanation

Working with Trucost, we calculated emissions from the Fuel-and-energy-related activities category for 2014. We determined this category is not relevant (less than 1% of total GHG emissions), based on quantitative analysis of 2014 data. There have been no significant changes in our business models since this 2014 analysis.

Upstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO2e

25,904

Emissions calculation methodology

Trucost used its EEI-O model to calculate GHG emissions for each component of transportation and distribution, based on Tennant’s spend by transportation mode.

Upstream transportation has increased spend by 30% while GHG emissions have increased by 27%, showing a slight reduction in intensity associated with a lower percentage of air transport and increases in ground and water transport.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Explanation

Waste generated in operations

Evaluation status

Not relevant, explanation provided

Explanation

Working with Trucost, we calculated emissions from the Waste generated in operations category for 2014. We determined this category is not relevant (less than 1% of total GHG emissions), based on quantitative analysis of 2014 data. There have been no significant changes in our business models since this 2014 analysis.

Business travel

Evaluation status

Not relevant, explanation provided

Explanation

Working with Trucost, we calculated emissions from the Business travel category for 2014. We determined this category is not relevant (less than 1% of total GHG emissions), based on quantitative analysis of 2014 data. There have been no significant changes in our business models since this 2014 analysis.

Employee commuting

Evaluation status

Not relevant, calculated

Metric tonnes CO2e

4,585

Emissions calculation methodology

Trucost estimated employee commuting emissions using Tennant's global employee head count and country averages for commuting time, transportation mode and distance.

While the number of employees at Tennant Company has actually increased slightly – from 3,207 to 3,242 FTE globally, the carbon emissions associated with commuting has actually decreased. This is due to a two-fold reason based on best estimates using average data at a country level. Firstly, data used to calculate emissions based on

average modal split of commuters in different regions has been updated and as such the average mode of transport has moved towards less carbon intensive modes (for example, an increase in use of subways and buses, rather than private vehicles). Secondly, emissions associated with vehicles (both public transport and average car use) has also decreased, resulting in overall reduced emissions for commuting.

With the overall reduction of employee commuting emissions, the Employee commuting category now falls below the relevance threshold of 1% of total Scope 1+2+3 emissions.

0.83% = 4,585 mT CO2e / 554,351.6 mT CO2e

Employee commuting also falls below the 1% threshold of Scope 3 total emissions.

0.89% = 4,585 mT CO2e / 517,340 mT CO2e

We intend to continue calculating Employee commuting carbon emissions in future years, as we have new facilities and facility closures planned. These changes may shift the Employee commuting category back above the 1% relevance threshold.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Explanation

Upstream leased assets

Evaluation status

Not relevant, explanation provided

Explanation

Working with Trucost, we determined the Upstream leased assets category is not applicable to Tennant Company's business activities.

Downstream transportation and distribution

Evaluation status

Not relevant, calculated

Metric tonnes CO2e

142

Emissions calculation methodology

Given a change in methodological approach adopted in 2017, Category 9 - Downstream transportation and distribution is not relevant, but calculated for reference.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Explanation

Processing of sold products

Evaluation status

Not relevant, explanation provided

Explanation

Working with Trucost, we determined the Processing of sold products category is not applicable to Tennant Company's business activities.

Use of sold products

Evaluation status

Relevant, calculated

Metric tonnes CO2e

364,812

Emissions calculation methodology

We developed a product portfolio emissions calculator tool, which estimates product life emissions based on a set of assumptions for each product category. The assumptions include: product life (in years); number of uses per year; and energy per use (kWh or fuel volume). These assumptions are combined with appropriate emission factors. For cord and battery products, we use the electric grid emission factor for sold-to country. For internal combustion products, we use standard emission factors for each fuel type (gasoline, diesel, or LPG). We also include an indirect emission factor which represents indirect emissions required for wastewater treatment, water use, and maintenance activities. The indirect emissions factor is based on Life Cycle Assessment data for a representative product (T300). The indirect emissions factor is adjusted up/down based on relative model complexity/simplicity.

Our calculated 2018 emissions for Use of sold products have been verified by Trucost.

NOTE: Use of sold products emissions reported here includes third-party products. The Int 2 target (C4.1b) boundary does not include third-party products as they are outside of our design control.

NOTE: 2017 Use of sold products emissions were reported as 367,566 mT CO2e. Since the 2018 CDP response, we discovered one product was mis-categorized and therefore restate 2017 Use of sold products emissions to 367,060 mT CO2e.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Explanation

In developing the product portfolio emissions calculator tool, we used sales/service machine life data along with hour-meter and IRIS® usage frequency data. This data comes directly (or indirectly) from the value chain partner - customers. Scope 3, Category 11 ‘Use of sold products’ does not include intermediate products, floor coatings, or reconditioned equipment.

End of life treatment of sold products

Evaluation status

Not relevant, explanation provided

Explanation

Working with Trucost, we calculated emissions from the End-of-life treatment of sold products category for 2014. We determined this category is not relevant (less than 1% of total GHG emissions), based on quantitative analysis of 2014 data. There have been no significant changes in our business models since this 2014 analysis.

