Welcome to your CDP Climate Change Questionnaire 2022

C0. Introduction

C0.1

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

Essential Utilities, Inc. (referred to as Essential Utilities, Essential, the Company, we, us, or our), a Pennsylvania corporation, is the holding company for regulated utilities providing water, wastewater, or natural gas services to an estimated five million people in Pennsylvania, Ohio, Texas, Illinois, North Carolina, New Jersey, Indiana, Virginia, West Virginia, and Kentucky under the Aqua and Peoples brands. One of our largest operating subsidiaries, Aqua Pennsylvania, Inc., (Aqua Pennsylvania) accounted for approximately 55% of operating revenues and approximately 68% of income for our Regulated Water segment in 2021. As of December 31, 2021, Aqua Pennsylvania provided water or wastewater services to approximately one-half of the total number of water and wastewater customers we serve. Aqua Pennsylvania's service territory is located in the suburban areas in counties north and west of the City of Philadelphia and in 27 other counties in Pennsylvania. Our other regulated water or wastewater utility subsidiaries provide similar services in seven additional states. Additionally, pursuant to the Company' growth strategy, commencing on March 16, 2020 with the completion of the Peoples Gas Acquisition, the Company began to provide natural gas distribution services to customers in western Pennsylvania, Kentucky, and West Virginia. Approximately 93% of the total number of natural gas utility customers we serve are in western Pennsylvania. Lastly, the Company's market-based activities are conducted through Aqua Infrastructure, LLC, Aqua Resources Inc., and certain other non-regulated subsidiaries of Peoples. Prior to our October 30, 2020 sale of our investment in a joint venture, Aqua Infrastructure provided non-utility raw water supply services for firms in the natural gas drilling industry. Following the October 30, 2020 closing, Aqua Infrastructure does not provide any services to the natural gas drilling industry. Aqua Resources offers, through a third-party, water and sewer line protection solutions and repair services to households. Other non-regulated subsidiaries of Peoples provide utility service line protection services to households and operate gas marketing and production businesses.

This CDP submission presents information for the year of 2021 and is Essential's second submittal to include our recently acquired natural gas utility operations.

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
Reporting year	January 1, 2021	December 31, 2021	Yes	1 year

C0.3

(C0.3) Select the countries/areas in which you operate.

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 chosen approach for consolidating your GHG inventory.

Financial control

C0.8

(C0.8) Does your organization have an ISIN code or another unique identifier (e.g., Ticker, CUSIP, etc.)?

Indicate whether you are able to provide a unique identifier for your organization	Provide your unique identifier
Yes, a Ticker symbol	WTRG

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
Board-level committee	The board of directors is briefed on ESG matters in its regularly scheduled meetings, through various channels and reporting paths. The corporate governance committee takes primary responsibility for providing board oversight for the company's ESG profile, strategy, and activities. At least five times per year, both the chief of staff, who reports to the CEO and oversees the ESG program, and the ESG Manager present an update to the corporate governance committee of the board on ESG matters. Often joining them are various leaders from across the organization to speak to various subjects. Written reports are provided to the full board at each meeting and, for certain ESG matters, presentations are made to the full board. Climate-related matters are an area of particular attention throughout the year, and there is even one meeting solely dedicated to a deep dive on climate change and environmental sustainability. During this detailed review, there is analysis and discussion of climate change initiatives, strategies, peer and industry benchmarking, risks and opportunities, and progress towards related goals. These matters are discussed both in terms of impact to current operations as well as through the lens of future acquisition and expansion opportunities and resiliency. Additionally, climate-related items are covered under the enterprise risk management (ERM) review conducted by the Risk Mitigation and Investment Policy Committee of the board and is reported to the full board at each of its regularly scheduled meetings. Also, there is additional oversight provided by the Audit Committee, which is informed about climate change risks through the Compliance and Disclosure Committees, comprised of the company's management. Our board members understand the significance of climate change and passionately believe it is their duty to provide active oversight on these matters and be well-educated on the subject. As C1.1D notes, we are proud to have multiple board members with climate competence and believe this both enriches dialogue at meetings and helps inform our overall climate strategy.
Chief Executive Officer (CEO)	Our Chief Executive Officer, who also serves as the board's Chair, is responsible for Essential's overall direction and strategy related to climate issues for operations and aligning corporate growth with consideration of climate-related issues. Further, the CEO is the most direct interface with current and future investors in addressing our company's alignment with ESG and climate goals. As

	such, the CEO provides a valuable voice and perspective to board discussions on climate change matters and serves as a crucial bridge between the board and the company's management to ensure alignment on climate-related matters. Essential's CEO actively engages in many meetings and discussions throughout the year on climate-related matters, both internally and with the larger utilities industry.

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
Other, please specify Five times per year	Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding annual budgets Reviewing and guiding business plans Setting performance objectives Monitoring implementation and performance of objectives Overseeing major capital expenditures, acquisitions and divestitures Monitoring and overseeing progress against goals and targets for addressing climate-related issues	Reviewing and guiding strategy- The board views the strategic direction of Essential within the proper context of climate risks and opportunities. It is not a separate, siloed analysis but rather climate-related matters are integrated organically into larger strategic discussions. As a utility that operates critical infrastructure, resiliency and sustainability are core to our business and the board helps to ensure climate change and the transition to a low-carbon economy are accounted for within enterprise strategic planning. Reviewing and guiding major plans of action- The board is and wishes to be actively involved in reviewing and guiding major plans of action and initiatives regarding reducing greenhouse gas emissions and promoting climate resiliency. Reviewing and guiding risk management policies- As stated in section C1.1A, there are multiple formal channels by which the board provides clear oversight on enterprise risk management policies, which include climate-related matters. Monitoring implementation and performance of objectives- Management transparently reports on both successes and challenges of its climate-related projects and efforts. The board must assess this performance to ensure that these critical objectives are met.

		Overseeing major capital expenditures, acquisitions, and divestitures- The board provides strong governance on such matters, which include major programs like our replacement of methane leak-prone pipe and various other emissions-reducing initiatives. Monitoring and overseeing progress against goals and targets for addressing climate-related issues- A dashboard showing progress against climate-related goals and targets is presented to the board and discussed at each meeting, five times per year. Reviewing and guiding annual budgets- Our emissions reduction initiatives, such as our gas pipeline replacement and REC purchasing, are major budgetary line items and require detailed consideration from leadership at both board and management levels, which must prudently manage Essential's finances while meeting climate goals. Reviewing and guiding business plans- The board reviews Essential's business plans and strategy in light of climate-related matters and provides its perspective and guidance to management as key initiatives and actions are discussed. Setting performance objectives- Climate-related metrics are a part of the Essential Short-Term Incentive Awards Program and the board is well aware of the importance of tying company performance and management's pay to climate-related targets and goals.

C1.1d

(C1.1d) Does your organization have at least one board member with competence on climate-related issues?

	Board member(s) have competence on climate-related issues	Criteria used to assess competence of board member(s) on climate-related issues
Row 1	Yes	Edwina Kelly has a significant background in renewable energy and sustainability. As Managing Director for the global Power and Renewables group within Canada Pension Plan Investment Board, Ms.

		Kelly has deep familiarity with various renewable technologies and the energy industry. Previously, she was a Director at EFG Hermes UAE, where she helped manage the renewable energy platform, led solar portfolio acquisitions, and equity restructuring of wind farm investments. Ms. Kelly is also a member of the Board of Directors a VTRM Energia, which invests in renewable energy in Brazil. We believe Ms. Kelly brings a wealth of knowledge in alternative energy, reducing emissions, and the role of finance in climate change action. Ellen T. Ruff has had a successful career in the energy sector. With a legal and regulatory background. some of her roles have included President of the Office for Nuclear Development at Duke Energy Corporation and President of Duke Energy Carolinas. In her decades of experience in the energy industry, Ms. Ruff has both witnessed and strategically participated in the energy transition from coal to gas and renewables. We believe Ms. Ruff brings an informed and broad view of energy and climate issues through the lens of an experienced leader. Christopher C. Womack has held numerous leadership positions in the energy sector, particularly through his work with Southern Company and its subsidiaries. Mr. Womack is the Chairman, President, and Chief Executive Officer of Georgia Power. Previously, he held executive roles at both Southern Company and Georgia Power ranging from external affairs to hydro power. We believe Mr. Womack brings a deep understanding of all elements of the energy industry and offers his experience as the executive leader responsible for Georgia Power's climate change mitigation and adaptation efforts.

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
Other C-Suite Officer, please specify Chief Environmental Officer	Both assessing and managing climate-related risks and opportunities	Annually
Chief Executive Officer (CEO)	Both assessing and managing climate-related risks and opportunities	Quarterly

Other, please specify Vice President, Chief Of Staff, Investor Relations and Communications	Both assessing and managing climate-related risks and opportunities	Quarterly
Other, please specify Executive Vice President, General Counsel and Secretary	Both assessing and managing climate-related risks and opportunities	Quarterly
Chief Financial Officer (CFO)	Both assessing and managing climate-related risks and opportunities	As important matters arise
Chief Operating Officer (COO)	Both assessing and managing climate-related risks and opportunities	As important matters arise
Other, please specify Vice President, Fleet Operations	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).

As set forth in responses to section C1.1, the company has various reporting pathways, touch points, and methods to actively manage climate-related issues. For example, climate-related issues through the Enterprise Risk Management (ERM) framework are reviewed by the General Counsel to determine risks related to both short term acute events and risk due to longer term climate change issues for both physical assets and production operations. At least five times per year, an update on the progress being made with ERM is presented to the full Board of Directors. Our Chief Executive Officer is responsible for the overall direction and strategy related to climate issues for operations and aligning corporate growth with consideration of climate-related issues. Further, the CEO is the most direct interface with current and future investors in addressing our company's alignment with ESG and climate goals.

Our Chief Financial Officer is responsible for monitoring the financial impact of climate-related events and projecting the financial risk of future events for current operations. The CFO assesses the financial impact of climate-related issues in both growth and expansion opportunities. Our Chief Operating Officer is responsible for ensuring physical assets are protected from climate related issues and implementing operational procedures and efficiencies to reduce energy consumption. The Chief Environmental Officer reports to the Chief Operating Officer and downward to each state president and corporate engineering functions to provide the overarching guidance and oversight in managing and evaluating risk through our Key Performance Indicators (KPIs) which include energy intensity. It is the Chief Environmental Officer's responsibility to prepare and present an annual report on environmental sustainability

matters to the Board of Directors. The Corporate Energy manager, who reports through the Vice President Corporate Engineering to the Senior Vice President, Chief Operating Officer, leads the assessment and tracking of energy intensity for production assets. This individual assists each state's president and chief engineer with identifying and implementing energy reduction measures at well stations, water treatment plants and wastewater treatment plants. The Corporate Energy Manager is also responsible for energy purchases, including procurement of green energy within those states with deregulated markets and the assessment and implementation of on-site renewable energy projects where feasible. The Vice President of Fleet Operations, reporting up through the Chief Administrative Officer to the Chief Executive Officer, is responsible for managing the large fleet of vehicles across the enterprise and implementing efficiency initiatives that reduce emissions and climate impact.

The Chief of Staff oversees the company's ESG program in concert with responsibilities pertaining to public and investor relations. In this capacity, the Chief of Staff coordinates with the aforementioned individuals and others within the organization on various initiatives and also manages both internal and external communications on these matters. In May 2020, Essential Utilities created an ESG Manager position. This is a full-time role that reports to the Chief of Staff and is completely dedicated to further developing and maturing the ESG profile of the Company, of which climate change matters and impacts are among the most critical.

Additional management oversight of climate-related matters is provided by the ESG oversight committee, which was formalized in 2020. Members of this group include over a dozen senior leaders from across the organization, each lending a unique and valued perspective. This group meets at least once per quarter to discuss recent progress with ESG initiatives, industry news and trends, strategic short and long-term planning, approval of various initiatives and policies and to recommend matters to be presented to the CEO and the board. We remain dedicated to continually strengthening our governance on climate-related matters in recognition of its critical importance to our society, planet, and company.

C1.3

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

	Provide incentives for the management of climate-related issues	Comment
Row 1	Yes	Environmental stewardship is one of the several pillars of the Essential Short-Term Incentive (STI) Plan, outlined in detail in our proxy filing. The quantity of gas leaks from our distribution network has a 2.5% weighting. We also measure ourselves against the miles of methane leak-prone pipe we planned to replace at the start of the year and this, too, has a 2.5% weighting. In 2021, we experienced overachievement of the targets we set for each of these goals, as outlined in our proxy filing, available on our website. These elements of our STI Plan

		promote minimization of our largest source of Scope 1 emissions, fugitive methane leaks from our gas distribution network. Another such incentivized factor, relevant to certain managers in our organization, is energy intensity, a crucial metric for our operations. This promotion of energy efficiency has contributed to significant reductions, in recent years, of energy usage at our wastewater plants, for example.

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).

Entitled to incentive	Type of incentive	Activity incentivized	Comment
Management group	Monetary reward	Energy reduction project	Incentives are realized through achieving/exceeding Key Performance Indicators (KPIs) based on internal benchmarks for each state and meeting external industry metrics, which include cost of operations and energy consumption, management, and engineering. Annually, these benchmarks are evaluated and adjusted to meet new goals. Incentive levels vary by position and state. There is an energy intensity KPI for certain managers in our organization and this drives awareness of the acute climate threat and its potential impact on operational costs. This KPI encourages management to proactively implement measures to address and reduce energy intensity in an effort to lower costs and reduce carbon emissions.
Management group	Monetary reward	Emissions reduction project	Quantity of gas leaks is a climate-related metric is included as a component of Essential's Short-Term Incentive Awards (STI), in order to promote accountability for performance in this area. In 2021, we recorded 539 gas leaks, which is well below our targeted achievement of 700. More information on Essential's STI program can be found in our proxy filing, available on our website.
Management group	Monetary reward	Emissions reduction project	Quantity of gas distribution pipe miles replaced versus planned replacements is a climate-related metric that is included as a component of Essential's Short-Term

			Incentive Awards (STI), in order to promote accountability for performance in this area. In 2021, we replaced more miles of leak-prone distribution pipe than we had planned (106.80% of total). More information on Essential's STI program can be found in our proxy filing, available on our website.

C2. Risks and opportunities

C2.1

(C2.1) Does your organization have a process for identifying, assessing, and responding to climate-related risks and opportunities?

Yes

C2.1a

(C2.1a) How does your organization define short-, medium- and long-term time horizons?

	From (years)	To (years)	Comment
Short-term	0	5	We have determined that, within our areas of operations, the short-term time horizon of 0-5 years is an actionable and pertinent range, as both physical and transitional risks are likely to adjust and shift in the short-term. Evaluating our exposure to risks in the short-term allows us to develop more effective strategies to reach our sustainability goals and transition to a low-carbon economy.
Medium-term	6	15	The company is a long-term holder of water, wastewater, and gas distribution network assets. Through our scenario analysis methodology, we have determined that water and wastewater assets, along with their associated risks and opportunities, must be addressed in the medium-term (6-15 years). As such, the company engages in annual five-year planning cycles and, on occasion, ten-year planning cycles to address capital improvement to infrastructure and operations. The planning in each case involves budgeting capital, environmental needs, maintenance, and operations. Deficiencies noted during repeated acute events can be addressed through capital infrastructure improvement projects and costs can be allocated for within future rate cases. Similarly, our scenario analysis has shown that the medium-term time horizon is important for our gas operations as well, as we examine how emissions-reducing technologies and alternative fuels may be implemented in the industry and various regulatory responses to

			climate change may take further shape. Our infrastructure improvement program, which includes the replacement of leak-prone pipe, is also scheduled to conclude within this timeframe. Climate-related issues recognized in the medium-term can be addressed by the existing planning process for improvement projects and managed effectively within the context of resilient operations. This time horizon is congruent with the company's climate goals.
Long-term	16	30	Long-term or emerging risks include economic, social, environmental, regulatory, and political change, as well as new technologies. Engaging in long-term (16-30 year) planning cycles where enterprise-wide issues are evaluated are important in addressing actions today where their outcomes pay dividends far into the future. An example of a long-term business activity is the replacement of water and wastewater pipe to ensure long-term product delivery. As identified through our scenario analysis methodology, we have determined that many climate-related issues are most impactful to our areas of operations in the long-term, and company-wide strategies include contingencies for various climate-related scenarios.

