Essential Utilities, Inc

2024 CDP Corporate Questionnaire 2024

Word version

Important: this export excludes unanswered questions
This document is an export of your organization's CDP questionnaire response. It contains all data points for questions that are answered or in progress. There may be questions or data points that you have been requested to provide, which are missing from this document because they are currently unanswered. Please note that it is your responsibility to verify that your questionnaire response is complete prior to submission. CDP will not be liable for any failure to do so.
Terms of disclosure for corporate questionnaire 2024 - CDP

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09/27/2024, 01:35 pm

Contents

C1. Introduction

(1.3) Provide an overview and introduction to your organization.

(1.3.2) Organization type

Select from:

☑ Publicly traded organization

(1.3.3) Description of organization

Essential Utilities, Inc., (Essential Utilities, 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 5.5 million people in Pennsylvania, Ohio, Texas, Illinois, North Carolina, New Jersey, Indiana, Virginia, and Kentucky under the Aqua and Peoples brands. One of our largest operating subsidiaries, Aqua Pennsylvania, Inc. (Aqua Pennsylvania), provides water or wastewater services to approximately one-half of the total number of water or wastewater customers we serve. These customers are 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. Our Peoples subsidiaries provide natural gas service to approximately 744,000 customers in western Pennsylvania and Kentucky. Approximately 95% 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 Resources, Inc. and certain other non-regulated subsidiaries of Peoples. Aqua Resources offers, through a third-party, water and sewer service 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.
[Fixed row]

(1.4) State the end date of the year for which you are reporting data. For emissions data, indicate whether you will be providing emissions data for past reporting years.

(1.4.1) End date of reporting year

12/31/2023

(1.4.2) Alignment of this reporting period with your financial reporting period

Select from:

☑ Yes

(1.4.3) Indicate if you are providing emissions data for past reporting years

Select from:
☑ Yes

(1.4.4) Number of past reporting years you will be providing Scope 1 emissions data for

Select from:
☑ 1 year

(1.4.5) Number of past reporting years you will be providing Scope 2 emissions data for

Select from:
☑ 1 year

(1.4.6) Number of past reporting years you will be providing Scope 3 emissions data for

Select from:
☑ 1 year
[Fixed row]

(1.5) Provide details on your reporting boundary.

	Is your reporting boundary for your CDP disclosure the same as that used in your financial statements?
	Select from: ☑ Yes

[Fixed row]

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

ISIN code - bond

(1.6.1) Does your organization use this unique identifier?

Select from:

☑ No

ISIN code - equity

(1.6.1) Does your organization use this unique identifier?

Select from:

☑ Yes

(1.6.2) Provide your unique identifier

US29670G1022

CUSIP number

(1.6.1) Does your organization use this unique identifier?

Select from:

☑ Yes

(1.6.2) Provide your unique identifier

29670G102

Ticker symbol

(1.6.1) Does your organization use this unique identifier?

Select from:

☑ Yes

(1.6.2) Provide your unique identifier

WTRG

SEDOL code

(1.6.1) Does your organization use this unique identifier?

Select from:

☑ No

LEI number

(1.6.1) Does your organization use this unique identifier?

Select from:

☑ Yes

(1.6.2) Provide your unique identifier

549300ILTEOF3E3QY357

D-U-N-S number

(1.6.1) Does your organization use this unique identifier?

Select from:

☑ No

Other unique identifier

(1.6.1) Does your organization use this unique identifier?

Select from:

☑ No

[Add row]

(1.24) Has your organization mapped its value chain?

(1.24.1) Value chain mapped

Select from:

☑ Yes, we have mapped or are currently in the process of mapping our value chain

(1.24.2) Value chain stages covered in mapping

Select all that apply

☑ Upstream value chain

☑ Downstream value chain

(1.24.3) Highest supplier tier mapped

Select from:

☑ Tier 1 suppliers

(1.24.4) Highest supplier tier known but not mapped

Select from:

☑ Tier 2 suppliers

(1.24.7) Description of mapping process and coverage

Essential maintains downstream value chain visibility through its direct relationship with customer connections, almost all of which are end users of our resources and utility services. There are some industrial customers of our water utility for which we do not have precise mapping further downstream. Essential is aware and has a relationship with its Tier 1 suppliers. In many cases, we are also aware of Tier 2 supplier relationships. Given the breadth and complexity of our structure, as well as

circumstances inherent in our utility industry, it is infeasible to produce a full mapping of Essential's upstream supply chain, particularly for several tiers of supplier relationships.
[Fixed row]

(1.24.1) Have you mapped where in your direct operations or elsewhere in your value chain plastics are produced, commercialized, used, and/or disposed of?

(1.24.1.1) Plastics mapping

Select from:

☑ No, and we do not plan to within the next two years

(1.24.1.5) Primary reason for not mapping plastics in your value chain

Select from:

☑ Other, please specify **:**See accompanying note.

(1.24.1.6) Explain why your organization has not mapped plastics in your value chain

Essential's primary use of plastics is in main replacement activities. There are currently limited options for alternative materials suitable to such infrastructure and environmental concerns must be balanced against factors of resiliency, customer affordability, and operational safety. Additionally, plastics are required to be used by regulation as well in certain instances. Fortunately, such infrastructure has a relatively long life of service. Essential continuously monitors industry best practices and engages industry regulators.
[Fixed row]

C2. Identification, assessment, and management of dependencies, impacts, risks, and opportunities

(2.1) How does your organization define short-, medium-, and long-term time horizons in relation to the identification, assessment, and management of your environmental dependencies, impacts, risks, and opportunities?

Short-term

(2.1.1) From (years)

0

(2.1.3) To (years)

12

(2.1.4) How this time horizon is linked to strategic and/or financial planning

We have determined that, within our areas of operations, the short-term time horizon extending through 2035 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

(2.1.1) From (years)

13

(2.1.3) To (years)

27

(2.1.4) How this time horizon is linked to strategic and/or financial planning

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 infrastructure assets, along with their associated risks and opportunities, must be addressed and planned for in the medium-term (through 2050). 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. 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.

Long-term

(2.1.1) From (years)

28

(2.1.2) Is your long-term time horizon open ended?

Select from:

☑ No

(2.1.3) To (years)

57

(2.1.4) How this time horizon is linked to strategic and/or financial planning

Long-term or emerging risks include economic, social, environmental, regulatory, and political change, as well as new technologies. Engaging in long-term (through 2080) 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.
[Fixed row]

(2.2) Does your organization have a process for identifying, assessing, and managing environmental dependencies and/or impacts?

(2.2.1) Process in place

Select from:

☑ No, but we plan to within the next two years

(2.2.4) Primary reason for not evaluating dependencies and/or impacts

Select from:

☑ No standardized procedure

(2.2.5) Explain why you do not evaluate dependencies and/or impacts and describe any plans to do so in the future

Essential, for several years, has disclosed climate risks and opportunities as part of our CDP reporting. With this process relatively mature, the company is in the process of developing a broader environmental analysis inclusive of biodiversity and consistent with TNFD principles. At this early juncture, the company is not prepared to disclose via CDP environmental dependencies and impacts. However, as we build a biodiversity disclosure similar to our climate reporting, the company anticipates it will be in a position to offer such insights over the next 2-3 years. Our most recent ESG Report does feature a new section dedicated to biodiversity that does list some generic dependencies and impacts relevant to our industry, broadly.
[Fixed row]

(2.2.1) Does your organization have a process for identifying, assessing, and managing environmental risks and/or opportunities?

	Process in place	Risks and/or opportunities evaluated in this process
	Select from: ☑ Yes	*Select from:* ☑ Both risks and opportunities

[Fixed row]

(2.2.2) Provide details of your organization's process for identifying, assessing, and managing environmental dependencies, impacts, risks, and/or opportunities.

Row 1

(2.2.2.1) Environmental issue

Select all that apply

☑ Climate change

(2.2.2.2) Indicate which of dependencies, impacts, risks, and opportunities are covered by the process for this environmental issue

Select all that apply

☑ Risks

☑ Opportunities

(2.2.2.3) Value chain stages covered

Select all that apply

☑ Direct operations

(2.2.2.4) Coverage

Select from:

☑ Full

(2.2.2.7) Type of assessment

Select from:

☑ Qualitative and quantitative

(2.2.2.8) Frequency of assessment

Select from:

☑ Annually

(2.2.2.9) Time horizons covered

Select all that apply

☑ Short-term

☑ Medium-term

☑ Long-term

(2.2.2.10) Integration of risk management process

Select from:

☑ A specific environmental risk management process

(2.2.2.11) Location-specificity used

Select all that apply

☑ Sub-national

(2.2.2.12) Tools and methods used

Enterprise Risk Management

☑ Internal company methods

International methodologies and standards

☑ IPCC Climate Change Projections

Other

☑ External consultants

☑ Internal company methods

☑ Materiality assessment

☑ Scenario analysis

(2.2.2.13) Risk types and criteria considered

Acute physical

☑ Cyclones, hurricanes, typhoons
☑ Drought
☑ Flood (coastal, fluvial, pluvial, ground water)
☑ Heat waves
☑ Heavy precipitation (rain, hail, snow/ice)

Chronic physical

☑ Heat stress
☑ Water stress
☑ Sea level rise
☑ Change in land-use
☑ Temperature variability
☑ Changing precipitation patterns and types (rain, hail, snow/ice)
☑ Water quality at a basin/catchment level
☑ Precipitation or hydrological variability
☑ Increased severity of extreme weather events
☑ Water availability at a basin/catchment level
☑ Changing temperature (air, freshwater, marine water)

Policy

☑ Carbon pricing mechanisms
☑ Changes to international law and bilateral agreements
☑ Changes to national legislation
☑ Increased difficulty in obtaining operations permits
☑ Poor coordination between regulatory bodies

Market

☑ Changing customer behavior

Reputation

☑ Increased partner and stakeholder concern and partner and stakeholder negative feedback
☑ Negative press coverage related to support of projects or activities with negative impacts on the environment (e.g. GHG emissions, deforestation & conversion, water stress)
☑ Stakeholder conflicts concerning water resources at a basin/catchment level

☑ Stigmatization of sector

Technology

☑ Transition to lower emissions technology and products

Liability

☑ Exposure to litigation

☑ Non-compliance with regulations

(2.2.2.14) Partners and stakeholders considered

Select all that apply

☑ Customers

☑ Employees

☑ Investors

☑ Suppliers

☑ Regulators

☑ Local communities

(2.2.2.15) Has this process changed since the previous reporting year?