Downstream leased assets

Evaluation status

Not relevant, explanation provided

Explanation

Working with Trucost, we determined the Downstream leased assets category is not applicable to Tennant Company's business activities.

Franchises

Evaluation status

Not relevant, explanation provided

Explanation

Working with Trucost, we determined the Franchises category is not applicable to Tennant Company's business activities.

Investments

Evaluation status

Not relevant, explanation provided

Explanation

Working with Trucost, we determined the Investments category is not applicable to Tennant Company's business activities.

Other (upstream)

Evaluation status

Not relevant, explanation provided

Explanation

Beyond Purchased goods and services, Upstream transportation, and Employee commuting we have not identified any other upstream activities that are relevant.

Other (downstream)

Evaluation status

Not relevant, explanation provided

Explanation

Beyond Use of sold products we have not identified any other downstream activities that are relevant.

C6.7

(C6.7) Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

No

C6.10

(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO2e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Intensity figure

32.9

Metric numerator (Gross global combined Scope 1 and 2 emissions)

37,011

Metric denominator

Other, please specify

Unit total revenue, in $ M

Metric denominator: Unit total

1,123.51

Scope 2 figure used

Market-based

% change from previous year

10.4

Direction of change

Decreased

Reason for change

Efficiency projects, renewable energy purchasing, the trend to cleaner electrical grids, and increased revenue all contributed to the 10.4% year-over-year intensity decrease. These activities constitute approximately 80% of the intensity decrease.

IPC Group business entities are included in 2018 reported emissions but were not for 2017. IPC produces higher volume, less complex products. The total of IPC entities make a lower intensity contribution than legacy Tennant Company entities. While the IPC acquisition accounts for an absolute increase of 7,445 mT CO2e in carbon emissions, the lower carbon intensity of this business is approximately 20% of the intensity decrease.

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?

Yes

C7.1a

(C7.1a) Break down your total gross global Scope 1 emissions by greenhouse gas type and provide the source of each used greenhouse warming potential (GWP).

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
CO2	27,309.9	IPCC Fifth Assessment Report (AR5 – 100 year)
CH4	11.6	IPCC Fifth Assessment Report (AR5 – 100 year)
N2O	81.7	IPCC Fifth Assessment Report (AR5 – 100 year)

C7.2

(C7.2) Break down your total gross global Scope 1 emissions by country/region.

Country/Region	Scope 1 emissions (metric tons CO2e)
Australia	462.5
Belgium	153.3
Brazil	506.8
Canada	925.6
China	22.6
France	1,246.3

Germany	1,443.1
Japan	160.7
Mexico	311.7
Netherlands	1,202
Portugal	164.6
Spain	671.9
United Kingdom of Great Britain and Northern Ireland	1,561.9
United States of America	16,600.8
Italy	1,870.4
Norway	99

C7.3

(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.

By business division

C7.3a

(C7.3a) Break down your total gross global Scope 1 emissions by business division.

Business division	Scope 1 emissions (metric ton CO2e)
Americas - North, Central, and South America	18,344.9
EMEA - Europe, Middle East, and Africa	8,412.5
APAC - Asia Pacific	645.8

C7.5

(C7.5) Break down your total gross global Scope 2 emissions by country/region.

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted in market-based approach (MWh)
Australia	202.6	202.6	245.5	
Belgium	17.3	17.3	87.2	
Brazil	19.3	19.3	273.7	
Canada	3	3	79.9	
China	493.7	493.7	644.1	
France	17.9	17.9	281.7	

Germany	100.4	100.4	209.2	
Japan	36.7	36.7	73.5	
Mexico	29.7	29.7	53.8	
Netherlands	772.5	0.2	1,900.3	1,900
Spain	56.5	56.5	192.4	
United Kingdom of Great Britain and Northern Ireland	69.8	69.8	157.3	
United States of America	10,023.5	6,019.1	17,755.6	3,100
India	128.8	128.8	150	
Italy	2,405.3	2,405.3	5,946.1	
Norway	7.8	7.8	496.7	

C7.6

(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.

By business division

C7.6a

(C7.6a) Break down your total gross global Scope 2 emissions by business division.

Business division	Scope 2, location-based emissions (metric tons CO2e)	Scope 2, market-based emissions (metric tons CO2e)
Americas - North, Central, and South America	10,075.5	6,071.1
EMEA - Europe, Middle East, and Africa	3,447.5	2,675.2
APAC - Asia Pacific	861.8	861.8

C7.9

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?

Increased

C7.9a

(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined) and for each of them specify how your emissions compare to the previous year.