C2.1b

(C2.1b) How does your organization define substantive financial or strategic impact on your business?

Essential Utilities defines climate-related impacts though a model which weights likelihood, cost, magnitude of impact and time horizon. Evaluating exposure to climate-related risks and opportunities over a range of time horizons allows for a strategy for the transition to a low-carbon economy recognized in the Paris Agreement and UN SDGs. In conjunction with the Villanova University Sustainable Engineering program, the goal was to define a model focused on processes for identifying, assessing, and managing climate-related issues as well as on the climate-related risks and opportunities identified by the company. This information offers investors greater confidence that the company understands and has properly assessed the potential impacts to climate related issues.
This model was developed in conjunction with Villanova University and formalizes the process, adding consistency in approach and providing a method that is easily repeatable and evergreen.

The model was also defined using the CDP framework as a reference to allow for consistency in evaluation and reporting and to maintain consistency with CDP as it evolves over time. The

scoring methodology developed applies to both risks and opportunities. Financial impacts in terms of the analysis are defined at three levels (Low $0 to 250K, Medium $250K to 1M, and High >$1M) and they can be from a single event/occurrence or an annualized cost impact of a specified time horizon (for negative impact, we included labor, control infrastructure and operations and maintenance (O&M) risk; for opportunities, we included cost savings or additional revenue). While cost is a quantitative assessment of impact, it was also important to assess the qualitative factors within the Magnitude of Impact (MOI).

This scenario analysis process is conducted with Villanova University as a rigorous workshop across several weeks, with internal meetings as well to prepare for each workshop session and to discuss various opinions and ideas. Multiple members of management with climate-related responsibilities, as outlined in section C1, partake in this process and the findings and conclusions are shared and discussed with company leadership. This analysis has been performed for our legacy water and wastewater operations and our gas operations as well. The result is a consistent and similarly rigorous scenario analysis based on climate science, conducted for each segment of our company, and with the facilitative guidance of an experienced and objective third-party. We believe this to be a best practice for companies completing the CDP and we look forward to continually revisiting and updating our analysis in future years.

C2.2

(C2.2) Describe your process(es) for identifying, assessing and responding to climate-related risks and opportunities.

Value chain stage(s) covered

Direct operations

Risk management process

Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment

Annually

Time horizon(s) covered

Short-term
Medium-term
Long-term

Description of process

Risks and opportunities within the model are defined using a STEEP (Sociological, Technological, Economical, Environmental, and Political) analysis method to evaluate both internal and external forces on their likelihood of occurrence and then on the magnitude of their impact, time horizon and likelihood. Topic areas were selected and, for implications within those areas specific risks or opportunities (R&O) were addressed. The implications are given a score based on likelihood, cost and magnitude of impact

(MOI) on operations as they relate to climate impacts under the Businesses as Usual and Temperature Rise Below 2 Degrees Celsius climate-related scenarios. This method allows for a semi-quantitative method for ranking of risks and opportunities and serves to triage a larger number of implications. The process also allows for implications to be updated and easily re-evaluated on an annual basis. This re-evaluation takes into consideration updates to climate models and the addition of new topics and implications as the businesses and business locations change. Our analysis was designed based on guidance from the Task Force on Climate Related Financial Disclosures (TCFD) surrounding scenario analysis, which is a key recommendation from the organization.

Review of the STEEP analysis was used to guide the selection of Risks and Opportunities (R&Os) reported below. Multiple members of management with climate-related responsibilities, as outlined in section C1, partake in this process and the findings and conclusions are shared and discussed with company leadership. The analysis results and individual section scores for each implication were considered in the selection of the most relevant and material R&Os to include in this CDP submittal.

Please refer to C3.2a for additional detail on our analysis process.

Water and Wastewater:

The analysis has six topic areas: Capital Investments vs. Extreme Temperatures, Higher Energy Costs vs. Temperature, Market Growth vs. Groundwater Availability, Infrastructure Resilience vs. Frequency and Intensity of Storm Events, System Compliance vs. Regulations on Contaminants of Emerging Concern (CECs), and Population Dynamics vs. Source Water Availability. The six topic areas we identified yielded 37 implications of a risk or opportunity (R&O) across three geographic areas encompassing our operations. The STEEP analysis method helped provide the scoring rational and justification in selecting specific R&Os over others. Based on previous qualitative methods, implications such as flooding figured more prominently. However, when analyzed within the STEEP process, other implications scored higher. The implications with the highest scores are presented in the subsections below.

To address the sections of implications and scoring, we utilized WRI's Aqueduct Water Risk Atlas, Global Flood Analyzer and GEMI's Local Water Tool and analysis of existing infrastructure within 100-year and 500-year flood plains. Quantitative scenario analyses from the CMIP5 climate data set for the period 1950-2099 under the RCP2.6 and RCP8.5 scenarios within the BCCAv2 ccsm4 model run were used to gauge time-frame and MOI. We intend to update our analysis with more recent model outputs when suitable climate data becomes available. Also, we considered past recent history with hurricanes in North Carolina and Texas in relation to actual operational and financial impacts.

Gas:
The analysis has four topic areas: Heating Degree Days vs. Cost of Carbon, Extreme Cold vs. Hydrogen Blending, Population Change vs. National Ban on Fracking, and

Severe Weather Events vs. Decarbonization Incentive (Streamlining vs. Regulation). The four topic areas we identified yielded 17 implications of a risk or opportunity across our primary geographic area of the greater Pittsburgh metropolitan region. The STEEP analysis method helped provide the scoring rational and justification in selecting specific R&Os over others. The implications with the highest scores are presented in the subsections below.

Quantitative scenario analyses from the CMIP5 climate data set for the period 1950-2099 under the RCP2.6 and RCP8.5 scenarios within the BCCAv2 ccsm4 model run were used to gauge time-frame and MOI. We intend to update our analysis with more recent model outputs when suitable climate data becomes available.

C2.2a

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

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	The company is a publicly traded utility that is regulated by State and Federal Government agencies (e.g. Environmental Protection Agency, Securities Exchange Commission, and the Public Utility Commissions) in each state in which it operates. Therefore, current climate-based regulations are considered relevant and always considered in temporal risk planning.
Emerging regulation	Relevant, always included	Emerging regulations are considered in risk planning and need to be addressed as they arise (e.g. cyanotoxins, carbon pricing, potential regulatory limits on carbon extraction) for water, wastewater, and gas activities. These emerging water quality, contaminants of emerging concern, and greenhouse emissions regulations may impact rates, require alternative water sources or increase treatment costs and can be financially significant. These are important because they may increase the energy required to process water and wastewater. Further, specific climate-related regulation in the future can impact our business as well. Examples may include tariffs and/or fees from acute weather events or new mandates on renewable energy. As such, designing and managing a strong environmental program that anticipates future trends and issues is an important way to mitigate such risk.
Technology	Relevant, always included	Transitional risks such as technology are considered when assessing the potential to substitute existing equipment or processes with lower emission options. There is also the risk of utilizing a new technology in our operations that does not prove to be a worthy investment. There is an obvious need for digital technologies within the water, wastewater,

		and gas sectors, in particular technologies that can improve infrastructure performance (process and pump automation) and the effectiveness of repairs to infrastructure and capital investments. In a capital-intensive business such as ours, making correct choices on efficient technology represents a major part of our climate risk mitigation strategy, especially given the longer-term period of service of much of this equipment.
Legal	Relevant, always included	Climate change litigation against companies, governments and individuals is on the rise, and these risks are considered relevant due to their potential economic impact to the company. Legal risks go hand-in-hand with policy risks, which the company may face in the form of rate changes imposed by regulatory mandates, interruption in service due to extreme weather or emerging drinking water contaminants. CDP recently reported that the world's 50 largest companies expect almost US$1 trillion at risk from climate impacts, and higher operating costs associated with legal and policy changes making up a significant part of this risk. Therefore, legal considerations represent an important part of our climate-based risk assessments.
Market	Relevant, always included	Shifts in supply and demand for water, wastewater services, and gas will invariably be affected by climate change. This risk is considered relevant to the company as water demands decrease with changing customer behavior and extreme weather affects water quality and quantity, in addition to a greater societal focus on water and gas conservation and efficiency. As a result, we consider climate-related market risks as our operations and services evolve over the short, medium and long-term periods.
Reputation	Relevant, always included	Climate change leads to multiple challenges for water, wastewater, and gas utilities. Our company mission statement is "to sustain life and improve economic prosperity by safely and reliably delivering Earth's most essential resources to our customers and communities." We must do this while maintaining trust with our customers, regulators and governing state public utility commissions and agencies. Developing a strong ESG program with credibility and consistent improvement is vital to fulfilling our mission as well as earning the necessary trust to facilitate the relationships needed for operating our business and acquiring new systems. Speaking broadly, across the United States, there is growing awareness of critical infrastructure issues and rising expectations of utilities as a force for positive change. Thus, the public's confidence in our commitment to the community and stewardship of the planet is at the core of everything we do. Our actions surrounding climate change is one important element of this. Engaging with the customer, our regulators, investors, and our other stakeholders on climate change is important to us and something we will continue to address going

		forward. To underscore this importance, in 2020, Essential created and filled a new position of ESG Manager to address the need and effort required evolve our ESG handprint and engage our community of customers and investors. We also published an expanded and more extensive report on a new dedicated ESG microsite (ESG.Essential.co).
Acute physical	Relevant, always included	Acute physical climate-related risks are always considered and are relevant in all states we operate. Increased precipitation leads to flooding and increasing temperatures lead to droughts. As a result of Hurricane Harvey, the customer demand was reduced during the storm and also during the recovery effort. This has direct financial implications as well. In an effort to better assess and manage the potential impacts from acute physical risks in the short, medium and long-term, we have explored tools such as WRI's Aqueduct Water Risk Atlas.
Chronic physical	Relevant, always included	Chronic physical climate-related risks are always considered and are relevant. Due to increasing precipitation in various regions we operate, we are increasing capital expenses toward infrastructure to safeguard our dams and reservoirs. In addition to this, we assess and manage the potential impacts from chronic physical risks in the short, medium and long-term by preliminary analysis using tools like WRI's Aqueduct Water Risk Atlas and Global Flood Analyzer. The primary risks and effects are: Temperature – Increased cost and energy to treat water and wastewater and increased risk of exceeding water quality criteria. Strain on the electrical grid is another consideration. A reduction in average heating degree days due to climate change will also reduce natural gas demand. Drought – Not being able to meet customer demand, increased cost and energy to treat water, increased cost and energy to pump water and increased risk of exceeding water quality criteria. Flooding - Physical risk to facilities, increased cost and energy to treat water and wastewater, increased risk of exceeding water quality criteria for water and waste water. Also associated with flooding are often from other severe weather resulting in widespread and long-lasting power outages.

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 & Primary climate-related risk driver

Chronic physical

Precipitation and/or hydrological variability

Primary potential financial impact

Increased capital expenditures

Company-specific description

Wastewater I&I and SSO (Water and Wastewater Business Unit) - Protecting the environment from untreated sewage is a top priority as the owner and operator of wastewater systems. However, our company does acquire many systems that, due to historical lack of repair and investment, require time to make major infrastructure investments to prevent sewers from overflowing to the environment. Overflows can be caused during non-rain events by sewer collapses, electrical failures, and blockages. Also, extreme weather events such as hurricanes and tropical storms, increased frequency of extreme rainfall events, or climate-related trends can force a well-operated and maintained system to experience the occasional sanitary sewer overflow. Our company works to eliminate overflows through capital investments and operations, minimize and report overflows when they happen, and track the location, frequency, and duration of any overflows for future improvements.

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)

10,000

Potential financial impact figure – maximum (currency)

1,000,000

Explanation of financial impact figure

This estimate is based on impacts from physical climate-related risks only and not reputational risks associated with an interruption in service. The range of financial impact cited above is an estimate in terms of cost per wastewater system per storm event.

Cost of response to risk

1,000,000

Description of response and explanation of cost calculation

This financial impact is based on the past costs of capital investments and expenditures of additional infrastructure per collection system to address wet weather impacts, infiltration, and inflow as a result of increased regulations. Costs can vary significantly due to local/regional factors, so this figure is more directional in nature.

Comment

We perform routine O&M and capital projects to respond to and mitigate this risk by building resiliency throughout our wastewater systems.

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Emerging regulation

Mandates on and regulation of existing products and services

Primary potential financial impact

Increased capital expenditures

Company-specific description

Cyanotoxins/CECs (contaminants of emerging concern) (Water and Wastewater Business Unit)- Blooms of toxin-producing cyanobacteria are expected to proliferate in surface water as global temperatures rise. These organisms produce cyanotoxins, a

CEC that we have identified as a potential climate-related risk to our ability to provide safe and healthy drinking water to our customers. However, there is currently research being performed internally and externally to further assess this risk. Our company's response to regulations for CECs, and specifically cyanotoxins, depends on the speed and structure by which these regulations are implemented. The EPA has begun conducting studies to determine chronic and acute maximum contaminant level (MCL) in humans and aquatic life for the pollutants. Once these studies are complete and potentially translated into regulatory policy, this could influence the regulations of water quality for surface water plants. How quickly these regulatory policies are adapted and implemented, and their results, will determine how soon and strict future CEC regulations in drinking water quality are. Our company's response to these future regulations depends on these results and we are actively monitoring the latest scientific and regulatory developments in this area.

Time horizon

Short-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)

10,000

Potential financial impact figure – maximum (currency)

50,000

Explanation of financial impact figure

This range estimate refers to the annual financial impact for additional O&M to maintain and operate infrastructure, per surface water plant, to address cyanotoxins as a result of a likely scenario of increased regulations.

Cost of response to risk

1,000,000

Description of response and explanation of cost calculation

This financial impact is based on the capital investments and expenditures of the additional infrastructure, per surface water plant, to address cyanotoxins as a result of increased regulations.

Comment

We have already begun installation of treatment upgrades to address cyanotoxins in our Ohio subsidiary.

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Emerging regulation

Mandates on and regulation of existing products and services

Primary potential financial impact

Increased indirect (operating) costs

Company-specific description

Disinfection by-products (Water and Wastewater Business Unit) - An unintended consequence of drinking water disinfection is the generation of disinfection by-products (DBPs). These chemical disinfection by-products, either organic or inorganic depending on the context, form as part of normal chemical disinfection treatment through the interaction between naturally occurring organic materials present in the source water and the treatment technology being used. In the case of our operations, the disinfectant most prone to cause DBP is chlorine. Chlorine dosage, and by extension the prevalence of DBP, is highly dependent on temperature. Through the use of scenario analysis, we determined the potential implications to our business operations under an optimistic scenario (RCP 2.6) and a Business-as-Usual pathway (BAU, RCP 8.5). We have determined that, based on this scenario analysis, there is a high likelihood that regulatory authority and requirements will also be highly dependent on similar climate-related trends. Our company may address increased DBPs as a result of treatment by implementing new filtration and treatment processes (e.g. organics removal, carbon treatment, membranes) for their effective removal prior to delivery, with the ability to scale these efforts based on the regulatory requirements, justified through the results of the scenario analysis.