Select from:

☑ No

(2.2.2.16) Further details of process

Risks and opportunities were defined using an internally defined climate scenario analysis based on guidance from the TCFD. To assist with this process, Essential engaged the Sustainable Engineering graduate program at Villanova University. Given response text size limitations, and since similar processes have been put into place across our company's utilities, we have elected to disclose an abbreviated description of the climate review at our water and wastewater utility: The first step was to define the geographic scope of the study. The purpose of this step was to identify a selection of six cities in the United States for which future climate change could be assessed that would be representative of business operations. The six cities selected for assessment were: Philadelphia, PA; Pittsburgh, PA; Fort Wayne, IN; Raleigh, NC; Dallas, TX; and Austin, TX. The next step in scoping the study was to decide on the temporal boundaries. Two time periods were selected as a historical baseline and two future time periods were selected for future analysis. The two historical time periods selected were from 1950 to 1980 and from 1990 to 2020. The two future time periods selected were in the short-term from 2030 to 2060 and in the long-term from 2070 to 2100. In this study, observed historical data was obtained from the NOAA Climate Data Online store. Using this tool, observed precipitation and temperature data was downloaded for each of the six cities

assessed over the historical time period from 1950 to 2020. The three variables selected for assessment were daily maximum near-surface air temperature, daily minimum near-surface air temperature, and precipitation. CMIP6 climate models were downloaded through the European Commission's Copernicus Climate Data Store. Essential decided to assess future climate in both a low and high emissions scenario. The SSP selected for the low emissions scenario was the sustainability pathway (SSP1-2.6) and the high emissions scenario was the fossil fuel development pathway (SSP5-8.5). A quantitative analysis was then performed for each location utilizing the climate data and internally established significant events thresholds. First, the number of events per year for each model and climate scenario was calculated for each geographic location. Then the number of annual events was averaged across the four models at each location under the climate scenarios. Additionally, the number of significant events for each site over the historical periods of 1950-1980 and 1990-2020 were calculated. Then the percent change in total significant events relative to the historical period of 1990-2020 was calculated for the short term (2030-2060) and long term (2070-2100) time frames. To rank and quantify implications, we referenced information from historical events that directly impacted operations, insights from the physical climate risk assessment, and held multiple workshops with members of management. The objective of a subsequent workshop process was to leverage the expertise of leaders to obtain a list of possible climate change implications. Following the identification of potential risks and opportunities, the next step for the group was to prioritize these. Participants provided scores for the categories of time horizon, likelihood, magnitude of impact, cost to manage, potential financial impact, and applicable regions of the risk or opportunity.
[Add row]

(2.2.7) Are the interconnections between environmental dependencies, impacts, risks and/or opportunities assessed?

(2.2.7.1) Interconnections between environmental dependencies, impacts, risks and/or opportunities assessed

Select from:
☑ No

(2.2.7.3) Primary reason for not assessing interconnections between environmental dependencies, impacts, risks and/or opportunities

Select from:
☑ No standardized procedure

(2.2.7.4) Explain why you do not assess the interconnections between environmental dependencies, impacts, risks and/or opportunities

As noted, Essential is not prepared, at this time, to disclose environmental dependencies and impacts. As such, the company is unable to assess interconnections to disclosed risks and opportunities.
[Fixed row]

(2.3) Have you identified priority locations across your value chain?

(2.3.1) Identification of priority locations

Select from:

☑ No, but we plan to within the next two years

(2.3.7) Primary reason for not identifying priority locations

Select from:

☑ No standardized procedure

(2.3.8) Explain why you do not identify priority locations

Essential's climate management and disclosures are relatively mature. However, our biodiversity management and disclosures are currently being further developed, in accordance with TNFD and other leading frameworks. We recognize and support CDP's efforts to expand corporate disclosure beyond climate change, in a silo, to other environmental topics inclusive of biodiversity. However, at this time, Essential is not prepared to disclose priority locations across the value chain. Please refer to Essential's most recent ESG Report for a new section on biodiversity. We will be expanding our disclosures over the next couple of years and hope to demonstrate a similar level of awareness and management of nature-related issues as climate-related issues.
[Fixed row]

(2.4) How does your organization define substantive effects on your organization?

Risks

(2.4.1) Type of definition

Select all that apply

☑ Qualitative

☑ Quantitative

(2.4.2) Indicator used to define substantive effect

Select from:

☑ Other, please specify :Both capital and expense are included in our definitions of "cost to manage" and "potential financial impact"

(2.4.3) Change to indicator

Select from:

☑ Absolute increase

(2.4.5) Absolute increase/ decrease figure

10000000

(2.4.6) Metrics considered in definition

Select all that apply

☑ Frequency of effect occurring

☑ Time horizon over which the effect occurs

☑ Likelihood of effect occurring

☑ Other, please specify :Time horizon, likelihood, magnitude of impact, cost to manage, potential financial impact, and applicable regions of the risk or opportunity

(2.4.7) Application of definition

Time horizon: Short term through 2035, medium term through 2050, and long term through 2080 Likelihood: Low (0-29%), Medium (30-79%), and High (80-100%) Magnitude of impact: High, medium, and low. Qualitative judgments with factors including operations, reputation, health, and safety. Cost to manage (cumulative cost through time horizon): Low (

Opportunities

(2.4.1) Type of definition

Select all that apply

☑ Qualitative

☑ Quantitative

(2.4.2) Indicator used to define substantive effect

Select from:

☑ Other, please specify :Both capital and expense are included in our definitions of "cost to realize" and "potential financial impact"

(2.4.3) Change to indicator

Select from:

☑ Absolute increase

(2.4.5) Absolute increase/ decrease figure

10000000

(2.4.6) Metrics considered in definition

Select all that apply

☑ Frequency of effect occurring

☑ Time horizon over which the effect occurs

☑ Likelihood of effect occurring

☑ Other, please specify :Time horizon, likelihood, magnitude of impact, cost to manage, potential financial impact, and applicable regions of the risk or opportunity

(2.4.7) Application of definition

Time horizon: Short term through 2035, medium term through 2050, and long term through 2080 Likelihood: Low (0-29%), Medium (30-79%), and High (80-100%) Magnitude of impact: High, medium, and low. Qualitative judgments with factors including operations, reputation, health, and safety. Cost to realize (cumulative cost through time horizon): Low (
[Add row]

C3. Disclosure of risks and opportunities

(3.1) Have you identified any environmental risks which have had a substantive effect on your organization in the reporting year, or are anticipated to have a substantive effect on your organization in the future?

Climate change

(3.1.1) Environmental risks identified

Select from:

☑ Yes, both in direct operations and upstream/downstream value chain

Plastics

(3.1.1) Environmental risks identified

Select from:

☑ No

(3.1.2) Primary reason why your organization does not consider itself to have environmental risks in your direct operations and/or upstream/downstream value chain

Select from:

☑ Other, please specify :Please see explanation.

(3.1.3) Please explain

Essential has not yet undertaken a comprehensive analysis of potential material risks and opportunities related to plastics across its value chain. As a utility that provides water, wastewater, and gas services to customers, our product does not include plastic components or packaging. We do use plastic main for conveyance throughout some of our systems. However, these are long-term infrastructure assets that do have pronounced environmental benefits versus alternatives, such as being less prone to methane leakage. We believe and communicate that our water distribution displaces countless water bottles. Essential's commitment to provide safe and reliable drinking water is a significant driver in plastic use reduction in the community. Further, our extensive habitat restoration and conservation efforts mitigate health and environmental risks that plastics cause around water sources. At this time, given limited resources and an assessment of most material

environmental risks, Essential has elected to prioritize its resources around climate change and biodiversity risk assessment. It will continue to contemplate risks posed by plastics and whether a similarly in-depth assessment around this issue is warranted.
[Fixed row]

(3.1.1) Provide details of the environmental risks identified which have had a substantive effect on your organization in the reporting year, or are anticipated to have a substantive effect on your organization in the future.

Climate change

(3.1.1.1) Risk identifier

Select from:
☑ Risk1

(3.1.1.3) Risk types and primary environmental risk driver

Acute physical
☑ Flooding (coastal, fluvial, pluvial, groundwater)

(3.1.1.4) Value chain stage where the risk occurs

Select from:
☑ Direct operations

(3.1.1.6) Country/area where the risk occurs

Select all that apply
☑ United States of America

(3.1.1.9) Organization-specific description of risk

General flooding risk, Sanitary Sewer Overflow (SSO), Dams (Water and Wastewater Business Unit) – Changing precipitation patterns, including increased intensity and frequency of extreme precipitation events, can put existing water and wastewater infrastructure at risk in a variety of ways. Within the context of flooding,

Essential has identified three sub-risks within the risk of flooding, including a general flooding risk, SSOs, and damage to dams. As a general flooding risk, there is risk to infrastructure planning because of the increased intensity and frequency of extreme precipitation events with a number of assets built below a 500-year floodplain. Heavy precipitation events are also a risk to operations as such events can force even a well-operated and maintained system to experience the occasional sanitary sewer overflow.