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	1,165	Decreased	3.83	In 2018, we purchased 1,675 incremental ERCOT wind RECs and 575 incremental Ohio compliant RECs. We maintained the 2,850 REC and GO purchases made in 2017. A portion of the incremental ERCOT RECs were applied to our Louisville, KY, facility, in the SRTV eGRID area as the nearest location to ERCT. The balance of incremental ERCOT RECs were applied to our facility in Chicago, IL, in the RFCW eGRID region which is the next nearest facility to ERCOT. SERC and RFCW residual mix emission factors were applied for the balance of energy used in Louisville, KY, and Chicago, IL, respectively. The 575 Ohio compliant RECs were applied to Parkman, OH, electrical use in the RFCW eGRID area. The RFCW residual mix emission factor was applied for the balance of energy used in Parkman, OH. 2017 Scope 1+2 emissions were 30,427 mT (as restated to address several small oversights). -3.83% = (-1,165 / 30,427) * 100
Other emissions reduction activities	2,008.1	Decreased	6.6	We completed implementation of 14 emission reduction projects in 2018. The total emission reduction achieved was 2,008.1 mT CO2e. In Sections 4.3a & b, these 14 projects are described in full detail. 2017 Scope 1+2 emissions were

				30,427 mT (as restated to address several small oversights). -6.6% = (-2,008.1 / 30,427) * 100
Divestment	6.6	Decreased	0.02	We divested the Waterstar business in 2018. Virtually all electricity consumed at Waterstar in 2018 was covered by Ohio compliant RECs. The exception was 760 kWh at 0.4 mT CO2e. Since the divestment occurred in Q3 2018, the emission reduction from electricity use is negligible. Natural gas use at Waterstar was 1200.5 therms less than the average of prior 2 years. Production activity ceased at this location in Aug-Sep 2018. The accompanying 6.6 mT CO2e emission reduction is directly tied to the divestment. 2017 Scope 1+2 emissions were 30,427 mT (as restated to address several small oversights). -0.0217% = (-6.6 / 30,427) * 100 FYI - The annualized emission reduction for this divestment is about 49 mT CO2e or 0.16%.
Acquisitions	7,445	Increased	24.5	IPC Group was acquired in April 2017. IPC business entity emissions are included as part of 2018 total Scope 1+2 emissions. Total Scope 1+2 emissions for the IPC business entities were 7,445 mT CO2e. 2017 Scope 1+2 emissions were 30,427 mT (as restated to address several small oversights). 24.5% = (7,445 / 30,427) * 100

Mergers				Not applicable for 2018.
Change in output	2,283.7	Increased	7.51	Comparing 2017 and 2018, our sales increased by 12%. A large portion of this increase was higher sales volume of new products, pre-owned machines, and service. Sales increase: 12% = ($1,123,511 - $1,003,066) / $1,003,066 2017 Scope 1+2 emissions were 30,427 mT (as restated to address several small oversights). Change in output emission increase: 7.51% = (2,283.7 / 30,427) * 100 We are pleased that our sales increased at a faster rate than carbon emissions, even when taking increased renewable energy consumption and significant emission reduction activities into account.
Change in methodology				Not applicable for 2018.
Change in boundary	28.7	Increased	0.09	Our Sales and Service fleet in New Zealand was left outside the reporting boundary (oversight) for 2012-2017. For 2018, we include fleet-related fuel consumption and the resulting 28.7 mT CO2e carbon emissions in New Zealand. 2017 Scope 1+2 emissions were 30,427 mT (as restated to address several small oversights). 0.094% = (28.7 / 30,427) * 100
Change in physical operating conditions				Not applicable for 2018.
Unidentified				Not applicable for 2018.

Other				Not applicable for 2018.

C7.9b

(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Market-based

C8. Energy

C8.1

(C8.1) What percentage of your total operational spend in the reporting year was on energy?

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

C8.2

(C8.2) Select which energy-related activities your organization has undertaken.

	Indicate whether your organization undertakes this energy-related activity
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	No
Consumption of purchased or acquired steam	No
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	No

C8.2a

(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total MWh

Consumption of fuel (excluding feedstock)	HHV (higher heating value)	67	119,646.8	119,713.8
Consumption of purchased or acquired electricity		5,000	23,547.08	28,547.08
Total energy consumption		5,067	143,193.88	148,260.88

C8.2b

(C8.2b) Select the applications of your organization's consumption of fuel.

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	No
Consumption of fuel for the generation of heat	Yes
Consumption of fuel for the generation of steam	No
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	No

C8.2c

(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.

Fuels (excluding feedstocks)

Natural Gas

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

52,211.5

Comment

Fuel used for manufacturing processes and facility heating

Fuels (excluding feedstocks)

Liquefied Natural Gas (LNG)

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

0.3

Comment

Fuel used for Sales and Service vehicle fleets

Fuels (excluding feedstocks)

Diesel

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

24,138

Comment

Fuel used for Sales and Service vehicle fleets

Fuels (excluding feedstocks)

Motor Gasoline

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

42,815

Comment

Fuel used for Sales and Service vehicle fleets

Fuels (excluding feedstocks)

Liquefied Petroleum Gas (LPG)

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

331

Comment

Fuel used for material handling equipment and manufacturing process

Fuels (excluding feedstocks)

Propane Liquid

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

151

Comment

Fuel used for material handling equipment and manufacturing process

Fuels (excluding feedstocks)

Bioethanol

Heating value

Total fuel MWh consumed by the organization

67

Comment

Fuel used for Sales and Service vehicle fleets

C8.2d

(C8.2d) List the average emission factors of the fuels reported in C8.2c.