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)

1

Potential financial impact figure – maximum (currency)

2

Explanation of financial impact figure

This financial impact is based on the capital investments and expenditures, along with corresponding operating costs, of the additional infrastructure required to remove disinfection by-products as a result of increased regulations as a cost ($) per 1 million gallons of water produced .

Cost of response to risk

1,000,000

Description of response and explanation of cost calculation

This financial impact is based on the capital investments and expenditures of the additional infrastructure, per surface water plant, to address disinfection by products as a result of increased regulations.

Comment

We perform routine O&M and capital projects to respond to and mitigate this risk by building resiliency throughout our wastewater systems.

Identifier

Risk 4

Where in the value chain does the risk driver occur?

Downstream

Risk type & Primary climate-related risk driver

Technology

Transitioning to lower emissions technology

Primary potential financial impact

Increased capital expenditures

Company-specific description

Safe Hydrogen Concentration (Gas Business Unit) - Hydrogen blends as a sustainable fuel source are in their infancy. With this said, it is paramount to perform sufficient research and development to ensure safety in distribution and processing. Lack of adequate protocols and safety measures, if we ever were to blend hydrogen in our gas

supply, could lead to significant liability issues. Hydrogen is a highly combustible gas. As an operator of a gas distribution network with safety always of the utmost priority, we wished to capture this potential downside risk of hydrogen blending. We also acknowledge, in C2.4, that there is upside opportunity as well with this nascent technology.

Time horizon

Long-term

Likelihood

Unlikely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Studies into whether hydrogen blending will be practical and safe for transport through distribution pipelines are in their infancy. We continue to monitor developments in understanding in both academic and industry circles. It is too premature to conduct a financial analysis at this time as there are too many variables preventing such estimates from being useful and actionable. Once we have a better understanding of what kind of adjustments to our infrastructure would be needed to transport hydrogen and to what degree it can be sourced across our footprint, it will be an appropriate time to conduct such a financial analysis surrounding a potential safety incident. We believe this is still at least several years away, if not longer.

Cost of response to risk

Description of response and explanation of cost calculation

As per the above explanation, it is too premature to estimate the cost of response to a risk that we do not have much actionable information about today. If we decide to utilize hydrogen blending, safety planning will be a core element of our strategy and we will be in a better position to examine the cost of precautions needed to mitigate such a risk.

Comment

Identifier

Risk 5

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Technology

Substitution of existing products and services with lower emissions options

Primary potential financial impact

Decreased revenues due to reduced demand for products and services

Company-specific description

Electrification (Gas Business Unit) - As climate change exacerbates and renewables comprise a higher proportion of electric generation, there may be a shift towards electrification of buildings and a shift away from natural gas usage to at least some degree. This may be market-driven or policy-driven in nature, or some combination of the two. This would constitute an inherent risk for our natural gas distribution business, absent of the potential to transition to economically and environmentally competitive technologies and alternative fuel sources. A potential decrease in natural gas demand could pose a financial impact to the company. Depending on the ultimate severity of the risk, which is difficult to assess at this time, there is a range of outcomes from a muted and limited adoption of electrification to some degree of stranded gas assets.

Time horizon

Long-term

Likelihood

Likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

If a move towards electrification occurs in the next few decades, it is difficult to assess today what primary drivers will contribute to this change, how regionalized it may be, and the pace at which it will occur. Thus, we believe it is too premature to perform a financial analysis to assess potential impact. A highly variable political, social, and economic environment contributes to this uncertainty. We do not believe this is a short-term risk and we forecast that natural gas demand will remain stable for quite some time. As such, we will continue to monitor this in future years and revisit the potential to conduct a financial impact analysis should electrification begin and accelerate in a manner that may impact our business.

Cost of response to risk

Description of response and explanation of cost calculation

Besides our aggressive emissions-reduction initiatives, which are well documented in this report, there are no specific responses to this risk we can take at this time. Thus, cost of response to risk is not applicable.

Comment

Identifier

Risk 6

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Technology

Unsuccessful investment in new technologies

Primary potential financial impact

Increased direct costs

Company-specific description

Late Entrant for Renewable Adoption (Gas Business Unit)- The risk of not adopting renewables could present a financial risk of late entry. The level of risk would be based on the economic comparison between future adoption and current premiums. The economic feasibility of acquiring renewable energy may fluctuate based on the market and policies.

Time horizon

Long-term

Likelihood

Unlikely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The market for alternative fuels like renewable natural gas, hydrogen, and responsibly-sourced gas are currently developing and it is difficult to estimate at this time what the landscape will look like in several years. So much depends on volatile political, regulatory, and economic factors. As such, it is difficult to assess financial impact of the risk of late entry. Once a robust market for these alternative fuels develops, along with numerous production facilities, pricing forecasts will become more accurate and we will be able to revisit a financial assessment for this risk.

Cost of response to risk

Description of response and explanation of cost calculation

As stated above, it is difficult to assess the cost of response to this risk because the markets and development of such alternative fuels are only beginning to take shape and development can vary widely based on a range of external factors.

Comment

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

Energy source

Primary climate-related opportunity driver

Use of lower-emission sources of energy

Primary potential financial impact

Reduced indirect (operating) costs

Company-specific description

Renewable Energy Use (Water and Wastewater Business Unit)- Essential has installed solar panels at two treatment plant locations in the State of Illinois - Manteno WWTP and Danville WTP. Through favorable grants for solar installations, Aqua Illinois is able to realize 25 to 50% savings for its retail power supply costs at both a water and wastewater treatment plant while supplying 75 percent of the plants' annual kWh requirement. This an example of how solar can reduce operating costs with the right mix of incentives and comparative grid supplier power costs either under an own-and-operate or PPA arrangement. This also includes off-site PPA agreements with retail providers. In 2019, we entered into an agreement which provides Aqua Texas, beginning in July 2020, with 25% solar power through an off-site PPA agreement. This agreement provide a cost advantageous scenario as compared to 100% grid power. We continually evaluate the cost of retail power, available grants, land availability, and PPA opportunities. As such, we are ready to act with agility on advantageous opportunities.

Time horizon

Short-term

Likelihood

Likely

Magnitude of impact

Medium-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

Costs savings depend on location, grid retail power costs, and agreements. Estimates provided are representative of what can be reasonably achieved on an annual basis and the maximum represents what can possible for achievement, depending on the cost of retail grid power and incentives to allow us to deploy additional solar power.

Cost to realize opportunity

0

Strategy to realize opportunity and explanation of cost calculation

Through the PPA contract vehicle, the cost could be zero. Under the own-and-operate scenario, the costs could be $1M-$5M depending on the size of the solar asset and location.

Comment

Identifier

Opp2

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Markets

Primary climate-related opportunity driver

Access to new markets

Primary potential financial impact

Increased revenues resulting from increased demand for products and services

Company-specific description

System Purchases due to water quality and quantity issues (Water and Wastewater Business Unit) - Mergers and acquisitions as a growth strategy can allow for Essential to expand into new markets through opportunities that, in part, result from impacts of climate change. There are many factors that could lead municipalities to sell their systems, but as climate changes, water and wastewater systems become more complex to operate, require increased capital investment to meet change, and regulatory compliance becomes more complex. While these are the same risks identified as risks to our business, they are also present opportunities for acquisition. Fair Market Value (FMV) policies provide a mechanism for municipal systems to sell their water and wastewater systems. These municipalities seek a company such as Essential with

broad expertise and experience, access to capital, and a strong understanding of current and future regulations and legislation. Through the use of scenario analysis, we have identified specific areas of operations and climate scenarios that would provide a strategic advantage on this front, leading to acquisitions that would improve service reliability and quality to local stakeholders.

Time horizon

Short-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)

1,000,000

Potential financial impact figure – maximum (currency)

100,000,000

Explanation of financial impact figure

For a utility, climate change alone may not be the reason for a sale of water or wastewater system, but the impacts of climate change may be one of the considerations and perhaps a decision point for sale of a system. The expertise of the successful bidder to address climate change risk could also be a winning factor in the bid process. The figures cited are an estimate of financial impact which is variable based on the size and number of systems acquired.

Cost to realize opportunity

0

Strategy to realize opportunity and explanation of cost calculation

Costs for acquisition are already included in routine marketing and business opportunity budgets.

Comment

Identifier

Opp3

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Markets

Primary climate-related opportunity driver

Access to new markets

Primary potential financial impact

Increased revenues through access to new and emerging markets

Company-specific description

Wastewater discharge reuse and purple pipe projects (Water and Wastewater Business Unit)- As climate change may alter precipitation patterns, a consequence of this may be the impact to groundwater and surface water quantity and quality in various regions. Reducing the demand for freshwater and reducing demand on less resilient sources of supply will require communities to consider alternatives sources and technologies. Irrigation is a significant demand on household water use and cooling for power generation and server farms requires significant water. If these uses for homes, businesses, technology, agriculture, and golf courses are to be maintained for growing populations, the treatment and reuse of wastewater for potable and other uses will need to be expanded. This may provide opportunities to add customers within a given service area or provide access to new communities and businesses that cannot meet their supply demands. The company is currently involved in several agreements in which it treats wastewater and returns the water to various fields, including golf courses, where the water is used for irrigation. This opportunity includes expanded services for wastewater effluent used in irrigation, as well as services to convert wastewater back to a fully potable source.

Time horizon

Long-term

Likelihood

More likely than not

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)

5,000,000

Explanation of financial impact figure

This range represents annual revenue increase and is based on an increase in total water sales of 1%.

Cost to realize opportunity

Strategy to realize opportunity and explanation of cost calculation

We are unable to estimate costs at this time.

Comment

Identifier

Opp4

Where in the value chain does the opportunity occur?

Upstream

Opportunity type

Energy source

Primary climate-related opportunity driver

Use of lower-emission sources of energy

Primary potential financial impact

Returns on investment in low-emission technology

Company-specific description

Hydrogen Blends (Gas Business Unit)- Advancements taking place surrounding hydrogen blends present the opportunity to reduce GHG emissions by integrating natural gas with hydrogen. While academic and industry research is underway to determine a safe blending ratio, a hydrogen-natural gas blend could significantly reduce emissions. At this time, until further research and feasibility studies are performed in the coming years, assessment of the scale and nature of this opportunity remains challenging.

Time horizon

Long-term

Likelihood

Unlikely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Studies into whether hydrogen blending will be practical and safe for transport through distribution pipelines are in their infancy. We continue to monitor developments in understanding in both academic and industry circles. It is too premature to conduct a financial analysis at this time as there are too many variables preventing such estimates from being useful and actionable. Once we have a better understanding of what kind of adjustments to our infrastructure would be needed to transport hydrogen and to what degree it can be sourced across our footprint, it will be an appropriate time to conduct such a financial analysis surrounding this opportunity. We believe this is still at least several years away, if not longer.

Cost to realize opportunity

Strategy to realize opportunity and explanation of cost calculation

As per the above explanation, it is too premature to estimate the cost of realizing this opportunity. We need to continue assessing developments in hydrogen research and see how a market can be economically scaled before being able to conduct a financial analysis. There are many variables in a landscape that involves quickly changing political, legal, and economic factors.

Comment

Identifier

Opp5

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Energy source

Primary climate-related opportunity driver

Use of lower-emission sources of energy

Primary potential financial impact

Returns on investment in low-emission technology

Company-specific description

New Technology (Gas Business Unit)- For purposes of brevity, this opportunity collectively includes adoption of carbon capture utilization and storage (CCUS), adoption of combined cooling, heating, and power (CCHP), and electric vehicles. Carbon capture, utilization, and storage will be paramount in reducing greenhouse gas emissions globally. Although further academic and industry research is necessary in the coming years, CCUS presents an opportunity in various respects, most notably if it can reduce emissions at the point of customer combustion. CCHP, particularly in cases where an alternative low or zero-emissions fuel source can be utilized, would be an opportunity that can be realized in the future. We could leverage our existing expertise in natural gas-powered combined heat and power systems. Lastly, rapid developments are being made in the auto industry to electrify certain classes of vehicles. Electrifying our light vehicles over the coming years would provide an opportunity to reduce emissions and possibly reduce operating costs. This is the most certain of the three technologies at this time, but may have the smallest ultimate impact.

Note: The CDP Questionnaire only permits selection of one option for "Where in the value chain does this opportunity occur." Given the nature of this opportunity, we believe the applicable response is upstream, downstream, and direct operations.

Time horizon

Long-term

Likelihood

Unlikely

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

We believe it is too premature to be able to assess the financial impact of these technologies, especially CCUS as likely the most significant and material of the three highlighted in this opportunity. We are excited by the prospect of CCUS but its development is very uncertain at this time and difficult to assess.

Cost to realize opportunity

Strategy to realize opportunity and explanation of cost calculation

As per the above explanation, it is too premature to estimate the cost of realizing this opportunity. We need to continue assessing developments in carbon capture research and see how a market can be economically scaled before being able to conduct a financial analysis. There are many variables in a landscape that involves quickly changing political, legal, and economic factors.

Comment

Identifier

Opp6

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Energy source

Primary climate-related opportunity driver

Use of lower-emission sources of energy

Primary potential financial impact

Returns on investment in low-emission technology

Company-specific description

RNG Adoption (Gas Business Unit)- Renewable natural gas (RNG) or biomethane, is typically the result of anaerobic digestion of organic matter, such as manure, agricultural waste, food waste or landfill. RNG combines low or zero full-cycle carbon emissions with the high energy density and transportability of natural gas. It has the potential to reduce Scope 3 emissions when the utility owns the associated renewable credits. This opportunity reflects the potential for our company to source greater amounts of renewable natural gas in the coming years, especially if regulatory mechanisms are introduced to aid in this adoption.

Time horizon

Medium-term

Likelihood

Virtually certain

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

No, we do not have this figure

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

As a regulated utility, we pass through the costs of gas to our customers. We would not directly financially profit from the use of RNG, but this adoption would have environmental and sustainability benefits.

Cost to realize opportunity

Strategy to realize opportunity and explanation of cost calculation

We are currently in the process of evaluating the cost to realize this opportunity, especially as this market quickly develops in the near term. At this time, we are unable to provide this financial estimate.

Comment

C3. Business Strategy

C3.1

(C3.1) Does your organization's strategy include a transition plan that aligns with a 1.5°C world?

Row 1

Transition plan

No, our strategy has been influenced by climate-related risks and opportunities, but we do not plan to develop a transition plan within two years

Explain why your organization does not have a transition plan that aligns with a 1.5°C world and any plans to develop one in the future

As per section C4, Essential has recently set an ambitious target: By 2035, we will reduce our Scope 1 and 2 emissions by 60% from our 2019 baseline. We also announced an aspiration to achieve net zero emissions. This target represents combined Scope 1 and 2 emissions reductions attributable to planned or ongoing initiatives that utilize existing technology. Thus, the reductions we project have a high degree of certainty. They are not based on speculative or yet unproven technologies. Essential has detailed all the initiatives that will contribute to this target publicly through our ESG website and shareholder events. We are actively researching and monitoring promising developments and initiatives for future implementation, but these are not

included in our projected emissions reduction for 2035. We understand technological innovation will need to occur to reach net zero but are excited by the rapid pace of innovation in the industry. Our response to C3.1 may change in the future as we and our industry peers continue to assess opportunities and plan for an evolving economy. In the interest of transparency, we have elected to respond “no” for this year’s questionnaire until we are prepared to share a more defined plan for further emissions reductions beyond 2035 using new technology. We understand the importance of C3.1 and low-carbon transition plans, which is why climate matters and initiatives are a key part of our ongoing strategic discussions.