(3.1.1.11) Primary financial effect of the risk

Select from:

☑ Increased capital expenditures

(3.1.1.12) Time horizon over which the risk is anticipated to have a substantive effect on the organization

Select all that apply

☑ Medium-term

(3.1.1.13) Likelihood of the risk having an effect within the anticipated time horizon

Select from:

☑ Likely

(3.1.1.14) Magnitude

Select from:

☑ High

(3.1.1.16) Anticipated effect of the risk on the financial position, financial performance and cash flows of the organization in the selected future time horizons

Dam infrastructure upgrades to address extreme events will lead to increased costs related to inspections, operations, and management efforts undertaken by the company to mitigate these issues. Managing recurrent flooding will require additional capital investments for high-velocity storm protection and dam safety measures. This will also increase costs associated with removing non-compliant structures that do not meet current dam regulations. Overall, the costs associated with this flooding sub-risk of sanitary sewer overflows is not expected to pose a material impact to the company. However, further analysis across Essential's footprint is advisable to determine whether there is a need for further capital investment to address this sub-risk.

(3.1.1.17) Are you able to quantify the financial effect of the risk?

Select from:

☑ No

(3.1.1.26) Primary response to risk

Infrastructure, technology and spending

☑ Increase environment-related capital expenditure

(3.1.1.27) Cost of response to risk

0

(3.1.1.28) Explanation of cost calculation

We discussed the financial aspects of this risk with company experts and leaders as part of a Villanova-facilitated workshop series to determine whether a financial analysis would be possible given current available information. Although we were unable, at this time, to finalize financial estimates around costs and impacts for all risks and opportunities, we did determine critical pieces of information such as key financial drivers, future considerations for further discussion, and identification of potential next steps to develop financial models that could determine such figures in the future. At this juncture, however, our teams determined that in some cases we will need additional time, research, technological development, and tools which preclude us from providing a valuable estimate for our stakeholders to consider. We intend to develop such figures in the future and continue these discussions and efforts.

(3.1.1.29) Description of response

Dams and General Flood Risks: An increase in the frequency of small events, as opposed to large storm events, is a more significant aspect to forecast and manage. This is due to the design of the dams, which are built to withstand major events occurring every 100 or 500 years. However, the constant impact of small storm events, such as debris flows causing erosion, can hinder the proper functioning of the dams if not adequately addressed. Basin characteristics could be influenced by changes in precipitation patterns and frequency resulting from climate change. This can increase the material impact and pressure exerted on the dam. The increased changing patterns of weather on the dams necessitates additional maintenance, inspections, and operational reviews. Regarding general flooding risk, the discussion centered on potential insurance complications if flooding events increase. The team does not anticipate any future complications in terms of insurance premium costs. Measures are being taken to ensure alternative options for supplying water to customers in the event of company failures or infrastructure problems. Several state operations are already incorporating climate change modeling into their design processes to account for the variable costs associated with small but frequent and intense storms. Sanitary Sewer Overflows: Most of the costs will stem from pipeline replacements, infiltration control measures, preventive measures for water tank contamination, and other related tasks. Increased worker hours for system maintenance following high rainfall events that occur within a short timeframe can be expected. The most challenging aspect of quantifying the risk lies in determining whether storm events will be concentrated within a few hours. This concentrated precipitation poses a higher risk of system damage compared to prolonged storm events, as it can carry a greater amount of materials that may harm the system.

Climate change

(3.1.1.1) Risk identifier

Select from:

☑ Risk2

(3.1.1.3) Risk types and primary environmental risk driver

Chronic physical

☑ Water stress

(3.1.1.4) Value chain stage where the risk occurs

Select from:

☑ Upstream value chain

(3.1.1.6) Country/area where the risk occurs

Select all that apply

☑ United States of America

(3.1.1.9) Organization-specific description of risk

Water permits and allocations, reduced aquifer levels, mismatch of supply and demand (Water and Wastewater Business Unit) – Essential has identified three sub-risks which risk impacting its business development. Changing precipitation patterns and water scarcity are a risk to operations because of potential water rights and permit allocations. Water scarcity also poses a risk to business development in Texas due as reduced aquifer levels, which creates challenges in meeting customer demand. This is coupled with the risk that current systems could be inadequate to meet future increased water demand resulting from the rise in temperatures, creating a mismatch of supply and demand.

(3.1.1.11) Primary financial effect of the risk

Select from:

☑ Increased indirect [operating] costs

(3.1.1.12) Time horizon over which the risk is anticipated to have a substantive effect on the organization

Select all that apply

☑ Medium-term

(3.1.1.13) Likelihood of the risk having an effect within the anticipated time horizon

Select from:

☑ Very likely

(3.1.1.14) Magnitude

Select from:

☑ High

(3.1.1.16) Anticipated effect of the risk on the financial position, financial performance and cash flows of the organization in the selected future time horizons

There are multiple factors in play related to water scarcity in Texas. Further, climate change thresholds and associated thresholds for concern for Texas often differ from the rest of the company. Additional and more sophisticated climate change model analysis is recommended to further assess this risk as it relates to Texas.

(3.1.1.17) Are you able to quantify the financial effect of the risk?

Select from:

☑ No

(3.1.1.26) Primary response to risk

Engagement

☑ Engage in multi-stakeholder initiatives

(3.1.1.27) Cost of response to risk

0

(3.1.1.28) Explanation of cost calculation

We discussed the financial aspects of this risk with company experts and leaders as part of a Villanova-facilitated workshop series to determine whether a financial analysis would be possible given current available information. Although we were unable, at this time, to finalize financial estimates around costs and impacts for all risks and opportunities, we did determine critical pieces of information such as key financial drivers, future considerations for further discussion, and identification of potential next steps to develop financial models that could determine such figures in the future. At this juncture, however, our teams determined that in some cases we will need additional time, research, technological development, and tools which preclude us from providing a valuable estimate for our stakeholders to consider. We intend to develop such figures in the future and continue these discussions and efforts.

(3.1.1.29) Description of response

It was concluded by Essential that Texas faces the most significant impacts from this risk. 1) While the company, in its updated climate scenario analysis, previously defined high-temperature days as those above 90F, it was recognized that this limit is not applicable to Texas, where temperatures often exceed 100F. 2) The reduction in water source availability presents challenges and limitations based on the physical constraints of existing sources. The company is actively seeking new groundwater sources without further depleting current ones. This includes diversifying water sources and exploring partnerships. However, these efforts often entail an increase in costs and operational complexity. 3) Regarding expansion of real estate development in Texas, all new projects are required to undergo studies to ensure water availability for decades to come. The company extends its services to newly developed communities only when in accordance with regulations and in consideration of water supply challenges and tries to mitigate additional pressure to the existing system. 4) The company also acknowledges the lack of consistent zoning and regulations across different locations in the area. Clearer zoning would help identify areas to protect and promote appropriate development of new real estate ventures. Consistent regulations would provide a framework for the company to work with, facilitating better utilization and assurance of water services in the future. Across the company and especially in Texas, Essential is working on plans to improve irrigation systems, explore opportunities to expand wastewater reuse, develop campaigns on customer education on the use of water, and hire new positions for environmental compliance.

Climate change

(3.1.1.1) Risk identifier

Select from:

☑ Risk3

(3.1.1.3) Risk types and primary environmental risk driver

Chronic physical

☑ Changing temperature (air, freshwater, marine water)

(3.1.1.4) Value chain stage where the risk occurs

Select from:

☑ Direct operations

(3.1.1.6) Country/area where the risk occurs

Select all that apply

☑ United States of America

(3.1.1.9) Organization-specific description of risk

Disinfection byproducts, contaminants of emerging concern (Water and Wastewater Business Unit) – Rising temperatures create risk in operations because of increased water quality concerns including increased disinfection byproducts and contaminants emerging concern. At the same time meeting treatment standards will become more complex as, for example, the costs of water testing increase and there is a need for new treatment methods. For example, chemical disinfection by-products (DBP), either organic or inorganic depending on the context, form as part of normal chemical disinfection treatment. In the case of our operations, the disinfectant most prone to cause DBP is chlorine, which is highly dependent on temperature. Through climate analysis, we determined the potential implications to our business operations under a low emissions scenario (SSP1-2.6) and a high emissions scenario (SSP5-8.5), both of which show rising temperatures in the future, leading to increase chlorine dosages and therefore increased prevalence of DBP. The rising temperatures identified in the climate analysis will also create an environment where blooms of toxin-producing cyanobacteria can proliferate. These organisms produce cyanotoxins, a contaminant of emerging concern, which we have identified as a potential climate-related risk to our ability to provide safe and healthy drinking water to our customers.

(3.1.1.11) Primary financial effect of the risk

Select from:

☑ Increased indirect [operating] costs

(3.1.1.12) Time horizon over which the risk is anticipated to have a substantive effect on the organization

Select all that apply

☑ Medium-term

(3.1.1.13) Likelihood of the risk having an effect within the anticipated time horizon

Select from:

☑ Very likely

(3.1.1.14) Magnitude

Select from:

☑ High

(3.1.1.16) Anticipated effect of the risk on the financial position, financial performance and cash flows of the organization in the selected future time horizons

Our company has discussed various estimates for a simulated scenario of managing twenty reservoirs at risk of harmful algal blooms. Further analysis would yield higher quality estimates to share publicly. Components of the high-level estimate, which totaled several million dollars, included reservoir management, annual monitoring costs, and proactive response costs. In a reactive management scenario, where reservoirs are not managed, there is increased erosion and costs are higher due to larger swings and delayed responses. Components of the high-level estimate included public notices, fines, and consent orders to enforce reservoir management. These considerations highlight the complex nature of addressing emerging contaminants and the associated costs, underscoring efforts towards comprehensive management strategies. The cost of mitigating this risk is subject to multiple variables, including temperature and precipitation fluctuations and organic matter in the water. Further analysis is warranted to narrow the wide high level estimate band the group developed. The estimated costs, once further refined, are expected to be among the most material of the identified climate risks for Essential's water and wastewater operations. Developing accurate and location-specific forecast models is essential for addressing the potential risks and costs associated with DBPs under changing climatic conditions. Further work is advisable in this area.

(3.1.1.17) Are you able to quantify the financial effect of the risk?