Bioethanol

Emission factor

6.213

Unit

kg CO2e per gallon

Emission factor source

https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pdf

Comment

Fuel used for Sales and Service vehicle fleets

Diesel

Emission factor

10.21

Unit

kg CO2e per gallon

Emission factor source

https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pdf

Comment

Fuel used for Sales and Service vehicle fleets

Liquefied Natural Gas (LNG)

Emission factor

4.46

Unit

kg CO2 per gallon

Emission factor source

https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pdf

Comment

Fuel used for Sales and Service vehicle fleets

Liquefied Petroleum Gas (LPG)

Emission factor

5.68

Unit

kg CO2e per gallon

Emission factor source

https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pdf

Comment

Fuel used for material handling equipment and manufacturing process

Motor Gasoline

Emission factor

8.78

Unit

kg CO2e per gallon

Emission factor source

https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pdf

Comment

Fuel used for Sales and Service vehicle fleets

Natural Gas

Emission factor

53.06

Unit

kg CO2e per million Btu

Emission factor source

https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pdf

Comment

Fuel used for manufacturing processes and facility heating

Propane Liquid

Emission factor

5.72

Unit

kg CO2e per gallon

Emission factor source

https://www.theclimateregistry.org/wp-content/uploads/2018/06/The-Climate-Registry-2018-Default-Emission-Factor-Document.pdf

Comment

Fuel used for material handling equipment and manufacturing process

C8.2f

(C8.2f) Provide details on the electricity, heat, steam and/or cooling amounts that were accounted for at a low-carbon emission factor in the market-based Scope 2 figure reported in C6.3.

Basis for applying a low-carbon emission factor

Energy attribute certificates, Guarantees of Origin

Low-carbon technology type

Wind

Region of consumption of low-carbon electricity, heat, steam or cooling

Europe

MWh consumed associated with low-carbon electricity, heat, steam or cooling

1,900

Emission factor (in units of metric tons CO2e per MWh)

0

Comment

In 2018 we purchased 2,000 Guarantees of Origin (GOs) for our Uden, The Netherlands operation. The GO type was Technology T0200001, onshore Nederlandse windenergie. These GOs were retired via CertiQ.

Electricity use was lower than expected at the Uden facility in 2018 and only 1,900 GOs were needed. We plan to investigate using the 100 GO balance to cover a portion of 2019 electricity consumption.

Basis for applying a low-carbon emission factor

Energy attribute certificates, Renewable Energy Certificates (RECs)

Low-carbon technology type

Other low-carbon technology, please specify

Captured methane, landfill gas

Region of consumption of low-carbon electricity, heat, steam or cooling

North America

MWh consumed associated with low-carbon electricity, heat, steam or cooling

575

Emission factor (in units of metric tons CO2e per MWh)

0

Comment

In 2018 we purchased 575 renewable Energy Certificates for our Parkman, Ohio operation. The REC type was Ohio Compliance Non-solar (Captured Methane - Landfill Gas). The REC Serial Numbers are 3844569-1344 to 3844569-1918. These RECs were retired by IGS Energy, one of our electricity supply partners.

Basis for applying a low-carbon emission factor

Energy attribute certificates, Renewable Energy Certificates (RECs)

Low-carbon technology type

Wind

Region of consumption of low-carbon electricity, heat, steam or cooling

North America

MWh consumed associated with low-carbon electricity, heat, steam or cooling

2,525

Emission factor (in units of metric tons CO2e per MWh)

0

Comment

In 2018 we purchased 2,525 Renewable Energy Certificates for our Grand Prairie, TX; Louisville, KY; and Chicago, IL operations. The REC type was ERCOT wind. The REC Serial Numbers are 00221513 to 00224037. These RECs were retired by IGS Energy, one of our electricity supply partners.

C9. Additional metrics

C9.1

(C9.1) Provide any additional climate-related metrics relevant to your business.

C10. Verification

C10.1

(C10.1) Indicate the verification/assurance status that applies to your reported emissions.

	Verification/assurance status
Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	Third-party verification or assurance process in place
Scope 3	Third-party verification or assurance process in place

C10.1a

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 and/or Scope 2 emissions and attach the relevant statements.

Scope

Scope 1

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Moderate assurance

Attach the statement

Tennant_Assurance_Statement_Final.pdf

Page/ section reference

Page 1 - GHG Scope 1 (2018)

Verified by Trucost ESG Analysis, S&P Global

Relevant standard

A1000AS

Proportion of reported emissions verified (%)

99

Scope

Scope 2 location-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Moderate assurance

Attach the statement

Tennant_Assurance_Statement_Final.pdf

Page/ section reference

Page 1 - GHG Scope 2 Location Based

Verified by Trucost ESG Analysis, S&P Global

Relevant standard

A1000AS

Proportion of reported emissions verified (%)

99

Scope

Scope 2 market-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Moderate assurance

Attach the statement

Tennant_Assurance_Statement_Final.pdf

Page/ section reference

Page 1 - GHG Scope 2 Market Based

Verified by Trucost ESG Analysis, S&P Global

Relevant standard

A1000AS

Proportion of reported emissions verified (%)

99

C10.1b

(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 3 emissions and attach the relevant statements.