C3.2

(C3.2) Does your organization use climate-related scenario analysis to inform its strategy?

	Use of climate-related scenario analysis to inform strategy
Row 1	Yes, qualitative and quantitative

C3.2a

(C3.2a) Provide details of your organization’s use of climate-related scenario analysis.

Climate-related scenario	Scenario analysis coverage	Temperature alignment of scenario	Parameters, assumptions, analytical choices
Physical climate scenarios RCP 2.6	Company-wide		(Note: Due to CDP text limitations, the response is split over two entry rows, RCP 2.6 and RCP 8.5.) In an effort to better incorporate the potential effects of climate change on our business, Essential has assessed climate-related risks and opportunities through the use of scenario analysis. The purpose of this is to prioritize climate-relevant risks and opportunities and evaluate the timeline for impact in order to make proactive management decisions. Consistent with the recommendations of the TCFD, we herein provide details of our organizations use of climate-related scenario analysis. Guidance on conducting both qualitative and quantitative scenario analysis comes from ‘Recommendations of the Task Force on Climate-Related Financial Disclosures’ (2017) to identify our most pertinent climate-related business risks (transition and physical) and opportunities under the 2°C warming scenario (RCP 2.6) and the greater than 2°C Business-As-Usual (RCP 8.5) warming scenario. To perform qualitative scenario analyses, we

			implemented an multi-step scenario development process in which we identified issues, key factors influencing those issues, driving forces, ranked them by importance and uncertainty, and created scenario matrices with axes of uncertainty. This was performed for water and wastewater operations and, separately, gas operations. Each matrix was given a meaningful name and described qualitatively in the form of a narrative. From these narratives we derived implications, allowing for future selection of leading indicators. Relevant stakeholders within Essential, including, but not limited to, management, operations personnel, and other individuals responsible for climate-related matters (as detailed in section C1) were asked to provide potential risk areas and the implications these risks areas could affect within Essential's operations profile. For water and wastewater operations, analysis was performed within three geographic regions: Northern Region (NJ, PA, OH, IL and IN), Mid South (VA and NC) and the Texas Region (TX). For gas operations, analysis was performed within the greater Pittsburgh metro area, as this constitutes almost the entirety of our operational footprint.
Physical climate scenarios RCP 8.5	Company-wide		(As noted above, due to CDP text limitations, the response that began in RCP 2.6 row continues here in RCP 8.5) We downloaded temperature and precipitation data from the downscaled CMIP5 climate data set for the period 1950-2099 under the RCP2.6 and RCP8.5 scenarios within the BCCAv2 ccsm4 model run. We intend to update our analysis with more recent model outputs when suitable climate data becomes available. This quantitative model data was then used in tandem with stakeholder feedback to produce several key rating indicators for each region that Essential operates in. These key rating indicators included a potential magnitude of impact (MOI) for the indicator on operations (MOI definition consistent with CDP terminology), the likelihood of impact (consistent with institutional knowledge and historic climate data), and cost (annualized cost impact on labor, control infrastructure, operations and maintenance, etc.). These

			key rating indicators were given individual weights and scores by interviewed stakeholders, on a scale from 0-3. These ratings were then compiled to generate a total implication score (TIS), representing the impact that any particular implication could have on Essential's operations and as to whether it was an opportunity or a risk. The TIS was then cross calculated with the relative urgency, a metric developed from the results of the RCP 2.6 and RCP 8.5 climate analysis. By analyzing the climate variability within the applicable time horizon, a branching logical flow diagram was generated, allowing for variable and dynamic decision making on the relative importance and timeliness of actions, based on an indicator's susceptibility to either climate scenario. The resulting modified impact score (MIS) included all relevant information pertinent to individual risk or opportunities, adjusted for climate impact, in a format designed for managerial and operational expedience.

C3.2b

(C3.2b) Provide details of the focal questions your organization seeks to address by using climate-related scenario analysis, and summarize the results with respect to these questions.

Row 1

Focal questions

Which climate risks and opportunities are most material to Essential's operations across various time horizons?

What implications do various climate scenarios have on key elements of Essential's business strategy?

Have key climate forecasts or business operating landscapes changed materially since the prior analysis?

Results of the climate-related scenario analysis with respect to the focal questions

Please refer to sections C2.3 and C2.4 for detailed discussion of these identified risks and opportunities.

Please refer to section C3.3 for detailed discussion of how identified material climate risks and opportunities influence Essential's strategy.

Please refer to sections C2.2 and C3.2a for detailed discussion of how Essential constructs and conducts its scenario analysis process.

C3.3

(C3.3) Describe where and how climate-related risks and opportunities have influenced your strategy.

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	Climate change presents risks and opportunities to utilities like ours involved in water and wastewater treatment and gas distribution. Regarding the former, one example we are exploring and evaluating is using treated wastewater effluent for irrigation. This conserves freshwater, a resource growing scarcer, but also reduces the energy required for additional treatment at our plants. In 2020, we recycled to the groundwater recharge via spray irrigation, drip irrigation and subsurface infiltration approximately 526.6 million gallons of treated wastewater. This is 5% of the total wastewater treated in 2020, with the remainder safely discharged to streams, rivers, or lakes. Another example we are exploring and evaluating is acquisition of combined sewer and stormwater systems and upgrading the infrastructure to something more resilient and environmentally sound. Changing weather patterns are further exposing the need to upgrade such systems to ensure associated runoff issues do not occur. In our gas operations, there are numerous alternative fuels and emissions-reducing technologies we and other industry peers are exploring. Supplying an increased volume of renewable natural gas to our customers is one such example and we continue to assess development opportunities and potential partners in western Pennsylvania. We also are a leader in helping critical institutions implement efficient and resilient combined heat and power (CHP) solutions. Our highest profile project has been helping to develop Pittsburgh International Airport's modern microgrid. Further, we have invested in efficient fuel cell technology through our partnership with WATT Fuel Cell Corp. and assist businesses in transitioning their gas-powered commercial fleet to more efficient natural gas vehicles.

Supply chain and/or value chain	Yes	As energy is a major input for treating water and wastewater in our business, we made a strategic decision to increase the resiliency of our energy supply through various alternative and renewable energy initiatives where permissible through state regulatory frameworks. Our water and wastewater business set a target for all grid power from non-regulated electric suppliers (in PA, OH, NJ, and IL) to be 100% renewable through Green-e certified wind RECs by 2022. The associated energy sourcing agreement started in January 2020. Additionally, in 2019, Aqua Texas signed a solar PPA agreement for 25% of the state operation's power. Regarding gas operations, Essential has six interconnects with landfills producing renewable natural gas (RNG). This gas is delivered directly into our pipeline system. In 2021, this measured to over 1.5 Bcf, or about 1.3% of our total gas throughput. About 60% of this RNG is transported by Essential into an interstate pipeline or to a third-party pool operator. The remaining 40% is directly purchased by Essential, blended with our traditional natural gas supply, and delivered directly to our customers. Essential does not currently purchase renewable credits associated with the physical supply of RNG due largely to least-cost gas procurement guidelines set by our regulators. Thus, we cannot apply this emissions reduction to our greenhouse gas inventory. However, we believe we play a constructive and positive role in the development and function of the RNG market across our footprint by facilitating trade and transport of this environmentally friendly energy source. Essential is also working with other companies on developing potential additional RNG interconnects in our service territory. We look forward to expanding the number of partnerships with producers in the region.
Investment in R&D	Yes	As climate-related risks and opportunities are identified, we must continue our research and development of new techniques to source, treat, and transport water and wastewater efficiently. Our systems must be climate resilient. For example, as discussed in the C2 section, we have defined risks and opportunities using the STEEP (Sociological, Technological, Economical, Environmental and Political) analysis method to evaluate both internal and

		external forces on their likelihood of occurrence and then on the magnitude of their impact. This analysis focuses our research on the most efficient and effective methods. We are investing in a state-of-the-art new lab at our headquarters in Bryn Mawr, PA and additional cutting-edge capabilities that will allow us to better respond to such emerging issues and devise sustainable solutions. We also continue to perform detailed research into innovative new technologies for our gas operations that can reduce or eliminate emissions.
Operations	Yes	Designing and implementing efficient and resilient infrastructure and operational processes has a dual purpose of addressing climate change and reducing financial costs. As we make improvements to our systems, we drive energy efficiency, conservation, and waste minimization. There are many examples of how we have made changes or decisions in our operations, both minor and major, and a number of these are included throughout this report. For example, in our water and wastewater operations, automation helps reduce energy needed to operate our systems. Another example is through management of our operations while utilizing production metrics such as kWh/1,000 gallons. Regarding our gas operations, in 2013, we launched our Long-Term Infrastructure Improvement Plan (LTIIP). The LTIIP is an aggressive 20-year effort to replace and upgrade over 3,000 miles of natural gas pipelines with new plastic pipelines that will not corrode. As a result of LTIIP, Essential reduced leaks per mile of pipe surveyed (inclusive of distribution and gathering pipe) from 1.72 in 2017 to 1.33 in 2020, a 23% decrease.

C3.4

(C3.4) Describe where and how climate-related risks and opportunities have influenced your financial planning.

	Financial planning elements that have been influenced	Description of influence
Row 1	Direct costs Indirect costs	Our financial planning process is influenced by climate change in several ways. The first relates to our procurement of energy. We are creatively and proactively assessing our energy supply options, which

	Capital expenditures	involve forward purchasing of renewable energy and investments in various renewable energy projects. These alter the cadence of our cash outflows and often have a larger outlay at the outset of a project before earning savings in subsequent periods. As a water utility operating in an energy-intensive industry, these decisions involve planning, coordination, and financial considerations to ensure we are increasing resiliency and maintaining affordability for customers for this vital resource. Treating our water and protecting our systems requires us to maintain constant focus on emerging contaminants. Always looking to the future, we have identified cyanotoxins, as one example, of an emerging contaminant impacted by climate change, as detailed in C2. We have worked hard, and will continue to do so, to ascertain the impact of climate change on our water systems in accordance with scientific research. Our researchers and engineers are devising treatment methods to address risks by emerging contaminants, such as cyanotoxins, and this often requires additional investment in new technologies or processes to increase the resiliency of our various water systems. Additionally, we seek to reduce water loss and leakage wherever possible. The more water we need to treat at our plants, the more energy we need to use as an organization. Upfront investment in infrastructure and systems creates efficiency in the future. We replace water mains and many miles of pipe regularly to ensure that our systems are efficient and result in less water loss. This requires significant capital investment to maintain our systems and ensure they are resilient. We have invested approximately $3.5 billion in infrastructure improvements and replaced more than 1,300 miles of aging water main since 2012. Similarly, improving our gas system infrastructure, which is the most impactful emissions-reducing initiative across Essential, requires significant capital investment. We assess about 450,000 segments of pipe and assign a relative risk ranking based on probability of failure times and consequences to help us determine prioritization of action. The capital outlay varies from year to year, but we expect to spend approximately $275 million or more each year. We are also utilizing various leak detection and operational technologies that carry additional costs but reduce methane leakage.

C4. Targets and performance

C4.1

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

Absolute target

C4.1a

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

Target reference number

Abs 1

Year target was set

2021

Target coverage

Company-wide

Scope(s)

Scope 1
Scope 2

Scope 2 accounting method

Market-based

Scope 3 category(ies)

Base year

2019

Base year Scope 1 emissions covered by target (metric tons CO2e)

503,637

Base year Scope 2 emissions covered by target (metric tons CO2e)

117,393

Base year Scope 3 emissions covered by target (metric tons CO2e)

Total base year emissions covered by target in all selected Scopes (metric tons CO2e)

621,030

Base year Scope 1 emissions covered by target as % of total base year emissions in Scope 1

100

Base year Scope 2 emissions covered by target as % of total base year emissions in Scope 2

100

Base year Scope 3 emissions covered by target as % of total base year emissions in Scope 3 (in all Scope 3 categories)

Base year emissions covered by target in all selected Scopes as % of total base year emissions in all selected Scopes

100

Target year

2035

Targeted reduction from base year (%)

60

Total emissions in target year covered by target in all selected Scopes (metric tons CO2e) [auto-calculated]

248,412

Scope 1 emissions in reporting year covered by target (metric tons CO2e)

468,734

Scope 2 emissions in reporting year covered by target (metric tons CO2e)

117,723

Scope 3 emissions in reporting year covered by target (metric tons CO2e)

Total emissions in reporting year covered by target in all selected scopes (metric tons CO2e)

586,457

% of target achieved relative to base year [auto-calculated]

9.2784030831

Target status in reporting year

Underway

Is this a science-based target?

No, and we do not anticipate setting one in the next 2 years

Target ambition

Please explain target coverage and identify any exclusions

Gas distribution, water, and wastewater utility operations will contribute to our target, which apply to 100% of our Scope 1 and 2 emissions. While not formally validated by the Science-Based Targets Initiative, this science-based commitment is consistent with the rate of reduction necessary through 2035 to keep on track with the Paris Agreement, which aims to limit a global temperature rise to well below 2 degrees Celsius. We engaged an expert third party, Villanova University, to conduct this analysis.

Plan for achieving target, and progress made to the end of the reporting year

This target represents combined Scope 1 and 2 emissions reductions attributable to planned or ongoing initiatives that utilize existing technology. Thus, the reductions we project have a high degree of certainty. They are not based on speculative or yet unproven technologies. We are actively researching and monitoring promising developments and initiatives for future implementation, but these are not included in our projected emissions reduction for 2035. We understand technological innovation will need to occur to reach net zero, for which we announced an aspiration, but are excited by the rapid pace of innovation in the industry. There are two primary activities, among others, that contribute the most material reductions: replacement of aging gas main and increasing the procurement of renewable energy. The replacement of gas main leads to a modest but steady amount of incremental reductions each year and is responsible for most of the nearly 6% emissions reduction to date. Beginning in 2022, Essential dramatically increased its renewable electricity procurement to cover the majority of the company's needs, which will lead to significant reductions in GHG emissions immediately.

List the emissions reduction initiatives which contributed most to achieving this target

Target reference number

Abs 2

Year target was set

2021

Target coverage

Business division

Scope(s)

Scope 1
Scope 2

Scope 2 accounting method

Market-based

Scope 3 category(ies)

Base year

2019

Base year Scope 1 emissions covered by target (metric tons CO2e)

16,057

Base year Scope 2 emissions covered by target (metric tons CO2e)

115,124

Base year Scope 3 emissions covered by target (metric tons CO2e)

Total base year emissions covered by target in all selected Scopes (metric tons CO2e)

131,181

Base year Scope 1 emissions covered by target as % of total base year emissions in Scope 1

100

Base year Scope 2 emissions covered by target as % of total base year emissions in Scope 2

100

Base year Scope 3 emissions covered by target as % of total base year emissions in Scope 3 (in all Scope 3 categories)

Base year emissions covered by target in all selected Scopes as % of total base year emissions in all selected Scopes

100

Target year

2035

Targeted reduction from base year (%)

61.8

Total emissions in target year covered by target in all selected Scopes (metric tons CO2e) [auto-calculated]

50,111.142

Scope 1 emissions in reporting year covered by target (metric tons CO2e)

15,994

Scope 2 emissions in reporting year covered by target (metric tons CO2e)

113,221

Scope 3 emissions in reporting year covered by target (metric tons CO2e)

Total emissions in reporting year covered by target in all selected scopes (metric tons CO2e)

129,215

% of target achieved relative to base year [auto-calculated]

2.4250690065

Target status in reporting year

Underway

Is this a science-based target?