Select from:

☑ No

(3.1.1.26) Primary response to risk

Compliance, monitoring and targets

☑ Implementation of environmental best practices in direct operations

(3.1.1.27) Cost of response to risk

0

(3.1.1.28) Explanation of cost calculation

We discussed the financial aspects of this risk with company experts and leaders as part of a Villanova-facilitated workshop series to determine whether a financial analysis would be possible given current available information. Although we were unable, at this time, to finalize financial estimates around costs and impacts for all

risks and opportunities, we did determine critical pieces of information such as key financial drivers, future considerations for further discussion, and identification of potential next steps to develop financial models that could determine such figures in the future. At this juncture, however, our teams determined that in some cases we will need additional time, research, technological development, and tools which preclude us from providing a valuable estimate for our stakeholders to consider. We intend to develop such figures in the future and continue these discussions and efforts.

(3.1.1.29) Description of response

The increase in precipitation associated with climate change can elevate nutrient levels in water, leading to the extreme growth of harmful algal blooms (HABs). Conversely, reduced water availability alters nutrient concentrations, resulting in increased organic carbon, available nutrients, sediment, and other variables that contribute to algal growth. Climate change can also impact reservoirs by necessitating intensified monitoring of nutrients, sediments, and other factors that contribute to HAB blooms. Actions could potentially include the heightened use of carbon activation and constant monitoring and testing, as well as erosion and monitoring infrastructure. DBP levels are expected to increase notably with rising temperatures, particularly if these extreme temperatures persist for longer durations. Concurrently, variations in precipitation, such as an increase in intense storms or reductions in rainfall in different locations, alter water flow and availability. Increased precipitation will lead to higher levels of sediments and organic matter in the water, necessitating additional treatment to coagulate residual substances and an elevated volume and application of chlorine. These factors increase the likelihood of DBP formation, which require additional handling costs. Conversely, reduced precipitation and prolonged drought periods will require the company to utilize stored water, which involves costlier treatments, including chemical processes, and the exploration of new water sources. In both scenarios, processes aimed at reducing organic material in the water can have adverse effects on water availability, especially during periods of decreased precipitation and drought in various locations. Responses could include additional tank mixers to promote precipitation or stratification under high or low temperature conditions as well as implementation of new treatments or enhancements to existing treatment methods.

Climate change

(3.1.1.1) Risk identifier

Select from:

☑ Risk4

(3.1.1.3) Risk types and primary environmental risk driver

Technology

☑ Transition to lower emissions technology and products

(3.1.1.4) Value chain stage where the risk occurs

Select from:

☑ Downstream value chain

(3.1.1.6) Country/area where the risk occurs

Select all that apply

☑ United States of America

(3.1.1.9) Organization-specific description of risk

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.

(3.1.1.11) Primary financial effect of the risk

Select from:

☑ Decreased revenues due to reduced demand for products and services

(3.1.1.12) Time horizon over which the risk is anticipated to have a substantive effect on the organization

Select all that apply

☑ Medium-term

(3.1.1.13) Likelihood of the risk having an effect within the anticipated time horizon

Select from:

☑ Likely

(3.1.1.14) Magnitude

Select from:

☑ High

(3.1.1.16) Anticipated effect of the risk on the financial position, financial performance and cash flows of the organization in the selected future time horizons

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.

(3.1.1.17) Are you able to quantify the financial effect of the risk?

Select from:

☑ No

(3.1.1.26) Primary response to risk

Diversification

☑ Develop new products, services and/or markets

(3.1.1.27) Cost of response to risk

0

(3.1.1.28) Explanation of cost calculation

We are unable to disclose a cost calculation at this time. This risk is directly related to the disclosed opportunity of hydrogen for energy generation. As explained in that opportunity disclosure, at this early juncture of research and development, Essential is unable to produce a financial analysis and associated projection of anticipated implementation across our system..

(3.1.1.29) Description of response

Besides our aggressive emissions-reduction initiatives and exploration into hydrogen blending, which are well documented in this report, there are no specific responses to this risk we can take at this time.

Climate change

(3.1.1.1) Risk identifier

Select from:

☑ Risk5

(3.1.1.3) Risk types and primary environmental risk driver

Technology

☑ Unsuccessful investment in new technologies

(3.1.1.4) Value chain stage where the risk occurs

Select from:

☑ Direct operations

(3.1.1.6) Country/area where the risk occurs

Select all that apply

☑ United States of America

(3.1.1.9) Organization-specific description of risk

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. 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.

(3.1.1.11) Primary financial effect of the risk

Select from:

☑ Increased capital expenditures

(3.1.1.12) Time horizon over which the risk is anticipated to have a substantive effect on the organization

Select all that apply

☑ Medium-term

(3.1.1.13) Likelihood of the risk having an effect within the anticipated time horizon

Select from:

☑ About as likely as not

(3.1.1.14) Magnitude

Select from:

☑ Medium

(3.1.1.16) Anticipated effect of the risk on the financial position, financial performance and cash flows of the organization in the selected future time horizons

At this early juncture, it is too premature to assess or estimate the anticipated financial effect of this risk on the company. The energy landscape is rapidly evolving, with its economics, regulations, and technological facets shifting year-by-year. As such, Essential is proceeding with its research activities and is monitoring ongoing developments in the industry and with regulators.

(3.1.1.17) Are you able to quantify the financial effect of the risk?

Select from:

☑ No

(3.1.1.26) Primary response to risk

Diversification

☑ Develop new products, services and/or markets

(3.1.1.27) Cost of response to risk

0

(3.1.1.28) Explanation of cost calculation

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.

(3.1.1.29) Description of response

The company is currently exploring the feasibility of hydrogen blending, renewable natural gas, and other alternative energy sources. Some technologies, such as hydrogen blending, are in the research phase and are not expected to be implemented within our systems in the short-run.

Climate change

(3.1.1.1) Risk identifier

Select from:

☑ Risk6

(3.1.1.3) Risk types and primary environmental risk driver

Policy

☑ Changes to regulation of existing products and services

(3.1.1.4) Value chain stage where the risk occurs

Select from:

☑ Direct operations

(3.1.1.6) Country/area where the risk occurs

Select all that apply

☑ United States of America

(3.1.1.9) Organization-specific description of risk

Policy and Regulation Shifts (Gas Business Unit)- This risk relates to potential changes in policies and regulations affecting natural gas utilities. Uncertainty in regulatory environments can hinder investment in research and development and strategic planning. As a utility, the company has a long-term orientation and makes capital investments that often span generations. In a tumultuous political and regulatory environment, this business activity becomes more challenging. More stability in the nation's and region's energy future would promote sound capital investment decisions.

(3.1.1.11) Primary financial effect of the risk

Select from:

☑ Constraint to growth

(3.1.1.12) Time horizon over which the risk is anticipated to have a substantive effect on the organization

Select all that apply

☑ Short-term

(3.1.1.13) Likelihood of the risk having an effect within the anticipated time horizon

Select from:

☑ Virtually certain

(3.1.1.14) Magnitude

Select from:

☑ Medium-high

(3.1.1.16) Anticipated effect of the risk on the financial position, financial performance and cash flows of the organization in the selected future time horizons

This risk's potential financial implications are varied and depend on how events and circumstances come to pass. It is difficult to make an assessment at this point in time. Regulations could promote traditional natural gas utility operations, hinder traditional natural gas utility operations, incentivize gas utilities to develop alternative energy technologies, or some mix between these. Each regulation might have a different effect on the company's financial position.

(3.1.1.17) Are you able to quantify the financial effect of the risk?

Select from:

☑ No

(3.1.1.26) Primary response to risk

Engagement

☑ Engage with regulators/policy makers

(3.1.1.27) Cost of response to risk

0

(3.1.1.28) Explanation of cost calculation

The cost of response to this risk, in the short-term, is not material as this would include ongoing engagement with regulators and policymakers, as well as monitoring such developments.

(3.1.1.29) Description of response

The company will continue to engage in dialogue with regulators and policymakers while understanding that the environment in which the company operates is multi-faceted and involves many different stakeholders.
[Add row]

(3.1.2) Provide the amount and proportion of your financial metrics from the reporting year that are vulnerable to the substantive effects of environmental risks.

Climate change

(3.1.2.1) Financial metric

Select from:

☑ Other, please specify **:**N/A

(3.1.2.2) Amount of financial metric vulnerable to transition risks for this environmental issue (unit currency as selected in 1.2)

0

(3.1.2.3) % of total financial metric vulnerable to transition risks for this environmental issue

Select from:

☑ 100%

(3.1.2.4) Amount of financial metric vulnerable to physical risks for this environmental issue (unit currency as selected in 1.2)

0

(3.1.2.5) % of total financial metric vulnerable to physical risks for this environmental issue

Select from:

☑ 100%

(3.1.2.7) Explanation of financial figures

As noted in section 3.1.1, Essential is unable at this time to calculate and disclose a comprehensive financial modeling of the disclosed climate risks.
[Add row]

(3.6) Have you identified any environmental opportunities which have had a substantive effect on your organization in the reporting year, or are anticipated to have a substantive effect on your organization in the future?

	Environmental opportunities identified
Climate change	*Select from:* ☑ Yes, we have identified opportunities, and some/all are being realized

[Fixed row]

(3.6.1) Provide details of the environmental opportunities identified which have had a substantive effect on your organization in the reporting year, or are anticipated to have a substantive effect on your organization in the future.

Climate change

(3.6.1.1) Opportunity identifier

Select from:

☑ Opp1

(3.6.1.3) Opportunity type and primary environmental opportunity driver

Resilience

☑ Increased resilience to impacts of climate change

(3.6.1.4) Value chain stage where the opportunity occurs

Select from:

☑ Direct operations

(3.6.1.5) Country/area where the opportunity occurs

Select all that apply

☑ United States of America

(3.6.1.8) Organization specific description

Through master planning, integrate climate analyses into long-term capital budgeting (water and wastewater business unit): Master planning is an opportunity for Essential to integrate the results of these climate analyses into the capital planning process undertaken by engineering teams to mitigate climate-related risks. This opportunity relates to standardization of a process by which Essential would systematically incorporate detailed and technical future-state climate modeling into the master planning process. This would improve long-term resiliency and orient planning of assets around long-term climate implications and risk but require additional tools, expertise, and other resources.