Scope

Scope 3- at least one applicable category

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Attach the statement

Tennant_Assurance_Statement_Final.pdf

Page/section reference

Page 1 - GHG Scope 3 Use of Sold Products (2018)

Verified by Trucost ESG Analysis, S&P Global

Relevant standard

AA1000AS

C10.2

(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?

Yes

C10.2a

(C10.2a) Which data points within your CDP disclosure have been verified, and which verification standards were used?

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C7. Emissions breakdown	Year on year change in emissions (Scope 3)	AA1000AS Type 2, moderate level assurance	Scope 3, Category 11 - Use of sold products is the largest portion of our value chain carbon footprint. Prior year (2017) emissions were verified as 367,060 mT CO2e by Trucost ESG Analysis, S&P Global. NOTE: 2017 emissions were reported as 367,566 mT CO2e. Since our 2018 CDP response, we discovered one product was mis-categorized and therefore restate 2017 Category 11 emissions to 367,060 mT CO2e. Reporting year (2018) emissions were also verified by Trucost as 364,812 mT CO2e. The year-on-year change in emissions is calculated using these verified 2018 and 2017 figures (364,812 - 367,060 = -2,248). The resulting -2,248 mT CO2e year-on-year absolute change results in a 0.6% year-on-year reduction. 1

[1]Tennant_Assurance_Statement_Final.pdf

C11. Carbon pricing

C11.1

(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?

Yes

C11.1a

(C11.1a) Select the carbon pricing regulation(s) which impacts your operations.

Other carbon tax, please specify

UK Climate Change Levy (CCL)

C11.1c

(C11.1c) Complete the following table for each of the tax systems in which you participate.

Other carbon tax, please specify

Period start date

January 1, 2018

Period end date

December 31, 2018

% of emissions covered by tax

0.19

Total cost of tax paid

1,214

Comment

The UK Climate Change Levy (CCL) is one example of a carbon tax applied to our business. The CCL is applied to electricity used at our Northampton and Bolton, UK locations.

In 2018, the CCL additional cost for electricity was 910 GBP * ($1.3342 / GBP) = $1,214.

C11.1d

(C11.1d) What is your strategy for complying with the systems in which you participate or anticipate participating?

We comply by paying carbon taxes as a cost of business. Carbon taxes currently apply to some portions of our global business. We do not separately track carbon taxes paid in each country

where we operate. These taxes are not always easy to identify separately and some are passed on to end users indirectly.

One example of a carbon tax directly applied to our business is The UK Climate Change Levy (CCL). The CCL is applied to electricity used at our Northampton and Bolton, UK locations. In 2018, the CCL additional cost for electricity was 910 GBP * ($1.3342 / GBP) = $1,214. This cost was quantified by examining invoice detail, including the CCL rate increase from 0.568p/kWh to 0.583p/kWh in April 2018.

Emissions Trading Schemes (ETS) do not apply to any portion of our global business today, but could potentially apply in the next 2-5 years. We monitor ETS and other regulatory developments in the areas we operate, both to ensure compliance and minimize risk.

Our highest priority strategies are efficiency improvement and low-carbon energy purchasing, which result in reduced carbon emissions.

C11.2

(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?

No

C11.3

(C11.3) Does your organization use an internal price on carbon?

Yes

C11.3a

(C11.3a) Provide details of how your organization uses an internal price on carbon.

Objective for implementing an internal carbon price

Change internal behavior
Drive energy efficiency
Drive low-carbon investment
Other, please specify
Quantify risk

GHG Scope

Scope 1
Scope 2
Scope 3

Application

We use an internal price of carbon to quantify risk and understand full potential impacts of changes in our energy usage. The risk application is explained in "Impact and

implication" section below. We qualitatively consider carbon price in long-term capital investments, facility improvements, etc. to aid the decision making process and quantitatively on larger projects.

For example, in 2018 we made significant investments in capital equipment which will result in lower energy use. The electrical switchgear project in Minneapolis, MN, is one specific example. See Table C2.6 "Capital expenditures / capital allocation" for detail.

We use uniform pricing for capital investment decisions and revisit the price annually. For business strategy analysis, we use evolutionary pricing per the International Energy Agency (IEA) Sustainable Development Scenario. In the scenario, global CO2 emissions peak before 2020 and decline swiftly. In 2019, we intend to explore other scenario approaches.

Actual price(s) used (Currency /metric ton)

129

Variance of price(s) used

A full value chain assessment has been completed for each of the past five years, 2014-2018. As reported in "Tennant Value Chain Footprint - Financial Year 2018," we priced emissions at $129/tCO2e, with inflation taken into account per the EPA. (www3.epa.gov/climatechange/EPAactivities/economics/scc.html).