No, and we do not anticipate setting one in the next 2 years

Target ambition

Please explain target coverage and identify any exclusions

This target refers to the component of the Essential-wide target (Abs1) relating to water and wastewater utility operations. In prior year's CDP submittal, we referred to this planned reduction of emissions, but this is now formalized as a target. We have set the target year as 2035, to be consistent with the Essential-wide target (Abs1), but we plan to achieve this water and wastewater operations target fully in 2022. While not formally validated by the Science-Based Targets Initiative, this science-based commitment is consistent with the rate of reduction necessary through 2035 to keep on track with the Paris Agreement, which aims to limit a global temperature rise to well below 2 degrees Celsius. We engaged an expert third party, Villanova University, to conduct this analysis.

Plan for achieving target, and progress made to the end of the reporting year

This target will be achieved primarily through a contract with a retail power supplier for 100% wind power through Green-e Renewable Energy Certificates starting in 2022 for our deregulated power supply for our water and wastewater operations in PA, OH, NJ and IL. Starting June 1st, 2020, 25% of purchased power in TX has been contracted through a solar PPA. The benefits from the solar PPA and improved emission factors for both Market and Location based emission factor resulted in the to-date reduction in our emissions from our 2019 baseline. We will continue to evaluate opportunities to reduce emissions further and will need to balance these potential investments with the critical need to maintain affordable and safe water supply for customers. We are excited about the pace with which electric utilities and providers are shifting their portfolios to renewable generation, which we have not accounted for in this target but which presents opportunity for further emissions reduction in states where we don't not have the option to purchase renewable energy.

List the emissions reduction initiatives which contributed most to achieving this target

Target reference number

Abs 3

Year target was set

2021

Target coverage

Business activity

Scope(s)

Scope 1
Scope 2

Scope 2 accounting method

Market-based

Scope 3 category(ies)

Base year

2019

Base year Scope 1 emissions covered by target (metric tons CO2e)

487,580

Base year Scope 2 emissions covered by target (metric tons CO2e)

2,269

Base year Scope 3 emissions covered by target (metric tons CO2e)

Total base year emissions covered by target in all selected Scopes (metric tons CO2e)

489,849

Base year Scope 1 emissions covered by target as % of total base year emissions in Scope 1

100

Base year Scope 2 emissions covered by target as % of total base year emissions in Scope 2

100

Base year Scope 3 emissions covered by target as % of total base year emissions in Scope 3 (in all Scope 3 categories)

Base year emissions covered by target in all selected Scopes as % of total base year emissions in all selected Scopes

100

Target year

2035

Targeted reduction from base year (%)

59.51

Total emissions in target year covered by target in all selected Scopes (metric tons CO2e) [auto-calculated]

198,339.8601

Scope 1 emissions in reporting year covered by target (metric tons CO2e)

452,740

Scope 2 emissions in reporting year covered by target (metric tons CO2e)

4,502

Scope 3 emissions in reporting year covered by target (metric tons CO2e)

Total emissions in reporting year covered by target in all selected scopes (metric tons CO2e)

457,242

% of target achieved relative to base year [auto-calculated]

11.1855840991

Target status in reporting year

Underway

Is this a science-based target?

No, and we do not anticipate setting one in the next 2 years

Target ambition

Please explain target coverage and identify any exclusions

This target refers to the component of the Essential-wide target (Abs1) relating to natural gas utility operations. While not formally validated by the Science-Based Targets Initiative, this science-based commitment is consistent with the rate of reduction necessary through 2035 to keep on track with the Paris Agreement, which aims to limit a global temperature rise to well below 2 degrees Celsius. We engaged an expert third party, Villanova University, to conduct this analysis.

Plan for achieving target, and progress made to the end of the reporting year

This target will be achieved primarily through our Long-term Infrastructure Improvement Plan to replace 3,000 miles of leak-prone pipe over 20 years, our gathering system repair program, accelerated leak detection and repair, fugitive gas reinjection during construction, and transitioning to compressed natural gas fleet vehicles where feasible. While Essential translates all emissions to a common CO2e denomination, one should note that almost all Scope 1 and 2 emissions attributable to our gas utility are fugitive

methane leaks from pipes. Thus, this target can also be thought of as a methane reduction target for Essential, as the water and wastewater utility's emissions are almost all carbon dioxide. Thus, we have opted not to include a separate methane-specific target in C4.2, as this would be rather duplicative and not add value to this disclosure. This target represents combined Scope 1 and 2 emissions reductions attributable to planned or ongoing initiatives that utilize existing technology. Thus, the reductions we project have a high degree of certainty. They are not based on speculative or yet unproven technologies. We are actively researching and monitoring promising developments and initiatives for future implementation, but these are not included in our projected emissions reduction for 2035. We understand technological innovation will need to occur to reach net zero, for which we announced an aspiration, but are excited by the rapid pace of innovation in the industry.

List the emissions reduction initiatives which contributed most to achieving this target

C4.2

(C4.2) Did you have any other climate-related targets that were active in the reporting year?

No other climate-related targets

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	0	0
To be implemented*	1	76,000
Implementation commenced*	1	291,518
Implemented*	0	0
Not to be implemented	0	0

C4.3b

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

Initiative category & Initiative type

Low-carbon energy consumption
Wind

Estimated annual CO2e savings (metric tonnes CO2e)

76,000

Scope(s) or Scope 3 category(ies) where emissions savings occur

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)

0

Payback period

No payback

Estimated lifetime of the initiative

3-5 years

Comment

Our water and wastewater business contracted with a retail power supplier for 100% wind power through Green-e Renewable Energy Certificates starting in 2022 for its deregulated power supply for our water and wastewater operations in PA, OH, NJ and IL. This initial contract is for a three-year period.

Initiative category & Initiative type

Fugitive emissions reductions
Oil/natural gas methane leak capture/prevention

Estimated annual CO2e savings (metric tonnes CO2e)

291,518

Scope(s) or Scope 3 category(ies) where emissions savings occur

Scope 1

Voluntary/Mandatory

Voluntary

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

0

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

4,000,000,000

Payback period

No payback

Estimated lifetime of the initiative

16-20 years

Comment

This item represents all major initiatives that contribute to our emissions reduction target for our gas operations. The emissions reduction figure includes capital expenditures and investments in equipment related to our Long-term Infrastructure Improvement Plan to replace 3,000 miles of leak-prone pipe over 20 years, our gathering system repair program, accelerated leak detection and repair, fugitive gas reinjection during construction, and transitioning to compressed natural gas fleet vehicles where feasible. The investment required only includes the lifetime program cost of the Long-Term Infrastructure Improvement Plan, as the other items are difficult to quantify at this time. Due to difficulty in cleanly categorizing this item in CDP's questionnaire, we have labeled this under "Implementation Commenced". Each year, we make additional progress on these multi-year programs and investments that will lead us to reach our emissions reduction target.

C4.3c

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

Method	Comment
Financial optimization calculations	The company utilizes a ROI-based methodology referred to as "8:1:5" in which projects are justified based roughly on project spend versus payback period. This mechanism is used to justify a variety of energy efficiency measures across our organization. For energy projects, the cost variance per- and post-project plus utility, state or federal incentives are the primary factors that influence the outcome of energy-based 8:1:5 projects. In 2020, the mechanism was also formalized through compensation practices, in which team members are monetarily rewarded for qualifying project proposals.
Other General infrastructure investment needs	As a regulated utility, our capital improvement plans and finances are presented to state public utility commissions in the establishment of customer rates. There is a need for modernized infrastructure and this is recoverable through rates we charge customers. As such, many of the investments cited are central to our business model and are beneficial to all our stakeholders

	and the environment as well. These are not often separate or isolated decisions made solely within the context of climate or environmental goals.

C4.5

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products?

No

C5. Emissions methodology

C5.1

(C5.1) Is this your first year of reporting emissions data to CDP?

No

C5.1a

(C5.1a) Has your organization undergone any structural changes in the reporting year, or are any previous structural changes being accounted for in this disclosure of emissions data?

Row 1

Has there been a structural change?

No

C5.1b

(C5.1b) Has your emissions accounting methodology, boundary, and/or reporting year definition changed in the reporting year?

	Change(s) in methodology, boundary, and/or reporting year definition?	Details of methodology, boundary, and/or reporting year definition change(s)
Row 1	Yes, a change in methodology	Essential has recalculated its 2019 Scope 1 and 2 baseline from 616,652 metric tons CO2e to 621,030 metric tons CO2e. It has also recalculated 2020 Scope 1 and 2 emissions from 594,476 metric tons CO2e to 606,097 metric tons CO2e. These decisions were driven by changes to methodology for the calculation of emissions relating to our gas utility. These changes have led to a more complete and accurate representation of historical emissions. Essential's 60% Scope 1 and 2 emissions reduction commitment remains confidently in place.

C5.1c

(C5.1c) Have your organization's base year emissions been recalculated as result of the changes or errors reported in C5.1a and C5.1b?

	Base year recalculation	Base year emissions recalculation policy, including significance threshold
Row 1	Yes	Structural Changes: Per the guidance within the GHG Protocol, companies should define a significance threshold for requiring baseline adjustments, within Essential this threshold has been set at 5%. At a minimum, Essential will add or remove all associated greenhouse gas emissions of acquired/divested facilities for the base year when total greenhouse gas emissions of the acquisition or divestiture is greater than 5% of the total footprint in the base year. In addition, if cumulative acquisitions and divestitures over multiple years exceed the 5% threshold, then the full base year will be restated. This adjusted baseline would then be used to track progress toward the company's reduction goals. Recalculation Timing and Other Situations: • If a recalculation of the base year is required for a structural change which occurred in the middle of the reporting year, Essential will recalculate base year figures for the entire year, not just the period from the structural change onwards. If it is not possible to recalculate in that reporting year due to lack of data, recalculation can be carried out in the following year. • Transfer of ownership/ control of relevant activities, including changes in leased status, are treated in the same way as acquisitions and divestitures. • Essential does not recalculate the base year to take account of economic growth or decline, changes in production output or product mix, and closures and openings of operating units owned or controlled by Essential. Miscalculation: When Essential discovers a significant error, or a number of cumulative errors that are collectively significant, the emissions for the base year and all subsequent years will be recalculated. Significant errors are defined as errors that represent more than 1% of the Essential's total Scope 1 and 2 emissions. Errors excluded shall be reviewed annually by Essential to determine if these errors remain beneath the 1% threshold. Collectively, all errors must be below 5%. Any updates to Essential's base year emissions will be performed in accordance with the GHG Protocol. Note: Essential may also choose, at their discretion, to restate the baseline on a yearly basis to simplify tracking and accounting of acquisitions and divestitures or any calculation errors, even if the changes are less than the

		mandatory 5% threshold established above.

C5.2

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

Scope 1

Base year start
January 1, 2019

Base year end
December 31, 2019

Base year emissions (metric tons CO2e)
503,637

Comment
Gas Operations: 487,580
Water and Wastewater Operations: 16,057

Scope 2 (location-based)

Base year start
January 1, 2019

Base year end
December 31, 2019

Base year emissions (metric tons CO2e)
125,908

Comment
Location-based Scope 2 emissions were not calculated for our gas operations for 2019. Given materiality, we have included market-based Scope 2 emissions for our gas operations in this figure.

Gas Operations: 2,269
Water and Wastewater Operations: 123,639

Scope 2 (market-based)

Base year start
January 1, 2019

Base year end
December 31, 2019

Base year emissions (metric tons CO2e)

117,393

Comment

Gas Operations: 2,269
Water and Wastewater Operations: 115,124

Scope 3 category 1: Purchased goods and services

Base year start

January 1, 2019

Base year end

December 31, 2019

Base year emissions (metric tons CO2e)

35,765

Comment

CDP requires a consistent base year for all emissions scopes in section C5 disclosure. However, Essential began reporting Scope 3 emissions inclusive of its gas operations for the 2020 reporting year. However, Essential's enterprise-wide Scope 1 and 2 emissions reduction target utilizes a 2019 base year. To maintain a consistent base year, and in recognition of the fact that the only material Scope 3 category for gas operations is Use of Sold Products, the amount listed here is inclusive of 2019 water and wastewater operations.

Scope 3 category 2: Capital goods

Base year start

January 1, 2019

Base year end

December 31, 2019

Base year emissions (metric tons CO2e)

37,845

Comment

CDP requires a consistent base year for all emissions scopes in section C5 disclosure. However, Essential began reporting Scope 3 emissions inclusive of its gas operations for the 2020 reporting year. However, Essential's enterprise-wide Scope 1 and 2 emissions reduction target utilizes a 2019 base year. To maintain a consistent base year, and in recognition of the fact that the only material Scope 3 category for gas operations is Use of Sold Products, the amount listed here is inclusive of 2019 water and wastewater operations.

Scope 3 category 3: Fuel-and-energy-related activities (not included in Scope 1 or 2)

Base year start

January 1, 2019

Base year end

December 31, 2019

Base year emissions (metric tons CO2e)

28,742

Comment

CDP requires a consistent base year for all emissions scopes in section C5 disclosure. However, Essential began reporting Scope 3 emissions inclusive of its gas operations for the 2020 reporting year. However, Essential's enterprise-wide Scope 1 and 2 emissions reduction target utilizes a 2019 base year. To maintain a consistent base year, and in recognition of the fact that the only material Scope 3 category for gas operations is Use of Sold Products, the amount listed here is inclusive of 2019 water and wastewater operations.

Scope 3 category 4: Upstream transportation and distribution

Base year start

January 1, 2019

Base year end

December 31, 2019

Base year emissions (metric tons CO2e)

0

Comment

CDP requires a consistent base year for all emissions scopes in section C5 disclosure. However, Essential began reporting Scope 3 emissions inclusive of its gas operations for the 2020 reporting year. However, Essential's enterprise-wide Scope 1 and 2 emissions reduction target utilizes a 2019 base year. To maintain a consistent base year, and in recognition of the fact that the only material Scope 3 category for gas operations is Use of Sold Products, the amount listed here is inclusive of 2019 water and wastewater operations.

This is included in purchased products and capital goods. For our water and wastewater utility, our upstream transportation and conveyance of water and waste water is included in our Scope 1 and 2 emissions. We do not purchase or rely on other vendors to provide our raw source water or wastewater.

Scope 3 category 5: Waste generated in operations

Base year start

January 1, 2019

Base year end

December 31, 2019

Base year emissions (metric tons CO2e)

0

Comment

CDP requires a consistent base year for all emissions scopes in section C5 disclosure. However, Essential began reporting Scope 3 emissions inclusive of its gas operations for the 2020 reporting year. However, Essential's enterprise-wide Scope 1 and 2 emissions reduction target utilizes a 2019 base year. To maintain a consistent base year, and in recognition of the fact that the only material Scope 3 category for gas operations is Use of Sold Products, the amount listed here is inclusive of 2019 water and wastewater operations.

For 2019, this was deemed immaterial.