(3.6.1.9) Primary financial effect of the opportunity

Select from:

☑ Reduced indirect (operating) costs

(3.6.1.10) Time horizon over which the opportunity is anticipated to have a substantive effect on the organization

Select all that apply

☑ Medium-term

(3.6.1.11) Likelihood of the opportunity having an effect within the anticipated time horizon

Select from:

☑ Likely (66–100%)

(3.6.1.12) Magnitude

Select from:

☑ Medium

(3.6.1.14) Anticipated effect of the opportunity on the financial position, financial performance and cash flows of the organization in the selected future time horizons

Accurate cost calculations would necessitate conducting location-specific studies on climate change, performing cross-referenced analyses of all risk and opportunity factors and drivers, assessing the vulnerabilities of existing infrastructure under various climate change scenarios, and more. This opportunity necessarily relies upon

financial analysis conducted for all other risks and opportunities identified. Given these complex considerations, there is currently a high degree of uncertainty, making it challenging to provide specific cost estimates at this juncture. We discussed the financial aspects of this opportunity with company experts and leaders as part of a Villanova-facilitated workshop series to determine whether a financial analysis would be possible given current available information.

(3.6.1.15) Are you able to quantify the financial effects of the opportunity?

Select from:

☑ No

(3.6.1.24) Cost to realize opportunity

0

(3.6.1.25) Explanation of cost calculation

We discussed the financial aspects of this opportunity with company experts and leaders as part of a Villanova-facilitated workshop series to determine whether a financial analysis would be possible given current available information. Although we were unable, at this time, to finalize financial estimates around costs and impacts for all risks and opportunities, we did determine critical pieces of information such as key financial drivers, future considerations for further discussion, and identification of potential next steps to develop financial models that could determine such figures in the future. At this juncture, however, our teams determined that in some cases we will need additional time, research, technological development, and tools which preclude us from providing a valuable estimate for our stakeholders to consider. We intend to develop such figures in the future and continue these discussions and efforts.

(3.6.1.26) Strategy to realize opportunity

While climate change has historically factored less prominently in master planning, there is great opportunity for its expanded and more formalized inclusion as a significant consideration point when developing the capital budget for the next decade. This may be an incremental process, especially in the near term, but such discussion among company leaders of climate change through the lens of each project the company undertakes will be fruitful and add to strong financial and environmental stewardship practices that already exist.

Climate change

(3.6.1.1) Opportunity identifier

Select from:

☑ Opp2

(3.6.1.3) Opportunity type and primary environmental opportunity driver

Products and services

☑ Increased sales of existing products and services

(3.6.1.4) Value chain stage where the opportunity occurs

Select from:

☑ Direct operations

(3.6.1.5) Country/area where the opportunity occurs

Select all that apply

☑ United States of America

(3.6.1.8) Organization specific description

System purchases due to increased water quality and quantity issues at other utilities (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 the impacts of climate change. As the climate changes, water and wastewater systems will become more complex to operate and require increased capital investment to meet change; this can include challenges such as more complex treatments being required to address emerging contaminants of concern or increased expertise and capital needed to meet the demands of increasingly complex emerging regulatory compliance. While these can present as risks our business, they also present opportunities for acquisition of smaller-scale 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 prior 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. Workshop 1: Growth Opportunities Through System Acquisitions Participants: Villanova (facilitator), ESG Manager, Director of Strategy and Corporate Development, Regulatory Counsel.

(3.6.1.9) Primary financial effect of the opportunity

Select from:

☑ Increased revenues resulting from increased demand for products and services

(3.6.1.10) Time horizon over which the opportunity is anticipated to have a substantive effect on the organization

Select all that apply

☑ Medium-term

(3.6.1.11) Likelihood of the opportunity having an effect within the anticipated time horizon

Select from:

☑ Likely (66–100%)

(3.6.1.12) Magnitude

Select from:

☑ High

(3.6.1.14) Anticipated effect of the opportunity on the financial position, financial performance and cash flows of the organization in the selected future time horizons

Given the complex multi-factor decision-making process of municipalities that drives system acquisitions, the group cannot determine a definitive increase or decrease in Essential's business growth attributable to climate change. While acknowledging the reality of climate change, the magnitude of its impact can vary between states, and the societal response remains uncertain. Similarly, political and regulatory scenarios are contingent upon a wide range of variables, which can either promote or hinder opportunities for business expansion.

(3.6.1.15) Are you able to quantify the financial effects of the opportunity?

Select from:

☑ No

(3.6.1.24) Cost to realize opportunity

0

(3.6.1.25) Explanation of cost calculation

Although a financial estimate is not possible at this juncture, there is an opportunity for Essential's business development team to have candid conversations with municipal operators about climate change and the degree to which public systems are prepared for its primary and secondary impacts. By demonstrating climate leadership, Essential can both as a model for others in the industry as well as enhance its attractiveness for municipalities interested in selling their systems.

(3.6.1.26) Strategy to realize opportunity

We discussed the financial aspects of this opportunity with company experts and leaders as part of a Villanova-facilitated workshop series to determine whether a financial analysis would be possible given current available information. Although we were unable, at this time, to finalize financial estimates around costs and impacts for all risks and opportunities, we did determine critical pieces of information such as key financial drivers, future considerations for further discussion, and identification of potential next steps to develop financial models that could determine such figures in the future. At this juncture, however, our teams determined that in some cases we will need additional time, research, technological development, and tools which preclude us from providing a valuable estimate for our stakeholders to consider. We intend to develop such figures in the future and continue these discussions and efforts.

Climate change

(3.6.1.1) Opportunity identifier

Select from:

☑ Opp3

(3.6.1.3) Opportunity type and primary environmental opportunity driver

Energy source

☑ Use of renewable energy sources

(3.6.1.4) Value chain stage where the opportunity occurs

Select from:

☑ Direct operations

(3.6.1.5) Country/area where the opportunity occurs

Select all that apply

☑ United States of America

(3.6.1.8) Organization specific description

Hydrogen is a potential alternative energy source that can be integrated into existing natural gas infrastructure. It offers opportunities for business evolution and sustainability. While it introduces additional safety and operational complexities, the benefits include aligning with green energy trends and attracting investment. The

U.S. and international communities are exploring hydrogen as a clean energy source, with various initiatives promoting its development. The U.S. Department of Energy's Hydrogen Program and global initiatives like the European Green Deal support hydrogen's role in achieving decarbonization goals. This opportunity aligns with these broader trends, providing a pathway for Essential Utilities to contribute to the green transition.

(3.6.1.9) Primary financial effect of the opportunity

Select from:

☑ Returns on investment in low-emission technology

(3.6.1.10) Time horizon over which the opportunity is anticipated to have a substantive effect on the organization

Select all that apply

☑ Medium-term

(3.6.1.11) Likelihood of the opportunity having an effect within the anticipated time horizon

Select from:

☑ About as likely as not (33–66%)

(3.6.1.12) Magnitude

Select from:

☑ High

(3.6.1.14) Anticipated effect of the opportunity on the financial position, financial performance and cash flows of the organization in the selected future time horizons

Absent further developments in regulation, commercialization, and production, it remains uncertain how hydrogen blending might impact the financial position of the company beyond an initial capital investment required to research and develop this technology.

(3.6.1.15) Are you able to quantify the financial effects of the opportunity?

Select from:

☑ No

(3.6.1.24) Cost to realize opportunity

0

(3.6.1.25) Explanation of cost calculation

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 in addition to conducting our own studies. 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

(3.6.1.26) Strategy to realize opportunity

Essential and the University of Pittsburgh's Swanson School of Engineering have entered a partnership to explore the use of hydrogen as a future energy source. Together, the organizations studies the potential of safely and securely transporting hydrogen through Essential's natural gas delivery systems. The partnership consists of two phases. The first phase conducted benchmarking and research focusing on the existing infrastructure, concentrating on technical issues involved with using natural gas pipelines to transport hydrogen or a hydrogen and natural gas blend. The second phase involves implementation of a pilot project that tests the injection of hydrogen blend in real-world applications, including pipeline material degradation and the impact of hydrogen blend on end-users' natural gas fueled equipment. Additionally, in both 2022 and 2023, Essential co-hosted energy industry leaders, investors, innovators, regulators and top practitioners at the H2 Conference in Pittsburgh. This event has positioned Appalachia and the Pittsburgh region as leaders in global energy innovation. Discussion topics and presentations have revolved around the region's role in large-scale hydrogen hubs being proposed by the U.S. Department of Energy. Additional central themes include the latest research, progress and best practices in commercializing this technology.

Climate change

(3.6.1.1) Opportunity identifier

Select from:

☑ Opp4

(3.6.1.3) Opportunity type and primary environmental opportunity driver

Energy source

☑ Use of renewable energy sources

(3.6.1.4) Value chain stage where the opportunity occurs

Select from:

☑ Direct operations

(3.6.1.5) Country/area where the opportunity occurs

Select all that apply

☑ United States of America

(3.6.1.8) Organization 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.

(3.6.1.9) Primary financial effect of the opportunity

Select from:

☑ Returns on investment in low-emission technology

(3.6.1.10) Time horizon over which the opportunity is anticipated to have a substantive effect on the organization

Select all that apply

☑ Short-term

(3.6.1.11) Likelihood of the opportunity having an effect within the anticipated time horizon

Select from:

☑ About as likely as not (33–66%)

(3.6.1.12) Magnitude

Select from:

☑ Medium

(3.6.1.14) Anticipated effect of the opportunity on the financial position, financial performance and cash flows of the organization in the selected future time horizons

Absent further developments in regulation, commercialization, and production cost declines, it remains uncertain how renewable natural gas might impact the financial position of the company.