Other internal assessments have used $144.17/mT CO2e. This price includes the $129/mT above but also includes the average global producer subsidy for fossil fuel of $15.17/mT – as calculated from 2014 global emissions (32.3 B tons CO2) and producer subsidy data published by IEA.

We will publish "Tennant Value Chain Footprint - Financial Year 2018" shortly. The report will be available to the public here:

https://www.tennantco.com/en_us/about-us/corporate-citizenship/sustainability.html

Type of internal carbon price

Shadow price

Impact & implication

We expect carbon taxes to be used more broadly and subsidies for fossil fuels to be eliminated over time. We use an internal carbon price to assess short- and long-term economic risks from climate change driven policy. In 2016, we assessed the potential impact of eliminating pre-tax fossil fuel subsidies, combined with new carbon taxes, to address externalities. That analysis quantified potential FY2014 impact as more than $100 M. The assessment was at the enterprise level and covered our full value chain. We broke potential impacts down to Geographic Business Units and Functional Groups. The information was communicated to the Global Leadership Team to increase awareness and provide motivation to pursue energy/fuel use reductions and renewable energy. The Global Leadership Team includes all leaders at the Director level and above.

For FY2018, we estimate the social costs of our Scope 1, 2, and 3 GHG emissions at more than $71 million. That amount is greater than 6% of our 2018 Revenue and more than double our Net Earnings.

2018 Revenue = $1,123,511,000
2018 Net Earnings = $33,412,000

Total Scope 1, 2, and 3 emissions = 554,351.3 = 27,403.2 + 9,608.1 + 121,897 (Category 1) + 25,904 (Cat 4) + 4,585 (Cat 7) + 142 (Cat 9) + 364,812 (Cat 11)

$71, 511,356.4 = 554,351.6 mT CO2e x $129/mT CO2e

NOTE: This calculation includes the Scope 1+2 emissions for acquired IPC Group business, but does not include IPC Scope 3 emissions. We intend to expand the Scope 3 boundary to include IPC for 2019 reporting year.

Potential impact significantly exceeds our $4,500,000, our 2018 definition of substantive financial impact.

In addition to quantifying/managing risks to Tennant Company, we consider how new technologies and products can reduce our customer's emissions. We use Life-Cycle Analysis to quantify environmental impacts - including carbon emissions. Potential customer cost of future carbon taxes can be quantified and included as part of total cost and value proposition discussions.

C12. Engagement

C12.1

(C12.1) Do you engage with your value chain on climate-related issues?

Yes, our suppliers
Yes, our customers

C12.1a

(C12.1a) Provide details of your climate-related supplier engagement strategy.

Type of engagement

Innovation & collaboration (changing markets)

Details of engagement

Run a campaign to encourage innovation to reduce climate impacts on products and services

% of suppliers by number

2

% total procurement spend (direct and indirect)

8

% Scope 3 emissions as reported in C6.5

2

Rationale for the coverage of your engagement

Planning for this campaign began in 2017. One direct material supplier group was selected for targeted supplier engagement. The selected group provides a good opportunity for Scope 3, Category 1 - Purchased goods and services emission reduction, based on upstream data from our full value chain assessment. Based on the 2017 campaign planning, the group represents about 10% of Scope 3, Category 1 emissions and about 2% of total Scope 3 carbon emissions. The selected direct material group provides an even larger opportunity for Scope 3, Category 11 - Use of sold products emission reduction. Category 11 is more than 70% of our total 2018 Scope 3 emissions. A primary criteria in selecting this first direct material group for engagement was how much each material group affects Use of sold products carbon emissions.

In 2018, we began direct engagement with three specific suppliers in the selected group. Discussions were held on two general areas of opportunity: 1) how we might help the supplier reduce their direct carbon emissions; and 2) how the supplier's component designs and emerging technologies might help us improve our products and reduce Scope 3, Use of sold products carbon emissions.

Additional discussions and site visits are planned for 2019 and we may add more suppliers from this group to the campaign.

Impact of engagement, including measures of success

This direct material supplier group offers the largest long-term opportunity for both Category 1 and 11 emission reductions. The components provided by this supplier group are major energy consumers in a broad range of our products. The particular range of products represents about 65% of our total 2018 Scope 3, Use of sold products emissions and 43% of all 2018 Scope (1+2+3) emissions.

We consider achieving material emission reduction to be the measure of success for this initiative.

The selected suppliers were interested in the 2018 discussion topics and the dialog will be continued.

Specific measures of success are to be determined.

Comment

Type of engagement

Innovation & collaboration (changing markets)

Details of engagement

Run a campaign to encourage innovation to reduce climate impacts on products and services

% of suppliers by number

11

% total procurement spend (direct and indirect)

79

% Scope 3 emissions as reported in C6.5

17.4

Rationale for the coverage of your engagement

The 2017 Supplier Summit targeted a subset (11% by quantity) of all suppliers, which comprised 79% of total 2017 (direct and indirect) spend. The rationale for this coverage is the traditional Pareto Principle.