Scope 3 category 6: Business travel

Base year start

January 1, 2019

Base year end

December 31, 2019

Base year emissions (metric tons CO2e)

115

Comment

CDP requires a consistent base year for all emissions scopes in section C5 disclosure. However, Essential began reporting Scope 3 emissions inclusive of its gas operations for the 2020 reporting year. However, Essential's enterprise-wide Scope 1 and 2 emissions reduction target utilizes a 2019 base year. To maintain a consistent base year, and in recognition of the fact that the only material Scope 3 category for gas operations is Use of Sold Products, the amount listed here is inclusive of 2019 water and wastewater operations.

Scope 3 category 7: Employee commuting

Base year start

January 1, 2019

Base year end

December 31, 2019

Base year emissions (metric tons CO2e)

2,447

Comment

CDP requires a consistent base year for all emissions scopes in section C5 disclosure. However, Essential began reporting Scope 3 emissions inclusive of its gas operations for the 2020 reporting year. However, Essential's enterprise-wide Scope 1 and 2

emissions reduction target utilizes a 2019 base year. To maintain a consistent base year, and in recognition of the fact that the only material Scope 3 category for gas operations is Use of Sold Products, the amount listed here is inclusive of 2019 water and wastewater operations.

Scope 3 category 8: Upstream leased assets

Base year start

January 1, 2019

Base year end

December 31, 2019

Base year emissions (metric tons CO2e)

0

Comment

CDP requires a consistent base year for all emissions scopes in section C5 disclosure. However, Essential began reporting Scope 3 emissions inclusive of its gas operations for the 2020 reporting year. However, Essential's enterprise-wide Scope 1 and 2 emissions reduction target utilizes a 2019 base year. To maintain a consistent base year, and in recognition of the fact that the only material Scope 3 category for gas operations is Use of Sold Products, the amount listed here is inclusive of 2019 water and wastewater operations.

For 2019, this was deemed immaterial.

Scope 3 category 9: Downstream transportation and distribution

Base year start

January 1, 2019

Base year end

December 31, 2019

Base year emissions (metric tons CO2e)

0

Comment

CDP requires a consistent base year for all emissions scopes in section C5 disclosure. However, Essential began reporting Scope 3 emissions inclusive of its gas operations for the 2020 reporting year. However, Essential's enterprise-wide Scope 1 and 2 emissions reduction target utilizes a 2019 base year. To maintain a consistent base year, and in recognition of the fact that the only material Scope 3 category for gas operations is Use of Sold Products, the amount listed here is inclusive of 2019 water and wastewater operations.

For 2019, this was deemed immaterial.

Scope 3 category 10: Processing of sold products

Base year start

January 1, 2019

Base year end

December 31, 2019

Base year emissions (metric tons CO2e)

0

Comment

CDP requires a consistent base year for all emissions scopes in section C5 disclosure. However, Essential began reporting Scope 3 emissions inclusive of its gas operations for the 2020 reporting year. However, Essential's enterprise-wide Scope 1 and 2 emissions reduction target utilizes a 2019 base year. To maintain a consistent base year, and in recognition of the fact that the only material Scope 3 category for gas operations is Use of Sold Products, the amount listed here is inclusive of 2019 water and wastewater operations.

For 2019, this was deemed immaterial.

Scope 3 category 11: Use of sold products

Base year start

January 1, 2019

Base year end

December 31, 2019

Base year emissions (metric tons CO2e)

0

Comment

CDP requires a consistent base year for all emissions scopes in section C5 disclosure. However, Essential began reporting Scope 3 emissions inclusive of its gas operations for the 2020 reporting year. However, Essential's enterprise-wide Scope 1 and 2 emissions reduction target utilizes a 2019 base year. To maintain a consistent base year, and in recognition of the fact that the only material Scope 3 category for gas operations is Use of Sold Products, the amount listed here is inclusive of 2019 water and wastewater operations.

For 2019, this was deemed immaterial.

Scope 3 category 12: End of life treatment of sold products

Base year start

January 1, 2019

Base year end

December 31, 2019

Base year emissions (metric tons CO2e)

0

Comment

CDP requires a consistent base year for all emissions scopes in section C5 disclosure. However, Essential began reporting Scope 3 emissions inclusive of its gas operations for the 2020 reporting year. However, Essential's enterprise-wide Scope 1 and 2 emissions reduction target utilizes a 2019 base year. To maintain a consistent base year, and in recognition of the fact that the only material Scope 3 category for gas operations is Use of Sold Products, the amount listed here is inclusive of 2019 water and wastewater operations.

For 2019, this was deemed immaterial.

Scope 3 category 13: Downstream leased assets

Base year start

January 1, 2019

Base year end

December 31, 2019

Base year emissions (metric tons CO2e)

0

Comment

CDP requires a consistent base year for all emissions scopes in section C5 disclosure. However, Essential began reporting Scope 3 emissions inclusive of its gas operations for the 2020 reporting year. However, Essential's enterprise-wide Scope 1 and 2 emissions reduction target utilizes a 2019 base year. To maintain a consistent base year, and in recognition of the fact that the only material Scope 3 category for gas operations is Use of Sold Products, the amount listed here is inclusive of 2019 water and wastewater operations.

For 2019, this was deemed immaterial.

Scope 3 category 14: Franchises

Base year start

January 1, 2019

Base year end

December 31, 2019

Base year emissions (metric tons CO2e)

0

Comment

CDP requires a consistent base year for all emissions scopes in section C5 disclosure. However, Essential began reporting Scope 3 emissions inclusive of its gas operations for the 2020 reporting year. However, Essential's enterprise-wide Scope 1 and 2 emissions reduction target utilizes a 2019 base year. To maintain a consistent base year, and in recognition of the fact that the only material Scope 3 category for gas operations is Use of Sold Products, the amount listed here is inclusive of 2019 water and wastewater operations.

For 2019, this was deemed immaterial.

Scope 3 category 15: Investments

Base year start

January 1, 2019

Base year end

December 31, 2019

Base year emissions (metric tons CO2e)

1,058

Comment

CDP requires a consistent base year for all emissions scopes in section C5 disclosure. However, Essential began reporting Scope 3 emissions inclusive of its gas operations for the 2020 reporting year. However, Essential's enterprise-wide Scope 1 and 2 emissions reduction target utilizes a 2019 base year. To maintain a consistent base year, and in recognition of the fact that the only material Scope 3 category for gas operations is Use of Sold Products, the amount listed here is inclusive of 2019 water and wastewater operations.

Scope 3: Other (upstream)

Base year start

January 1, 2019

Base year end

December 31, 2019

Base year emissions (metric tons CO2e)

4,703

Comment

CDP requires a consistent base year for all emissions scopes in section C5 disclosure. However, Essential began reporting Scope 3 emissions inclusive of its gas operations for the 2020 reporting year. However, Essential's enterprise-wide Scope 1 and 2 emissions reduction target utilizes a 2019 base year. To maintain a consistent base year, and in recognition of the fact that the only material Scope 3 category for gas operations is Use of Sold Products, the amount listed here is inclusive of 2019 water and wastewater operations.

Scope 3: Other (downstream)

Base year start
January 1, 2019

Base year end
December 31, 2019

Base year emissions (metric tons CO2e)
0

Comment
CDP requires a consistent base year for all emissions scopes in section C5 disclosure. However, Essential began reporting Scope 3 emissions inclusive of its gas operations for the 2020 reporting year. However, Essential's enterprise-wide Scope 1 and 2 emissions reduction target utilizes a 2019 base year. To maintain a consistent base year, and in recognition of the fact that the only material Scope 3 category for gas operations is Use of Sold Products, the amount listed here is inclusive of 2019 water and wastewater operations.

C5.3

(C5.3) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

US EPA Center for Corporate Climate Leadership: Indirect Emissions From Purchased Electricity
US EPA Center for Corporate Climate Leadership: Direct Emissions from Stationary Combustion Sources
US EPA Center for Corporate Climate Leadership: Direct Emissions from Mobile Combustion Sources
US EPA Mandatory Greenhouse Gas Reporting Rule
US EPA Emissions & Generation Resource Integrated Database (eGRID)

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)
468,734

Start date
January 1, 2021

End date

December 31, 2021

Comment

Gas Operations: 452,740
Water and Wastewater Operations: 15,994

Year-on-year reduction primarily driven by gas pipeline replacement activities

Past year 1

Gross global Scope 1 emissions (metric tons CO2e)

494,835

Start date

January 1, 2020

End date

December 31, 2020

Comment

Gas Operations: 478,684
Water and Wastewater Operations: 16,151

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

We are reporting our emissions across 10 states. With over 100 utilities providing electric service to over 4,600 electrical utility accounts and three retail electric suppliers, we have focused on our deregulated states with retail electric suppliers in obtaining market-based emission factors. Market-based emission factors are used for to calculate CO2 emission for Illinois, Pennsylvania, New Jersey and Ohio. Both Constellation New Energy and Mid-America Energy Services replied with market-based emission factors for 2021. Our retailer supplier in Texas was not able to provide market-based emissions and recommended using EPA eGrid. For other regulated utilities in regulated states, or municipalities and co-ops, the most recent EPA eGrid factors were utilized.

C6.3

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

Reporting year

Scope 2, location-based

115,302

Scope 2, market-based (if applicable)

117,723

Start date

January 1, 2021

End date

December 31, 2021

Comment

Gas Operations: 4,332 (location) and 4,502 (market)
Water and Wastewater Operations: 110,970 (location) and 113,221 (market)

Year-on-year Scope 2 market-based emissions increase primarily driven by a commensurate increase in emissions factors from Constellation Energy.

Past year 1

Scope 2, location-based

124,727

Scope 2, market-based (if applicable)

111,262

Start date

January 1, 2020

End date

December 31, 2020

Comment

Gas Operations: 3,951 (location) and 3,156 (market)
Water and Wastewater Operations: 120,776 (location) and 108,106 (market)

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?

No

C6.5

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

Purchased goods and services

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

40,862

Emissions calculation methodology

Other, please specify

See below in "Please Explain" section

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

0

Please explain

This Scope 3 source is material only to water and wastewater operations and not to our gas operations and total company. However, we have elected to disclose this for transparency. Figures and descriptions relate solely to water and wastewater operations.

List of purchased chemicals from 2021 was provided by Purchasing Department. Emission factors for top bulk chemicals was gathered from Eco-invent 3 LCI and Agri-footprint-gross energy allocation database. Eco-invent 3 used a Market for Consequential Systems approach LCA. LCI data for >95% of the sum of the bulk weight of chemicals was obtained.

Many vendors for chemical are local and small business entities and do not provide supplier emission factors.

Capital goods

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

50,614

Emissions calculation methodology

Other, please specify

See below in "Please Explain" section

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

0

Please explain

This Scope 3 source is material only to water and wastewater operations and not to our gas operations and total company. However, we have elected to disclose this for transparency. Figures and descriptions relate solely to water and wastewater operations.

Pipeline Infrastructure Replacement includes Ductile Iron and PVC Pipe and HDPE Pipe Replacement, backfill, and repavement of roads. Pipe replacement: Calculated using CO2 emissions factors for a cradle to grave life cycle from an LCI performed by the University of Tehran (Hajibabaei, Mohsen, et al. “Life Cycle Assessment of Pipes and Piping Process in Drinking Water Distribution Networks to Reduce Environmental Impact.” Sustainable Cities and Society, vol. 43, Nov. 2018, pp. 538–549., doi:10.1016/j.scs.2018.09.014.) Note that due to negligible observed emissions differences, HDPE and PVC were grouped together. Backfill: Cradle to grave emission factors were gathered from LCI data from Ecoinvent-3 for crushed and washed limestone, Consequential, systems, GLO. Asphalt: Emission factors for embodied energy of asphalt were gathered from an LCI done by the Michigan Technology University for the National Asphalt and Pavement Association.

Vendors of ductile iron do not provide emissions information.

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

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

26,643

Emissions calculation methodology

Other, please specify

See below in "Please Explain" section

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

0

Please explain

This Scope 3 source is material only to water and wastewater operations and not to our gas operations and total company. However, we have elected to disclose this for transparency. Figures and descriptions relate solely to water and wastewater operations.

Emissions for fuel-and-energy-related activities was calculated using the methodology found in the Quantis Methodology and 2016 Registration Document. Scope 3 energy emissions = (Scope 1 x 0.25) + (Scope 2 x 0.20)

Data from suppliers is not available.

Upstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Please explain

This is included in purchased products and capital goods. For our water and wastewater utility, our upstream transportation and conveyance of water and waste water is included in our Scope 1 and 2 emissions. We do not purchase or rely on other vendors to provide our raw source water or wastewater. This is also deemed not relevant or material for our gas distribution business.

Waste generated in operations

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

810

Emissions calculation methodology

Other, please specify

See below in "Please Explain" section

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

0

Please explain

This Scope 3 source is material only to water and wastewater operations and not to our gas operations and total company. However, we have elected to disclose this for transparency. Figures and descriptions relate solely to water and wastewater operations.

Emissions for wastewater sludge transportation for all wastewater operations in eight states were calculated based on reported Dry Metric Tons based on gallon equivalents based on 2% solids. Using trip length relevant CO2, CH4, and N2O emissions factors

per Medium- and Heavy-Duty Truck ton-mile from EPA (2021) Emissions Factors for Greenhouse Gas Inventories (https://www.epa.gov/climateleadership/center-corporate-climate-leadership-ghg-emission-factors-hub); and GWP conversion factors from CH4 and N2O to amount of CO2.

There are over 50 suppliers for transport services. Many are small businesses which do not track or account for emissions. Greater then 98% of waste by weight consists of sediment residuals from the processing of surface water and process sludge from wastewater treatment plants. Essential relies on both vendors and it own truck fleet for waste disposal. When Essential assets are utilized those emissions are included in our Scope 1 emissions.

Business travel

Evaluation status

Not relevant, explanation provided

Please explain

Business travel is predominately through the use of company vehicles and are included in our Scope 1 emissions. The whole of relevant Scope 3 business travel is comprised of air travel. The company maintains no air travel related database or travel vendor due to the very low volume of air travel. This was calculated in 2019 for our water and wastewater business and accounted for only 0.1 % of total Scope 3 emissions. Business travel was significantly less in 2020 and 2021 due to COVID restrictions and therefore considered not relevant.

Employee commuting

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

1,682

Emissions calculation methodology

Other, please specify

See below in "Please Explain" section

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

0

Please explain

Emissions for employee commuting were calculated from the results of an employee survey conducted in 2019. Survey participation rate was 54% for those employees not assigned a company vehicle. Emissions factors for various vehicle/transportation types from emissions factors determined from EPA (2020) Emissions Factors for Greenhouse Gas Inventories (https://www.epa.gov/climateleadership/center-corporate-climate-leadership-ghg-emission-factors-hub and https://evtool.ucsusa.org/. Note that 42%

percent of employees are assigned a company vehicle which they use to commute to their assigned work location(s) and whose GHG Emissions are included the companies Scope 1 emissions. Based on 2021 records of employees working from home, the 2019 calculations were revised for 2021 and account for work from home days.

Upstream leased assets

Evaluation status

Not relevant, explanation provided

Please explain

Essential does not have upstream leased assets.

Downstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Please explain

As a utility company which provides water and natural gas distributed through a pipe system directly to the customers' points of use, such emissions are already included in Scope 1+2. This is also true of effluent discharged from our system.

Processing of sold products

Evaluation status

Not relevant, explanation provided

Please explain

As a water and gas utility, the natural resources we supply customers are already in a final state and do not require further processing.