(3.6.1.15) Are you able to quantify the financial effects of the opportunity?

Select from:

☑ No

(3.6.1.24) Cost to realize opportunity

0

(3.6.1.25) Explanation of cost calculation

Aside from direct cost of the supply, there are not material costs to realize the opportunity of blending renewable natural gas.

(3.6.1.26) Strategy to realize opportunity

Although renewable natural gas has been commercialized to varying degrees, Essential is currently unable to pursue this opportunity further due to state-level regulations that mandate the utility must supply customers with the lowest cost of gas. As such, and because there is a cost premium for RNG, this remains a barrier until such a time when regulations or economics change.

Climate change

(3.6.1.1) Opportunity identifier

Select from:

☑ Opp5

(3.6.1.3) Opportunity type and primary environmental opportunity driver

Resource efficiency

☑ Increased efficiency of production and/or distribution processes

(3.6.1.4) Value chain stage where the opportunity occurs

Select from:

☑ Direct operations

(3.6.1.5) Country/area where the opportunity occurs

Select all that apply

☑ United States of America

(3.6.1.8) Organization specific description

Leak detection focuses on enhancing safety and reducing environmental risks. By adopting advanced technologies, companies can minimize the risk of gas leaks and related incidents. This opportunity requires a focus on enhancing safety protocols and regulatory compliance. Effective leak detection is crucial in the transition to cleaner energy. It aligns with regulatory requirements and environmental goals, helping to reduce greenhouse gas emissions and prevent catastrophic events. In the U.S., there is increasing emphasis on safety and compliance, with regulatory bodies requiring rigorous leak detection standards. This opportunity supports sustainability objectives while ensuring operational safety and regulatory compliance.

(3.6.1.9) Primary financial effect of the opportunity

Select from:

☑ Reduced direct costs

(3.6.1.10) Time horizon over which the opportunity is anticipated to have a substantive effect on the organization

Select all that apply

☑ Short-term

(3.6.1.11) Likelihood of the opportunity having an effect within the anticipated time horizon

Select from:

☑ About as likely as not (33–66%)

(3.6.1.12) Magnitude

Select from:

☑ Medium

(3.6.1.14) Anticipated effect of the opportunity on the financial position, financial performance and cash flows of the organization in the selected future time horizons

Reducing gas leaks means a higher percentage of our product reaches the customer rather than is wasted. As such, there is a direct financial link between reducing leaks and reducing gas supply costs.

(3.6.1.15) Are you able to quantify the financial effects of the opportunity?

Select from:

☑ No

(3.6.1.24) Cost to realize opportunity

0

(3.6.1.25) Explanation of cost calculation

At this time, Essential is not prepared to disclose a financial estimate of costs to realize the opportunity. These costs depend on feasibility and expected benefits of various advanced leak detection technologies besides those already in place across our footprint.

(3.6.1.26) Strategy to realize opportunity

Essential is monitoring changes in the industry best practices as well as the prospect of new and more advanced leak detection technologies that can be implemented across our footprint.
[Add row]

(3.6.2) Provide the amount and proportion of your financial metrics in the reporting year that are aligned with the substantive effects of environmental opportunities.

Climate change

(3.6.2.1) Financial metric

Select from:

☑ Other, please specify **:**N/A

(3.6.2.2) Amount of financial metric aligned with opportunities for this environmental issue (unit currency as selected in 1.2)

0

(3.6.2.3) % of total financial metric aligned with opportunities for this environmental issue

Select from:

☑ 100%

(3.6.2.4) Explanation of financial figures

As noted in section 3.6.1, Essential is unable at this time to calculate and disclose a comprehensive financial modeling of the disclosed climate opportunities.
[Add row]

C4. Governance

(4.1) Does your organization have a board of directors or an equivalent governing body?

(4.1.1) Board of directors or equivalent governing body

Select from:

☑ Yes

(4.1.2) Frequency with which the board or equivalent meets

Select from:

☑ More frequently than quarterly

(4.1.3) Types of directors your board or equivalent is comprised of

Select all that apply

☑ Executive directors or equivalent

☑ Non-executive directors or equivalent

☑ Independent non-executive directors or equivalent

(4.1.4) Board diversity and inclusion policy

Select from:

☑ Yes, and it is publicly available

(4.1.5) Briefly describe what the policy covers

We encourage our stakeholders to review the Board Composition section of our most recent ESG Report (https://esg.essential.co/governance#corporate-governance). Fostering board diversity is a tenant of Essential's corporate governance practice. When assessing a candidate, consideration will be given to the effect such candidate will have on the diversity of the board. Diversity of the board is evaluated by considering a broad range of attributes, including, without limitation, race, gender and national origin, background, demographics, expertise and experience.

(4.1.6) Attach the policy (optional)

2023-essential-esg (22).pdf
[Fixed row]

(4.1.1) Is there board-level oversight of environmental issues within your organization?

	Board-level oversight of this environmental issue
Climate change	*Select from:* ☑ Yes
Biodiversity	*Select from:* ☑ Yes

[Fixed row]

(4.1.2) Identify the positions (do not include any names) of the individuals or committees on the board with accountability for environmental issues and provide details of the board's oversight of environmental issues.

Climate change

(4.1.2.1) Positions of individuals or committees with accountability for this environmental issue

Select all that apply
☑ Chief Executive Officer (CEO)
☑ Chief Financial Officer (CFO)
☑ Chief Sustainability Officer (CSO)
☑ Board-level committee

☑ Other, please specify :ESG Oversight Committee, a management committee comprised of numerous functional leaders across the organization. See https://esg.essential.co/governance#governance-of-esg for more details.

(4.1.2.2) Positions' accountability for this environmental issue is outlined in policies applicable to the board

Select from:

☑ Yes

(4.1.2.3) Policies which outline the positions' accountability for this environmental issue

Select all that apply

☑ Individual role descriptions

☑ Other policy applicable to the board, please specify :Committee Charter

(4.1.2.4) Frequency with which this environmental issue is a scheduled agenda item

Select from:

☑ Scheduled agenda item in some board meetings – at least annually

(4.1.2.5) Governance mechanisms into which this environmental issue is integrated

Select all that apply

☑ Reviewing and guiding annual budgets

☑ Overseeing and guiding scenario analysis

☑ Overseeing the setting of corporate targets

☑ Monitoring progress towards corporate targets

☑ Approving corporate policies and/or commitments

☑ Monitoring the implementation of the business strategy

☑ Overseeing reporting, audit, and verification processes

☑ Monitoring the implementation of a climate transition plan

☑ Overseeing and guiding the development of a business strategy

☑ Overseeing and guiding acquisitions, mergers, and divestitures

☑ Monitoring supplier compliance with organizational requirements

☑ Overseeing and guiding public policy engagement

☑ Overseeing and guiding public policy engagement

☑ Reviewing and guiding innovation/R&D priorities

☑ Approving and/or overseeing employee incentives

☑ Overseeing and guiding major capital expenditures

☑ Monitoring compliance with corporate policies and/or commitments

☑ Overseeing and guiding the development of a climate transition plan

☑ Reviewing and guiding the assessment process for dependencies, impacts, risks, and opportunities

(4.1.2.7) Please explain

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. 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. There are multiple formal channels by which the board provides clear oversight on enterprise risk management policies, which include climate-related matters. 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. 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. A dashboard showing progress against climate-related goals and targets is presented to the board and discussed at each meeting, five times per year. 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. 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. 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.

Biodiversity

(4.1.2.1) Positions of individuals or committees with accountability for this environmental issue

Select all that apply

☑ Chief Executive Officer (CEO)

☑ Chief Financial Officer (CFO)

☑ Chief Sustainability Officer (CSO)

☑ Board-level committee

☑ Other, please specify **:**ESG Oversight Committee, a management committee comprised of numerous functional leaders across the organization. See https://esg.essential.co/governance#governance-of-esg for more details.

(4.1.2.2) Positions' accountability for this environmental issue is outlined in policies applicable to the board

Select from:

☑ Yes

(4.1.2.3) Policies which outline the positions' accountability for this environmental issue

Select all that apply

☑ Individual role descriptions

☑ Other policy applicable to the board, please specify **:**Committee Charter

(4.1.2.4) Frequency with which this environmental issue is a scheduled agenda item

Select from:

☑ Scheduled agenda item in some board meetings – at least annually

(4.1.2.5) Governance mechanisms into which this environmental issue is integrated

Select all that apply

☑ Reviewing and guiding annual budgets

☑ Overseeing and guiding scenario analysis

☑ Overseeing the setting of corporate targets

☑ Monitoring progress towards corporate targets

☑ Approving corporate policies and/or commitments

☑ Monitoring the implementation of the business strategy

☑ Overseeing reporting, audit, and verification processes

☑ Monitoring the implementation of a climate transition plan

☑ Overseeing and guiding the development of a business strategy

☑ Overseeing and guiding acquisitions, mergers, and divestitures

☑ Monitoring supplier compliance with organizational requirements

☑ Monitoring compliance with corporate policies and/or commitments

☑ Overseeing and guiding the development of a climate transition plan

☑ Reviewing and guiding the assessment process for dependencies, impacts, risks, and opportunities

☑ Overseeing and guiding public policy engagement

☑ Overseeing and guiding public policy engagement

☑ Reviewing and guiding innovation/R&D priorities

☑ Approving and/or overseeing employee incentives

☑ Overseeing and guiding major capital expenditures

(4.1.2.7) Please explain

The board views the strategic direction of Essential within the proper context of biodiversity matters. It is not a separate, siloed analysis but rather biodiversity-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 biodiversity and the health of a thriving natural environment are accounted for within enterprise strategic planning. The board is and wishes to be actively involved in reviewing and guiding Essential's ongoing work to formalize and expand its programs around biodiversity and conservation. There are multiple formal channels by which the board provides clear oversight on enterprise risk management policies, which include environmental matters. 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. The board provides strong governance on such matters, which include major infrastructure initiatives that have biodiversity and ecosystem health implications. Our infrastructure modernization initiatives, such as our main replacement and treatment activities, 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 Essential's environmental commitments. The board reviews Essential's business plans and strategy in light of ecosystem-related matters and provides its perspective and guidance to management as key initiatives and actions are discussed.
[Fixed row]

(4.2) Does your organization's board have competency on environmental issues?