Impact of engagement, including measures of success

A Supplier Summit was held 9-10 January 2017 near our Minneapolis, MN, headquarters. Tennant Company leadership presented overall strategies, including our Sustainable Enterprise initiative. The education-oriented content covered our product and value chain Life Cycle Assessment (LCA) findings. A significant piece of the presentation covered the tremendous insight gained from a value chain assessment and how that could help the suppliers determine appropriate action to reduce carbon emissions and other environmental impacts. We also shared the progress we've made on reducing carbon emissions and how we achieved that progress to date. We encouraged suppliers to inquire about potential partnerships and share their own progress and ideas.

One program launched at the Summit enabled collaborative suggestions from our suppliers. The program is built on an easy-to-use data platform and provides a mechanism to interact with each partner on their suggestions and track progress. We received more than 90 suggestions. One transportation/distribution supplier suggested they could report our Scope 3 emissions and perform an impact assessment.

In 2018, we continued to follow-up on specific suggestions from the 2017 Summit.

As a result of the Summit, we raised awareness around benefits of reducing carbon emissions for 11% of our total suppliers. This group of suppliers represented 79% of our 2017 spend. Over time, we expect to see our Scope 3, Purchased goods and services emissions reduced. The Purchased goods and services category is more than 23% of our 2018 total Scope 3 carbon emissions.

Measures of success include: percentage of invited suppliers who attended the Summit and percentage of attending suppliers who provided collaboration suggestions.

Comment

C12.1b

(C12.1b) Give details of your climate-related engagement strategy with your customers.

Type of engagement

Education/information sharing

Details of engagement

Run an engagement campaign to educate customers about the climate change impacts of (using) your products, goods, and/or services

% of customers by number

100

% Scope 3 emissions as reported in C6.5

70.5

Please explain the rationale for selecting this group of customers and scope of engagement

Tennant Company communicates product and technology environmental advantages broadly, through all sales channels, and in a variety of ways. We chose to engage with all our customers because their use of sold products is the largest category of our value chain emissions - by far. We feel it is important to raise customer awareness around how they can reduce all types of environmental impact, including reducing carbon emissions.

This engagement has potential to affect 364,812 mT CO2e Scope 3 carbon emissions, more than 70% of our total Scope 3 emissions as reported in C6.5.

Specific product campaigns are also targeted to particular vertical markets.

Impact of engagement, including measures of success

Tennant Company's detergent-free ec-H2O technologies have been very successful in the market. These technologies and products help customers achieve significant environmental footprint reduction, including avoided carbon emissions. We have used Life Cycle Assessment model results to show our customers how ec-H2O can provide significant carbon emission reduction, among other environmental benefits.

We consider this product family a significant success in terms of environmental impact reduction plus strong revenue & profit contribution to our business.

Since the introduction of ec-H2O in 2008, our customers' cumulative carbon emission reduction is more than 88,000 mT CO2e. Total ec-H2O revenue exceeds $1.34 B in the

eleven years since introduction.

In 2018 alone, customer avoided emissions were more than 13,400 mT CO2e. Total sales for the ec-H2O product family were more than 10% of 2018 Total Revenue.

C12.3

(C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?

Trade associations

Funding research organizations

C12.3b

(C12.3b) Are you on the board of any trade associations or do you provide funding beyond membership?

Yes

C12.3c

(C12.3c) Enter the details of those trade associations that are likely to take a position on climate change legislation.

Trade association

American Association of Cleaning Equipment Manufacturers (AACEM).

AACEM is a subsidiary of the International Sanitary Supply Association (ISSA). AACEM serves and represents the interests of manufacturers of commercial and industrial powered cleaning equipment.

A Tennant Company employee is on the AACEM board and we are AACEM members.

We do not provide funding beyond membership dues.

Is your position on climate change consistent with theirs?

Mixed

Please explain the trade association's position

AACEM and ISSA have not taken a position on climate change.

ISSA works to educate members on environmental issues like air quality and climate change.

How have you influenced, or are you attempting to influence their position?

Tennant Company has taken a position on climate change. We have committed to long-term, science-based targets for emission reduction. We are taking aggressive action to reduce our value chain emissions.

Not all AACEM members hold a similar position on climate change. Tennant Company would support AACEM and ISSA taking a position on climate change similar to our position.

NOTE: Tennant Company does not typically take positions on specific legislation.

Trade association

Electro Chemical Activation (ECA) Consortium A/S.

ECA Consortium A/S is an International Non-Profit Association dedicated to promoting the use of ECA technology.

A Tennant Company employee is on the ECA Consortium A/S board and we are ECA Consortium A/S members.

We do not provide funding beyond membership dues.

Is your position on climate change consistent with theirs?

Mixed

Please explain the trade association's position

ECA Consortium A/S has not taken a position on climate change.

How have you influenced, or are you attempting to influence their position?

Tennant Company has taken a position on climate change. We have committed to long-term, science-based targets for emission reduction. We are taking aggressive action to reduce our value chain emissions.