Use of sold products

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

8,534,299

Emissions calculation methodology

Other, please specify

See below in "Please Explain" section

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

0

Please explain

This item is relevant to our gas operations only and constitutes the only material Scope 3 item in Essential's enterprise-wide inventory.

In contrast, water is sold as a product which has a multitude of uses which may result in the heating of water and the use in industrial process. Essential does not have operational control or knowledge of how customers use water and therefore those impacts are not included.

End of life treatment of sold products

Evaluation status

Not relevant, explanation provided

Please explain

The natural resources we supply do not require end of life treatment.

Downstream leased assets

Evaluation status

Not relevant, explanation provided

Please explain

Essential has no downstream leased assets.

Franchises

Evaluation status

Not relevant, explanation provided

Please explain

Essential has no franchises.

Investments

Evaluation status

Not relevant, explanation provided

Please explain

Essential has no qualifying investments.

Other (upstream)

Evaluation status

Relevant, calculated

Emissions in reporting year (metric tons CO2e)

4,345

Emissions calculation methodology

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

0

Please explain

This Scope 3 source is material only to water and wastewater operations and not to our gas operations and total company. However, we have elected to disclose this for transparency. Figures and descriptions relate solely to water and wastewater operations.

In addition to producing water, Essential also purchases water from adjoining interconnected water companies/systems. Purchased water contains embodied energy as it is processed and received under pressure. If Essential did not purchase this water, it would need to produce more water. As such, our Scope 1 and 2 emissions would increase proportionally. We calculated this figure based on Essential's own 2021 emission factors for each state, defined as Tonnes CO2e/Million Gallons x volume of purchased = Tonnes CO2e.

We use our own state-defined emissions factors as a representative facsimile.

Other (downstream)

Evaluation status

Not relevant, explanation provided

Please explain

Essential has no other downstream emissions.

C6.5a

(C6.5a) Disclose or restate your Scope 3 emissions data for previous years.

Past year 1

Start date

January 1, 2020

End date

December 31, 2020

Scope 3: Purchased goods and services (metric tons CO2e)

40,672

Scope 3: Capital goods (metric tons CO2e)

48,207

Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2) (metric tons CO2e)

25,659

Scope 3: Upstream transportation and distribution (metric tons CO2e)

Scope 3: Waste generated in operations (metric tons CO2e)

911

Scope 3: Business travel (metric tons CO2e)

Scope 3: Employee commuting (metric tons CO2e)

Scope 3: Upstream leased assets (metric tons CO2e)

Scope 3: Downstream transportation and distribution (metric tons CO2e)

Scope 3: Processing of sold products (metric tons CO2e)

Scope 3: Use of sold products (metric tons CO2e)

8,533,075

Scope 3: End of life treatment of sold products (metric tons CO2e)

Scope 3: Downstream leased assets (metric tons CO2e)

Scope 3: Franchises (metric tons CO2e)

Scope 3: Investments (metric tons CO2e)

725

Scope 3: Other (upstream) (metric tons CO2e)

3,973

Scope 3: Other (downstream) (metric tons CO2e)

Comment

Prior to 2020, Essential's water and wastewater operations reported Scope 3 emissions. However, 2020 was the first reporting year for which material Scope 3 emissions were disclosed for newly acquired gas operations. The figures provided in this section can be found detailed in Essential's CDP questionnaire from last year.

C6.7

(C6.7) Are carbon dioxide emissions from biogenic 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

0.31

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

586,457

Metric denominator

unit total revenue

Metric denominator: Unit total

1,878,144

Scope 2 figure used

Market-based

% change from previous year

24

Direction of change

Decreased

Reason for change

Our revenue (unit total revenue reported as thousands of dollars) varies based on several business factors, including capital project performance, acquisition efforts, general and administrative (G&A) costs, and volume water and wastewater processed and gas delivered.

For our gas business, 2021 intensity figure (calculated in a similar fashion to total Essential) was 0.53. For our water and wastewater business, 2021 intensity figure (calculated in a similar fashion to total Essential) was 0.13 and experienced no change.

The reason for the year-on-year change in the gas business is due to methodology we used to accommodate for the mid-year acquisition of Peoples Gas in 2020. That year, Essential only reported emissions from Peoples for the full calendar year, although it only publicly reported revenue from the transaction date, March 16th. For 2021, both reported revenue and reported emissions are based on operations for the full calendar year.

Intensity figure

1.22

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

103,301

Metric denominator

Other, please specify

Millions of gallons of water produced

Metric denominator: Unit total

84,614

Scope 2 figure used

Market-based

% change from previous year

5.2

Direction of change

Increased

Reason for change

Increases in emissions intensity for Essential's wastewater and gas businesses were de minimis. For the water business, which experienced about a 5% increase, the market-based emissions factors for electricity supply generally increased by about the same percentage and accounts for the majority of the year-on-year change. Electricity consumption for all of our water and wastewater operations only increased about 1% year-on-year, as our business continued to grow as well. As noted in C9, energy intensity remained unchanged year-over-year. Thus, the increase in emissions intensity relates to the generation mix of our contracted energy supplier Constellation Energy, not any actions or behaviors within our own operations that would drive the increase.

Intensity figure

2.18

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

25,914

Metric denominator

Other, please specify

Millions of gallons of wastewater treated

Metric denominator: Unit total

11,861

Scope 2 figure used

Market-based

% change from previous year

1.1

Direction of change

Increased

Reason for change

Increases in emissions intensity for Essential's wastewater and gas businesses were de minimis. For the water business, which experienced about a 5% increase, the market-based emissions factors for electricity supply generally increased by about the same percentage and accounts for the majority of the year-on-year change. Electricity consumption for all of our water and wastewater operations only increased about 1% year-on-year, as our business continued to grow as well. As noted in C9, energy intensity remained unchanged year-over-year. Thus, the increase in emissions intensity relates to the generation mix of our contracted energy supplier Constellation Energy, not any actions or behaviors within our own operations that would drive the increase.

Intensity figure

3.1

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

457,242

Metric denominator

Other, please specify

Millions of cubic feet of gas delivered

Metric denominator: Unit total

147,600

Scope 2 figure used

Market-based

% change from previous year

2.2

Direction of change

Increased

Reason for change

Increases in emissions intensity for Essential's wastewater and gas businesses were de minimis. For the water business, which experienced about a 5% increase, the market-based emissions factors for electricity supply generally increased by about the same percentage and accounts for the majority of the year-on-year change. Electricity

consumption for all of our water and wastewater operations only increased about 1% year-on-year, as our business continued to grow as well. As noted in C9, energy intensity remained unchanged year-over-year. Thus, the increase in emissions intensity relates to the generation mix of our contracted energy supplier Constellation Energy, not any actions or behaviors within our own operations that would drive the increase.

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	84,749.8	IPCC Fourth Assessment Report (AR4 - 100 year)
CH4	383,848.9	IPCC Fourth Assessment Report (AR4 - 100 year)
N2O	81.7	IPCC Fourth Assessment Report (AR4 - 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)
United States of America	468,734

C7.3

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

By business division

By activity

C7.3a

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

Business division	Scope 1 emissions (metric ton CO2e)
Aqua Illinois	1,550
Aqua Indiana	326
Aqua North Carolina	2,870
Aqua New Jersey	543
Aqua Pennsylvania	6,381
Aqua Ohio	2,009
Aqua Virginia	682
Aqua Texas	1,632
Peoples Natural Gas Company	351,864
Peoples Gas Pennsylvania	77,123
Peoples Gas West Virginia	6,982
Delta Natural Gas Company	16,771

C7.3c

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

Activity	Scope 1 emissions (metric tons CO2e)
Water Production	15,333
Wastewater Treatment	662
Natural Gas Distribution	452,740

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)
United States of America	115,302	117,723

C7.6

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

By business division

By activity

C7.6a

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

Business division	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Aqua Illinois	14,164	10,764
Aqua Indiana	5,700	5,700
Aqua North Carolina	8,284	8,284
Aqua New Jersey	3,779	3,796
Aqua Pennsylvania	45,051	58,219
Aqua Ohio	16,222	12,217
Aqua Virginia	2,878	2,878
Aqua Texas	14,891	11,363
Peoples Natural Gas Company	3,532	3,671
Peoples Gas Pennsylvania	507	527
Peoples Gas West Virginia	71	74
Delta Natural Gas Company	223	231

C7.6c

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

Activity	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Water Production	83,987	87,968
Wastewater Treatment	26,983	25,252
Natural Gas Distribution	4,332	4,502

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?

Decreased

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				
Other emissions reduction activities	24,598	Decreased	4.1	Gas pipeline replacement activities contributed to emissions reduction.
Divestment				
Acquisitions				
Mergers				
Change in output				
Change in methodology				
Change in boundary				
Change in physical operating conditions				
Unidentified				
Other	4,958	Increased	0.8	Increase in Constellation Energy emissions factors

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 5% but less than or equal to 10%

C8.2

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

	Indicate whether your organization undertook this energy-related activity in the reporting year
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	Yes

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 (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	0	427,379	427,379
Consumption of purchased or acquired electricity		29,002	300,202	329,204
Consumption of self-generated non-fuel renewable energy		5,791		5,791
Total energy consumption		34,793	727,581	762,373

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.

Sustainable biomass

Heating value

Total fuel MWh consumed by the organization

Comment

Other biomass

Heating value

Total fuel MWh consumed by the organization

Comment

Other renewable fuels (e.g. renewable hydrogen)

Heating value

Total fuel MWh consumed by the organization

Comment

Coal

Heating value

Total fuel MWh consumed by the organization

Comment

Oil

Heating value

HHV

Total fuel MWh consumed by the organization

53,724

Comment

This entry is inclusive of both motor gasoline and diesel.

Motor gasoline methodology: Center for Corporate Climate Leadership GHG Emission Factors Hub, Emission Factors for Greenhouse Gas Inventories - Last Modified: 01 April 2022; Mobile Combustion CO2 Emission Factors.

Diesel methodology: Center for Corporate Climate Leadership GHG Emission Factors Hub, Emission Factors for Greenhouse Gas Inventories - Last Modified: 01 April 2022; Mobile Combustion CO2 Emission Factors.

Gas

Heating value

HHV

Total fuel MWh consumed by the organization

303,697

Comment

This entry is inclusive of both natural gas and compressed natural gas (CNG).

Natural gas methodology: Center for Corporate Climate Leadership GHG Emission Factors Hub, Emission Factors for Greenhouse Gas Inventories - Last Modified: 1 April 2022; Mobile Combustion CO2 Emission Factors.

CNG methodology: Center for Corporate Climate Leadership GHG Emission Factors Hub, Emission Factors for Greenhouse Gas Inventories - Last Modified: 01 April 2022; Mobile Combustion CO2 Emission Factors. Converted 0.05444 kg CO2 per scf * 35.3 scf per m3 = 1.92173 to Kg CO2 per m3

Other non-renewable fuels (e.g. non-renewable hydrogen)

Heating value

Total fuel MWh consumed by the organization

Comment

Total fuel

Heating value

HHV

Total fuel MWh consumed by the organization

357,421

Comment

Sum of natural gas, CNG, motor gasoline, and diesel consumption.

C8.2d

(C8.2d) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	5,791	5,791	5,791	5,791
Heat	19,764	19,764		
Steam				
Cooling				

C8.2e

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

Sourcing method

Default delivered electricity from the grid (e.g. standard product offering by an energy supplier), supported by energy attribute certificates

Energy carrier
Electricity

Low-carbon technology type
Wind

Country/area of low-carbon energy consumption
United States of America

Tracking instrument used
US-REC

Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)
29,002

Country/area of origin (generation) of the low-carbon energy or energy attribute
United States of America

Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)

Comment
National Green-e Energy Certified New Renewable

C8.2g

(C8.2g) Provide a breakdown of your non-fuel energy consumption by country.

Country/area
United States of America

Consumption of electricity (MWh)
334,995

Consumption of heat, steam, and cooling (MWh)
19,764

Total non-fuel energy consumption (MWh) [Auto-calculated]

354,759

C9. Additional metrics

C9.1

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

Description

Energy usage

Metric value

3.1

Metric numerator

Annual kilowatt hours

Metric denominator (intensity metric only)

Thousand gallons of water produced

% change from previous year

0

Direction of change

No change

Please explain

The company, in 2018, added kWh/1,000 gallon as a metric to its management scorecard. Managers are incentivized to maintain and lower energy consumption as measured by this metric. Since we started monitoring this, the two primary factors that have led to changes in energy intensity are: greater energy efficiency efforts at the local level and utilization of a more-energy efficient mix of pumping assets.

Description

Other, please specify

Quantity of gas leaks

Metric value

539

Metric numerator

Quantity of gas leaks

Metric denominator (intensity metric only)

N/A

% change from previous year

13

Direction of change

Decreased

Please explain

This is climate-related metric is included as a component of Essential's Short Term Incentive Awards, in order to promote accountability for performance in this area. In 2021, Essential recorded 539 gas leaks, which is well below the targeted amount of 700.

Description

Other, please specify

Quantity of gas distribution pipe miles replaced versus planned replacements

Metric value

107

Metric numerator

See below

Metric denominator (intensity metric only)

See below

% change from previous year

3

Direction of change

Increased

Please explain

Due to CDP text character limitations, please see the below:
Metric numerator: Gas distribution pipe miles replaced
Metric denominator: Gas distribution pipe miles planned to be replaced
The resulting metric would be percentage achievement of gas distribution pipe miles replaced versus planned to be replaced

This is climate-related metric is included as a component of Essential's Short Term Incentive Awards, in order to promote timely replacement of gas main, which reduces emissions. In 2021, we experienced 107% achievement over plan, which is greater than the 104% level of achievement over plan that we experienced in the previous year.

Description

Energy usage

Metric value

5.4

Metric numerator

Annual kilowatt hours

Metric denominator (intensity metric only)

Thousand gallons of wastewater treated

% change from previous year

0

Direction of change

No change

Please explain

The company, in 2018, added kWh/1,000 gallon as a metric to its management scorecard. Managers are incentivized to maintain and lower energy consumption as measured by this metric. It is expected that this figure may increase in some years because inflow and infiltration, influenced by rainy weather, influences greatly. An abnormally rainy year can lead to more wastewater treated, but not necessarily a corresponding increase in energy used due to the physics of water moving downhill through our pipeline network. Additional rainwater can reduce the energy needed to move water through our system due to gravity.

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	No third-party verification or assurance

C10.1a

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

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

CDP Verification Essential 2022.pdf

Page/ section reference

Page one of verification letter

Relevant standard

The Climate Registry's General Verification Protocol (also known as California Climate Action Registry (CCAR))

Proportion of reported emissions verified (%)

3

C10.1b

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

Scope 2 approach

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

CDP Verification Essential 2022.pdf

Page/ section reference

Page one of verification letter

Relevant standard

The Climate Registry's General Verification Protocol (also known as California Climate Action Registry (CCAR))

Proportion of reported emissions verified (%)

96

Scope 2 approach

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

CDP Verification Essential 2022.pdf

Page/ section reference

Page one of verification letter

Relevant standard

The Climate Registry's General Verification Protocol (also known as California Climate Action Registry (CCAR))

Proportion of reported emissions verified (%)

96

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	Other, please specify Emissions breakdown	Climate Registry's General Verification Protocol	Water and wastewater operations emissions are calculated from base data at the operating unit level for all Scope 1 & 2 emissions and aggregated to the company level. All calculations were verified for the emissions breakout.