Climate change

(4.2.1) Board-level competency on this environmental issue

Select from:
☑ Yes

(4.2.2) Mechanisms to maintain an environmentally competent board

Select all that apply
☑ Consulting regularly with an internal, permanent, subject-expert working group
☑ Integrating knowledge of environmental issues into board nominating process
☑ Having at least one board member with expertise on this environmental issue

(4.2.3) Environmental expertise of the board member

Experience
☑ Executive-level experience in a role focused on environmental issues
☑ Management-level experience in a role focused on environmental issues

☑ Staff-level experience in a role focused on environmental issues

☑ Experience in an organization that is exposed to environmental-scrutiny and is going through a sustainability transition

Other

☑ Other, please specify **:**Our board, which includes several utility executives and experts, are very familiar and adept with responsible environmental management, especially relating to the energy sector.

[Fixed row]

(4.3) Is there management-level responsibility for environmental issues within your organization?

	Management-level responsibility for this environmental issue
Climate change	*Select from:* ☑ Yes
Biodiversity	*Select from:* ☑ Yes

[Fixed row]

(4.3.1) Provide the highest senior management-level positions or committees with responsibility for environmental issues (do not include the names of individuals).

Climate change

(4.3.1.1) Position of individual or committee with responsibility

Executive level

☑ Chief Executive Officer (CEO)

(4.3.1.2) Environmental responsibilities of this position

Dependencies, impacts, risks and opportunities

☑ Managing environmental dependencies, impacts, risks, and opportunities

Engagement

☑ Managing engagement in landscapes and/or jurisdictions

☑ Managing public policy engagement related to environmental issues

Policies, commitments, and targets

☑ Setting corporate environmental policies and/or commitments

☑ Setting corporate environmental targets

Strategy and financial planning

☑ Developing a climate transition plan

☑ Implementing a climate transition plan

☑ Managing annual budgets related to environmental issues

☑ Implementing the business strategy related to environmental issues

☑ Developing a business strategy which considers environmental issues

☑ Managing acquisitions, mergers, and divestitures related to environmental issues

☑ Managing major capital and/or operational expenditures relating to environmental issues

☑ Managing priorities related to innovation/low-environmental impact products or services (including R&D)

Other

☑ Providing employee incentives related to environmental performance

(4.3.1.4) Reporting line

Select from:

☑ Reports to the board directly

(4.3.1.5) Frequency of reporting to the board on environmental issues

Select from:

☑ Annually

(4.3.1.6) Please explain

Our Chief Executive Officer, who also serves as the board's Chair, is responsible for Essential's overall direction and strategy related to environmental issues for operations and aligning corporate growth with consideration of environment-related issues. Further, the CEO is the most direct interface with current and future investors in addressing our company's alignment with ESG and environmental goals. As such, the CEO provides a valuable voice and perspective to board discussions on environmental matters and serves as a crucial bridge between the board and the company's management to ensure alignment on such matters. Essential's CEO actively engages in many meetings and discussions throughout the year on these subjects, both internally and with the larger utilities industry. Further, this individual is present when this board committee is given an annual deep dive into the topic of climate change and the environment by the VP Chief Environmental, Safety, and Sustainability Officer. A critical link between management and the board, the CEO/Chair is present for all board discussions that may relate to climate change or its impacts on company strategy. Further, some of the CEO's direct reports are active members of the ESG Oversight Committee. Reporting to the board on environmental matters occurs at least annually, but also as important matters arise. In practice, this has historically led to multiple presentations per year to the board. Reporting to the board on environmental matters occurs at least annually, but also as important matters arise. In practice, this has historically led to multiple presentations per year to the board.

Biodiversity

(4.3.1.1) Position of individual or committee with responsibility

Executive level

☑ Chief Executive Officer (CEO)

(4.3.1.2) Environmental responsibilities of this position

Dependencies, impacts, risks and opportunities

☑ Managing environmental dependencies, impacts, risks, and opportunities

Engagement

☑ Managing engagement in landscapes and/or jurisdictions

☑ Managing public policy engagement related to environmental issues

Policies, commitments, and targets

☑ Setting corporate environmental policies and/or commitments

☑ Setting corporate environmental targets

Strategy and financial planning

☑ Developing a climate transition plan

☑ Implementing a climate transition plan

☑ Managing annual budgets related to environmental issues

☑ Implementing the business strategy related to environmental issues

☑ Developing a business strategy which considers environmental issues

☑ Managing acquisitions, mergers, and divestitures related to environmental issues

☑ Managing major capital and/or operational expenditures relating to environmental issues

☑ Managing priorities related to innovation/low-environmental impact products or services (including R&D)

Other

☑ Providing employee incentives related to environmental performance

(4.3.1.4) Reporting line

Select from:

☑ Reports to the board directly

(4.3.1.5) Frequency of reporting to the board on environmental issues

Select from:

☑ Annually

(4.3.1.6) Please explain

Our Chief Executive Officer, who also serves as the board's Chair, is responsible for Essential's overall direction and strategy related to environmental issues for operations and aligning corporate growth with consideration of environment-related issues. Further, the CEO is the most direct interface with current and future investors in addressing our company's alignment with ESG and environmental goals. As such, the CEO provides a valuable voice and perspective to board discussions on environmental matters and serves as a crucial bridge between the board and the company's management to ensure alignment on such matters.

Essential's CEO actively engages in many meetings and discussions throughout the year on these subjects, both internally and with the larger utilities industry. Further, this individual is present when this board committee is given an annual deep dive into the topic of climate change and the environment by the VP Chief Environmental, Safety, and Sustainability Officer. A critical link between management and the board, the CEO/Chair is present for all board discussions that may relate to climate change or its impacts on company strategy. Further, some of the CEO's direct reports are active members of the ESG Oversight Committee.

Climate change

(4.3.1.1) Position of individual or committee with responsibility

Committee

☑ Environmental, Social, Governance committee

(4.3.1.2) Environmental responsibilities of this position

Dependencies, impacts, risks and opportunities

☑ Assessing environmental dependencies, impacts, risks, and opportunities

☑ Assessing future trends in environmental dependencies, impacts, risks, and opportunities

☑ Managing environmental dependencies, impacts, risks, and opportunities

Engagement

☑ Managing engagement in landscapes and/or jurisdictions

☑ Managing public policy engagement related to environmental issues

☑ Managing supplier compliance with environmental requirements

☑ Managing value chain engagement related to environmental issues

Policies, commitments, and targets

☑ Monitoring compliance with corporate environmental policies and/or commitments

☑ Measuring progress towards environmental corporate targets

☑ Measuring progress towards environmental science-based targets

☑ Setting corporate environmental policies and/or commitments

☑ Setting corporate environmental targets

Strategy and financial planning

☑ Developing a climate transition plan

☑ Implementing a climate transition plan

☑ Conducting environmental scenario analysis

☑ Managing annual budgets related to environmental issues

☑ Implementing the business strategy related to environmental issues

☑ Developing a business strategy which considers environmental issues

☑ Managing environmental reporting, audit, and verification processes

☑ Managing acquisitions, mergers, and divestitures related to environmental issues

☑ Managing major capital and/or operational expenditures relating to environmental issues

☑ Managing priorities related to innovation/low-environmental impact products or services (including R&D)

Other

☑ Providing employee incentives related to environmental performance

(4.3.1.4) Reporting line

Select from:

☑ Reports to the Chief Executive Officer (CEO)

(4.3.1.5) Frequency of reporting to the board on environmental issues

Select from:

☑ Not reported to the board

(4.3.1.6) Please explain

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. Climate change and biodiversity are typically the ESG topics that receives the largest amount of time and consideration in the meetings, which can last up to 90 minutes quarterly. The ESG Manager is responsible for presenting to this committee, which also includes the VP Chief Environmental, Safety, and Sustainability Officer, among about a dozen other senior executives. This committee, itself and as a group, does not report or present directly to the Board. However, as noted, certain individuals do undertake those responsibility's on the group's behalf.

Biodiversity

(4.3.1.1) Position of individual or committee with responsibility

Committee

☑ Environmental, Social, Governance committee

(4.3.1.2) Environmental responsibilities of this position

Dependencies, impacts, risks and opportunities

☑ Assessing environmental dependencies, impacts, risks, and opportunities

☑ Assessing future trends in environmental dependencies, impacts, risks, and opportunities

☑ Managing environmental dependencies, impacts, risks, and opportunities

Engagement

☑ Managing engagement in landscapes and/or jurisdictions

☑ Managing public policy engagement related to environmental issues

☑ Managing supplier compliance with environmental requirements

☑ Managing value chain engagement related to environmental issues

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☑ Monitoring compliance with corporate environmental policies and/or commitments

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☑ Setting corporate environmental targets

Strategy and financial planning

☑ Developing a climate transition plan

☑ Implementing a climate transition plan

☑ Conducting environmental scenario analysis

☑ Managing annual budgets related to environmental issues

☑ Implementing the business strategy related to environmental issues
☑ Developing a business strategy which considers environmental issues
☑ Managing environmental reporting, audit, and verification processes
☑ Managing acquisitions, mergers, and divestitures related to environmental issues
☑ Managing major capital and/or operational expenditures relating to environmental issues
☑ Managing priorities related to innovation/low-environmental impact products or services (including R&D)

Other
☑ Providing employee incentives related to environmental performance

(4.3.1.4) Reporting line

Select from:
☑ Reports to the Chief Executive Officer (CEO)

(4.3.1.5) Frequency of reporting to the board on environmental issues

Select from:
☑ Not reported to the board

(4.3.1.6) Please explain

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. Climate change and biodiversity are typically the ESG topics that receives the largest amount of time and consideration in the meetings, which can last up to 90 minutes quarterly. The ESG Manager is responsible for presenting to this committee, which also includes the VP Chief Environmental, Safety, and Sustainability Officer, among about a dozen other senior executives. This committee, itself and as a group, does not report or present directly to the Board. However, as noted, certain individuals do undertake those responsibility's on the group's behalf.