Not all ECA Consortium A/S members hold a similar position on climate change. Tennant Company would support ECA Consortium A/S taking a position on climate change similar to our position.

NOTE: Tennant Company does not typically take positions on specific legislation.

Trade association

EUnited Cleaning. The European Cleaning Machines Association.

EUnited Cleaning focuses on the industry sector producing cleaning systems for commercial and industrial use. EUnited Cleaning is part of The European Engineering Industries Association.

A Tennant Company employee is on the EUnited Cleaning board and we are EUnited Cleaning members.

We do not provide funding beyond membership dues.

Is your position on climate change consistent with theirs?

Mixed

Please explain the trade association's position

EUnited Cleaning has not taken a position on climate change.

How have you influenced, or are you attempting to influence their position?

Tennant Company has taken a position on climate change. We have committed to long-term, science-based targets for emission reduction. We are taking aggressive action to reduce our value chain emissions.

Tennant Company would support EUnited Cleaning taking a position on climate change similar to our position.

NOTE: Tennant Company does not typically take positions on specific legislation.

Trade association

Cremona Energy Consortium.

The Cremona Energy Consortium is a buying group of companies who collaborate to gain better energy tariffs. The companies are located around the city of Cremona, Italy. The consortium is part of the Italian Industrial Association

A Tennant Company employee is President of the Cremona Energy Consortium and we are members.

We do not provide funding beyond membership dues.

Is your position on climate change consistent with theirs?

Mixed

Please explain the trade association's position

Cremona Energy Consortium has not taken a specific position on climate change.

How have you influenced, or are you attempting to influence their position?

Tennant Company has taken a position on climate change. We have committed to long-term, science-based targets for emission reduction. We are taking aggressive action to reduce our value chain emissions.

Tennant Company would support Cremona Energy Consortium taking a position on climate change similar to our position.

NOTE: Tennant Company does not typically take positions on specific legislation.

C12.3d

(C12.3d) Do you publicly disclose a list of all research organizations that you fund?

Yes

C12.3f

(C12.3f) What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?

Tennant Company has an internal policy named: ***Political Contributions and Public Policy Activities***.

"It is the Company's policy not to make direct Political Contributions and to only engage in public policy activities where there are legal and support issues that directly affect our business objectives and protect or enhance the interests of our stakeholders. If the Company should determine that direct Political Contributions are warranted to support our business and stakeholders' interests, it must submit its recommendation to the Governance Committee for approval in advance of making such Political Contribution. The Company's management will report to the Governance Committee of the Company's Board of Directors any direct lobby efforts and direct Political Contributions."

"Nothing in this Policy shall prohibit the Company from participating in trade associations, professional societies, industry groups and other tax-exempt organizations that represent the industries and business communities in which the Company operates."

Direct activities are an exception and must be reviewed and approved by the Board of Directors.

When we are determining whether to engage in an indirect activity, one consideration is whether the organization's mission is consistent with our vision, business strategies and Stewardship guiding principle: "We will use our core value of stewardship to guide our actions. We are accountable to our colleagues, our customers, our investors and our communities. We care for one another and work together for our mutual safety." Another consideration is whether the organization is focused on sustainability issues including climate change. These considerations in our engagement process have led us to partner with many organizations that educate and advocate for responsible energy/resource use and other changes which benefit the environment.

Examples of trade and research organizations (indirect activities) where we engage include the Minnesota Sustainable Growth Coalition (MSGC), Environmental Initiative (EI), Canada Green Building Council (CaGBC), U.S. Green Building Council (USGBC), Twin Cities Conflict Minerals Task Force, Waste Wise Minnesota, NorthStar Initiative for Sustainable Enterprise (NiSE), ECA Consortium, EUnited Cleaning, International Sanitary Supply Association (ISSA), BSCAI, PRSM, SEAC, ABRALIMP, ABIMAQ, Cleaning Industry Research Initiative (CIRI), CEB/Gartner

Human Resources Practice Group, Minnesota Chamber of Commerce, Minnesota Business Partnership, and National Association of Corporate Directors (NACD).

C12.4

(C12.4) Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Publication

In voluntary sustainability report

Status

Underway – previous year attached

Attach the document

2018_TNC_CSR_FINAL.pdf

2017 Tennant Sustainability Report.pdf

Page/Section reference

The 2017 and 2018 Corporate Sustainability Reports (CSR) are attached. The 2018 CSR contains 2017 carbon emissions data and 2018 CDP score. Given CDP's response due date of 31 July, we decided to decouple CSR and carbon emissions publication. The decoupling makes our CSR more timely and relevant. Once the 2019 CDP response is submitted, we will publicize 2018 carbon emissions (targets, progress, etc.) here:

https://www.tennantco.com/en_us/about-us/corporate-citizenship/sustainability.html

Content elements

Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets
Other metrics

Comment

C14. Signoff

C-FI

(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

C14.1

(C14.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	President and Chief Executive Officer (CEO). NOTE: The President and CEO is also a Director on the Board of Directors.	Chief Executive Officer (CEO)