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)?

No, and we do not anticipate being regulated in the next three years

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?

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

C12. Engagement

C12.1

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

Yes, our suppliers

Yes, our customers/clients

C12.1a

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

Type of engagement

Innovation & collaboration (changing markets)

Details of engagement

Other, please specify

As a large electricity user, the company looks to our retail power suppliers with innovative power purchase agreements that allow us to control expenses, but focus on green and renewable power purchase options

% of suppliers by number

100

% total procurement spend (direct and indirect)

100

% of supplier-related Scope 3 emissions as reported in C6.5

0

Rationale for the coverage of your engagement

We request that our retail power suppliers provide energy portfolio mixes that offer both lower utility rates and increased options for green power purchases. We work with local utilities to utilize energy efficiency incentives. In some of our larger systems, we participate in energy load shedding events to take power off the grid during the highest demand times of the year. This is the result of active collaboration with our power providers to set up and participate in these programs, thus stabilizing the electric grid, and reducing the need for additional fossil fuel-consuming electric generation plants.

Impact of engagement, including measures of success

In 2019, in our Texas operations, we signed a solar PPA agreement which began to deliver about 25% solar power for the state's operations starting in mid- 2020. All of these improvements enable Essential to save on expenses which benefits our customers while reducing our Scope 2 emissions. Beginning in 2022, Essential contracted with a retail power supplier for 100% wind power through Green-e Renewable Energy Certificates for its water and wastewater operations in Illinois, New Jersey, Ohio, and Pennsylvania. These states feature deregulated energy markets that allow for this arrangement.

Comment

Essential's power suppliers are aware of the company's desire to source renewable energy and are engaging the company with potential and initiative solutions that can also be delivered at grid parity pricing. Purchased electric is a Scope 2 emission therefore the Scope 3 value field is zero.

Type of engagement

Other, please specify

Compliance and Onboarding

Details of engagement

% of suppliers by number

100

% total procurement spend (direct and indirect)

100

% of supplier-related Scope 3 emissions as reported in C6.5

100

Rationale for the coverage of your engagement

We have begun a more formal process of screening, requiring all our major suppliers, new and old, to re-sign our Code of Conduct periodically. The Code of Conduct was amended in 2020 to expand and enhance language surrounding our expectations of our suppliers' environmental and climate-related impacts and performance. We are committed to purchasing from suppliers that strive to improve the environmental quality of our operations. We seek to do business with suppliers who share our concerns for, and commitment to, preserving the environment. Our suppliers will act in accordance with all applicable laws, codes, and regulations regarding environmental protection and sustainability. Suppliers will use reasonable efforts to minimize pollution and improve in environmental protection and sustainability. Moving forward, as existing contracts expire, we will strongly encourage our major suppliers, where applicable, to track, and improve on their environmental footprint as we continue to explore innovative ways to reduce our carbon emissions. Energy use and greenhouse gas emissions are noted explicitly in the document and our Sustainability and Environmental Policy is linked as well, which has a section dedicated to climate change.

Impact of engagement, including measures of success

As these efforts evolve and mature, we continue to assess how to best measure impact of such engagement, as well as expand our dialogue with suppliers. We hope to use the information collected from suppliers to both make more informed and responsible choices in procurement, as well as encourage our existing suppliers to reduce.

Comment

C12.1b

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

Type of engagement & Details of engagement

Education/information sharing

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

% of customer - related Scope 3 emissions as reported in C6.5

100

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

We are very aware of the relationship between volume of water used by our customers and climate change. The higher the volume of water demanded by our customers, the more energy we must use to treat and deliver it. Further, our customer often uses

energy in the home to heat water for various purposes. Therefore, encouraging efficiency in water use achieves a dual purpose of conserving precious water resources and reducing climate change impact through energy use. While we do not explicitly make this connection to climate change to our customers in our communications, we believe the trend of American homes becoming more efficient with water usage is materially reducing the impact of inherently energy-intensive water utility operations. Similarly, we are aware of the large amount of Scope 3 emissions driven by customer combustion of gas. We encourage customers to use less gas and provide many tips to do so. This also helps to keep energy costs affordable, which is critical for households especially during the cold winter months, as our gas operations are primarily located in western Pennsylvania.

Impact of engagement, including measures of success

There are several methods by which we engage customers on water and gas efficiency. We operate an interactive website called aquawatersmart.com which allows customers to click on areas of a house, which displays various tips for conserving water. The user can share tips directly through social media and download various infographics. We provide gas usage reduction tips on our Peoples Gas website as well. We also send tips and communications directly to customers by email and mail, including through our welcome kit brochure. We ensure customer portals provide tools and means by which customers can closely monitor their water and gas usage. Additionally, we want to ensure we provide as much guidance and support as possible to economically distressed and low-income customers to reduce their bills through water efficiency, among other initiatives. We send an "eco-kit" to these customers which include an efficient showerhead as well as other materials that improve water usage in a home. We will also send water conservation tips to these customers. While it is difficult to isolate or quantify the exact impact of these initiatives (greater adoption of efficient appliances is a national trend we cannot credit solely to our engagement with customers), our customers' households are becoming more efficient, in line with trends other utilities are seeing. We believe engagement of the customer by utilities such as ours is a material driver of this change.

C12.2

(C12.2) Do your suppliers have to meet climate-related requirements as part of your organization's purchasing process?

No, and we do not plan to introduce climate-related requirements within the next two years

C12.3

(C12.3) Does your organization engage in activities that could either directly or indirectly influence policy, law, or regulation that may impact the climate?

Row 1

Direct or indirect engagement that could influence policy, law, or regulation that may impact the climate

Yes, we engage directly with policy makers
Yes, we engage indirectly through trade associations

Does your organization have a public commitment or position statement to conduct your engagement activities in line with the goals of the Paris Agreement?

No, and we do not plan to have one in the next two years

Describe the process(es) your organization has in place to ensure that your engagement activities are consistent with your overall climate change strategy

We take seriously our role in the public policy process. At our disposal are various outlets through which we can participate. Essential engages with government and trade associations in order to educate and address issues impacting our service, which includes matters relating to climate change. Engaging in this activity is important to support future and current candidates who want to maintain our mission by providing a strong water, wastewater and natural gas distribution infrastructure for the next generation, protect the environment, and allow our company to be financially viable. In addition, our management team can participate in Essential's political action committee (PAC). Transparency is critical to building trust in political activities and the activities of the PAC are overseen by a board that meets on a quarterly basis. All PAC and lobbying expenditures are reported in accordance with federal, state and local laws. Our company's overall climate strategy is aligned with our government affairs activities. Given the limited size of our company, there is very close oversight of all our engagement with public officials by senior management. There are several members of senior management, listed and described in this questionnaire, that are responsible for climate change risk management and mitigation in addition to being involved in all government affairs policy-related decision making. This helps to ensure our company is consistent with respect to climate change and that our behaviors and actions are representative of this CDP climate change disclosure. For further information, please refer to our Political Spending Policy, available on our website.

C12.3a

(C12.3a) On what policy, law, or regulation that may impact the climate has your organization been engaging directly with policy makers in the reporting year?

Focus of policy, law, or regulation that may impact the climate

Subsidies for renewable energy projects

Specify the policy, law, or regulation on which your organization is engaging with policy makers

Voluntary Emissions Reduction Program (VERP)

Policy, law, or regulation geographic coverage

Sub-national

Country/region the policy, law, or regulation applies to

United States of America

Your organization's position on the policy, law, or regulation

Support with no exceptions

Description of engagement with policy makers

Essential has sought to offer its Pennsylvania gas customers a voluntary emission reduction program (VERP). Customers would be given the option to voluntarily offset the emissions associated with natural gas combustion via the purchase of carbon offsets. Essential would charge the customer a flat fee and use these proceeds to procure carbon offsets prior to transferring ownership to the customer. This program would need to be approved by the Pennsylvania Public Utility Commission prior to implementation. Essential has not yet formally filed for approval with this regulatory body, but has engaged various state lawmakers and regulators in discussions about this program and why the company believes VERP would be in the best interests of its Pennsylvania customers and the environment.

Details of exceptions (if applicable) and your organization's proposed alternative approach to the policy, law or regulation

Have you evaluated whether your organization's engagement is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

C12.3b

(C12.3b) Provide details of the trade associations your organization engages with which are likely to take a position on any policy, law or regulation that may impact the climate.

Trade association

Other, please specify

National Association of Water Companies (NAWC)

Is your organization's position on climate change consistent with theirs?

Consistent

Has your organization influenced, or is your organization attempting to influence their position?

We are not attempting to influence their position

State the trade association's position on climate change, explain where your organization's position differs, and how you are attempting to influence their position (if applicable)

"NAWC members are committed to protecting the environment and to using our most precious resource – water – as wisely as possible. Improving environmental stewardship is one of the most often-cited reasons municipalities give for deciding to work with a water company. For water companies, sustainability is essential. The fact is water companies are helping to lead the way on water conservation with green, energy-saving initiatives that make a difference for the communities they serve."

Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)

Describe the aim of your organization's funding

Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

Trade association

Other, please specify

American Water Works Association (AWWA)

Is your organization's position on climate change consistent with theirs?

Consistent

Has your organization influenced, or is your organization attempting to influence their position?

We are not attempting to influence their position

State the trade association's position on climate change, explain where your organization's position differs, and how you are attempting to influence their position (if applicable)

"The American Water Works Association (AWWA) recognizes that global climate change and inherent variability are having impacts on the hydrologic cycle, source water, and water demands that differ from statistical trends based on historical records, thus impacting the anticipated quantity, quality, and reliability of water supplies. Two principal goals for water utilities in addressing impacts due to climate change and inherent variability are: to assess risk and uncertainty; and to develop and take actions that improve resiliency and sustainability in utility management, facilities and water sources."

Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)

Describe the aim of your organization's funding

Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

Trade association

Other, please specify

Water Environment Federation (WEF)

Is your organization's position on climate change consistent with theirs?

Consistent

Has your organization influenced, or is your organization attempting to influence their position?

We are not attempting to influence their position

State the trade association's position on climate change, explain where your organization's position differs, and how you are attempting to influence their position (if applicable)

"No other resource is likely to be more affected by climate change than water, as precipitation patterns change, sea levels rise, and water quality degrades. The nation's drinking water and wastewater infrastructure is already in need of significant investment to maintain current levels of service over the coming decades. Climate change will stress the system further. Adaptation approaches will in many cases require additional resources. Federal, state and local funding must continue to be directed to the Water Sector to adapt infrastructure and water supplies to climate change."

Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)

Describe the aim of your organization's funding

Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

Trade association

Other, please specify

American Gas Association (AGA)

Is your organization's position on climate change consistent with theirs?

Consistent

Has your organization influenced, or is your organization attempting to influence their position?

We are not attempting to influence their position

State the trade association's position on climate change, explain where your organization's position differs, and how you are attempting to influence their position (if applicable)

"The American Gas Association is committed to reducing greenhouse gas emissions through smart innovation, new and modernized infrastructure, and advanced technologies that maintain reliable, resilient, and affordable energy service choices for consumers."

Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)

Describe the aim of your organization's funding

Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

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 mainstream reports, incorporating the TCFD recommendations

Status

Underway – previous year attached

Attach the document

essential-tcfd20 (11).pdf

Page/Section reference

All pages and sections are relevant.

Content elements

Governance

Strategy
Risks & opportunities
Emissions figures
Emission targets
Other metrics
Other, please specify

Comment

This attachment is the company's prior year TCFD Report. Essential's updated publication of its TCFD Report shortly follows the submission of its CDP questionnaire and is, at the time of filing, unavailable for attachment. Please visit ESG.Essential.co to download this updated file. The TCFD Report includes similar information to that which is published in this CDP filing, but it is abridged and more concise.

Publication

In voluntary sustainability report

Status

Underway – previous year attached

Attach the document

essential-esg20 (7).pdf

Page/Section reference

Please refer to page 48.

Content elements

Governance
Strategy
Emissions figures
Emission targets
Other metrics

Comment

This attachment is the company's prior year ESG Report. Essential's updated publication of its 2021 ESG Reporting Update shortly follows the submission of its CDP questionnaire and is, at the time of filing, unavailable for attachment. Please visit ESG.Essential.co to download this updated file. The 2021 ESG Reporting Update consists of an interim update to key metrics and a full ESG Report update will be published in 2023.

C15. Biodiversity

C15.1

(C15.1) Is there board-level oversight and/or executive management-level responsibility for biodiversity-related issues within your organization?

	Board-level oversight and/or executive management-level responsibility for biodiversity-related issues	Description of oversight and objectives relating to biodiversity
Row 1	Yes, both board-level oversight and executive management-level responsibility	Biodiversity activities are included as part of Essential's larger ESG governance and oversight structure at both the board and management levels. We are working to increase the breadth and depth of briefings and considerations of biodiversity matters. Indirectly, our compliance with water and wastewater regulations is, itself, an indicator of the company's impact on biodiversity, as regulators seek to ensure utilities such as Essential comply with various environmental standards set forth. We are engaged in localized actions to support biodiversity in various ways, as we illustrate in our ESG Report. Examples from the recent past include: -Safely removing nuisance aquatic plants that are clogging a reservoir -Restoring native trees adjacent to reservoirs -Observing protective buffer zones around eagle nesting locations -Changing the project footprint of a planned dam removal to avoid a potential bog turtle habitat -Engaged in local partnerships to help grow native mussels in streams -Invested in a long-term partnership called TreeVitalize, which plants trees and shrubs around our Pennsylvania operating area

C15.2

(C15.2) Has your organization made a public commitment and/or endorsed any initiatives related to biodiversity?

	Indicate whether your organization made a public commitment or endorsed any initiatives related to biodiversity
Row 1	No, and we do not plan to do so within the next 2 years

C15.3

(C15.3) Does your organization assess the impact of its value chain on biodiversity?

	Does your organization assess the impact of its value chain on biodiversity?
Row 1	No, and we do not plan to assess biodiversity-related impacts within the next two years

C15.4

(C15.4) What actions has your organization taken in the reporting year to progress your biodiversity-related commitments?

	Have you taken any actions in the reporting period to progress your biodiversity-related commitments?	Type of action taken to progress biodiversity- related commitments
Row 1	Yes, we are taking actions to progress our biodiversity-related commitments	Land/water protection Land/water management Species management Education & awareness

C15.5

(C15.5) Does your organization use biodiversity indicators to monitor performance across its activities?

	Does your organization use indicators to monitor biodiversity performance?	Indicators used to monitor biodiversity performance
Row 1	Yes, we use indicators	Other, please specify Indirect indicators include: - Wastewater compliance - Air permit compliance - Consideration of environmental impacts on endangered and protected species as part of construction permitting requirements - Greenhouse gas emissions reduction

C15.6

(C15.6) Have you published information about your organization's response to biodiversity-related issues for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Report type	Content elements	Attach the document and indicate where in the document the relevant biodiversity information is located
In voluntary sustainability report or other voluntary communications	Content of biodiversity-related policies or commitments Impacts on biodiversity Details on biodiversity indicators	Our 2020 ESG Report details some examples of biodiversity-related initiatives. The company will be publishing an expanded biodiversity section in our next full ESG Report update next year.

C16. 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.

C16.1

(C16.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	Chief Environmental, Safety, and Sustainability Officer	Chief Sustainability Officer (CSO)

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

	I understand that my response will be shared with all requesting stakeholders	Response permission
Please select your submission options	Yes	Public

Please confirm below

I have read and accept the applicable Terms