Climate change

(4.3.1.1) Position of individual or committee with responsibility

Executive level

☑ Chief Sustainability Officer (CSO)

(4.3.1.2) Environmental responsibilities of this position

Dependencies, impacts, risks and opportunities

☑ Assessing environmental dependencies, impacts, risks, and opportunities

☑ Assessing future trends in environmental dependencies, impacts, risks, and opportunities

☑ Managing environmental dependencies, impacts, risks, and opportunities

Engagement

☑ Managing engagement in landscapes and/or jurisdictions

Policies, commitments, and targets

☑ Monitoring compliance with corporate environmental policies and/or commitments

☑ Measuring progress towards environmental corporate targets

☑ Measuring progress towards environmental science-based targets

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☑ Setting corporate environmental targets

Strategy and financial planning

☑ Developing a climate transition plan

☑ Implementing a climate transition plan

☑ Conducting environmental scenario analysis

☑ Managing annual budgets related to environmental issues

☑ Implementing the business strategy related to environmental issues

☑ Developing a business strategy which considers environmental issues

☑ Managing environmental reporting, audit, and verification processes

☑ Managing major capital and/or operational expenditures relating to environmental issues

☑ Managing priorities related to innovation/low-environmental impact products or services (including R&D)

(4.3.1.4) Reporting line

Select from:

☑ Other, please specify **:**Reports to General Counsel

(4.3.1.5) Frequency of reporting to the board on environmental issues

Select from:

☑ Annually

(4.3.1.6) Please explain

The VP Chief Environmental, Safety, and Sustainability Officer is the Essential executive with the greatest and most direct degree of daily involvement with environment-related matters. Collaborating with the ESG Manager, this individual undertakes the listed environment-related responsibilities and reports on progress to the rest of the leadership team and board of directors. At Essential, the individual currently in this role has a Ph.D. in environmental engineering and has taught classes relating to climate change at the university level. The ESG Manager, who works closely with this individual, is pursuing a Master's degree in energy policy and climate. Together, they lead company efforts on environmental matters. Reporting to the board on environmental matters occurs at least annually, but also as important matters arise. In practice, this has historically led to multiple presentations per year to the board.

Biodiversity

(4.3.1.1) Position of individual or committee with responsibility

Executive level

☑ Chief Sustainability Officer (CSO)

(4.3.1.2) Environmental responsibilities of this position

Dependencies, impacts, risks and opportunities

☑ Assessing environmental dependencies, impacts, risks, and opportunities

☑ Assessing future trends in environmental dependencies, impacts, risks, and opportunities

☑ Managing environmental dependencies, impacts, risks, and opportunities

Engagement

☑ Managing engagement in landscapes and/or jurisdictions

☑ Managing public policy engagement related to environmental issues

Policies, commitments, and targets

☑ Monitoring compliance with corporate environmental policies and/or commitments

☑ Measuring progress towards environmental corporate targets

☑ Measuring progress towards environmental science-based targets

☑ Setting corporate environmental policies and/or commitments

☑ Setting corporate environmental targets

Strategy and financial planning

☑ Developing a climate transition plan

☑ Implementing a climate transition plan

☑ Conducting environmental scenario analysis

☑ Managing annual budgets related to environmental issues

☑ Implementing the business strategy related to environmental issues

☑ Developing a business strategy which considers environmental issues

☑ Managing environmental reporting, audit, and verification processes

☑ Managing major capital and/or operational expenditures relating to environmental issues

☑ Managing priorities related to innovation/low-environmental impact products or services (including R&D)

(4.3.1.4) Reporting line

Select from:

☑ Other, please specify **:**Reports to General Counsel

(4.3.1.5) Frequency of reporting to the board on environmental issues

Select from:

☑ Annually

(4.3.1.6) Please explain

The VP Chief Environmental, Safety, and Sustainability Officer is the Essential executive with the greatest and most direct degree of daily involvement with environment-related matters. Collaborating with the ESG Manager, this individual undertakes the listed environment-related responsibilities and reports on progress to the rest of the leadership team and board of directors. At Essential, the individual currently in this role has a Ph.D. in environmental engineering and has taught classes relating to climate change at the university level. The ESG Manager, who works closely with this individual, is pursuing a Master's degree in energy policy and climate. Together, they lead company efforts on environmental matters. Reporting to the board on environmental matters occurs at least annually, but also as important matters arise. In practice, this has historically led to multiple presentations per year to the board.
[Add row]

(4.5) Do you provide monetary incentives for the management of environmental issues, including the attainment of targets?

Climate change

(4.5.1) Provision of monetary incentives related to this environmental issue

Select from:
☑ Yes

(4.5.2) % of total C-suite and board-level monetary incentives linked to the management of this environmental issue

100

(4.5.3) Please explain

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 2023, 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.
[Fixed row]

(4.5.1) Provide further details on the monetary incentives provided for the management of environmental issues (do not include the names of individuals).

Climate change

(4.5.1.1) Position entitled to monetary incentive

Senior-mid management

☑ Other senior-mid manager, please specify **:**Both executive and senior/mid-level management teams across the organization.

(4.5.1.2) Incentives

Select all that apply

☑ Bonus - % of salary

(4.5.1.3) Performance metrics

Targets

☑ Other targets-related metrics, please specify **:**Quantity of gas main fugitive leaks

(4.5.1.4) Incentive plan the incentives are linked to

Select from:

☑ Short-Term Incentive Plan, or equivalent, only (e.g. contractual annual bonus)

(4.5.1.5) Further details of incentives

Reduction in gas leaks outstanding includes the number of leaks outstanding at year-end as reported on DOT regulatory reports.

(4.5.1.6) How the position's incentives contribute to the achievement of your environmental commitments and/or climate transition plan

Fugitive methane leaks from our gas main is the primary source of our Scope 1 and 2 emissions. We have set a Scope 1 and 2 greenhouse gas emissions target, as noted. Reducing the quantity of leaks is influenced by inspection activity and replacement of older main. Reducing the quantity of leaks helps us reach our emissions reduction commitment. In 2023, Essential experienced only 134 leaks (205 would have triggered 100% payout). More information on Essential's STI program can be found in our proxy filing, available on our website.

Climate change

(4.5.1.1) Position entitled to monetary incentive

Senior-mid management

☑ Other senior-mid manager, please specify **:**Both executive and senior/mid-level management teams across the organization.

(4.5.1.2) Incentives

Select all that apply

☑ Bonus - % of salary

(4.5.1.3) Performance metrics

Targets

☑ Other targets-related metrics, please specify **:**Percentage of planned gas main replacement miles that are actually replaced

(4.5.1.4) Incentive plan the incentives are linked to

Select from:

☑ Short-Term Incentive Plan, or equivalent, only (e.g. contractual annual bonus)

(4.5.1.5) Further details of incentives

The gas LTIIP mileage replacement is measured as percentage completed per the approved plan.

(4.5.1.6) How the position’s incentives contribute to the achievement of your environmental commitments and/or climate transition plan

Fugitive methane leaks from our gas main is the primary source of our Scope 1 and 2 emissions. We have set a Scope 1 and 2 greenhouse gas emissions target, as noted. Reducing the proportion of older and leak-prone main as per our multi-year plan approved by regulators is the most significant action Essential can take to reduce its Scope 1 emissions. Increasing the proportion of newly replaced main helps us reach our emissions reduction commitment. In 2023, Essential experienced over 100% achievement of miles of main replacement versus plan. More information on Essential's STI program can be found in our proxy filing, available on our website.

Climate change

(4.5.1.1) Position entitled to monetary incentive

Facility/Unit/Site management

☑ Other facility/unit/site manager, please specify **:**Certain operational managers across the organization and state utilities

(4.5.1.2) Incentives

Select all that apply

☑ Other, please specify **:**Incentives vary by position and state of operations

(4.5.1.3) Performance metrics

Resource use and efficiency

☑ Reduction in total energy consumption

(4.5.1.4) Incentive plan the incentives are linked to

Select from:

☑ Short-Term Incentive Plan, or equivalent, only (e.g. contractual annual bonus)

(4.5.1.5) Further details of incentives

Incentives are realized through achieving and 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.

(4.5.1.6) How the position's incentives contribute to the achievement of your environmental commitments and/or climate transition plan

This KPI encourages management to proactively implement measures to address and reduce energy intensity in an effort to reduce carbon emissions, especially for states that have lower proportions of renewable energy consumption. As detailed in our ESG Report, our teams at operating plants and facilities have demonstrated innovation and a willingness to share best practices in their quest for energy-efficient operations.
[Add row]

(4.6) Does your organization have an environmental policy that addresses environmental issues?

	Does your organization have any environmental policies?
	Select from: ☑ Yes

[Fixed row]

(4.6.1) Provide details of your environmental policies.

Row 1

(4.6.1.1) Environmental issues covered

Select all that apply
☑ Climate change
☑ Biodiversity

(4.6.1.2) Level of coverage

Select from:

☑ Organization-wide

(4.6.1.3) Value chain stages covered

Select all that apply

☑ Direct operations

☑ Upstream value chain

☑ Downstream value chain

(4.6.1.4) Explain the coverage

Our Sustainability and Environmental policy has no exclusions and is written to encompass all operations, elements of the value chain, and external relationships.

(4.6.1.5) Environmental policy content

Environmental commitments

☑ Commitment to respect legally designated protected areas

☑ Other environmental commitment, please specify **:Please refer to the company's attached policies for specific commitments.**

☑ Commitment to comply with regulations and mandatory standards

☑ Commitment to take environmental action beyond regulatory compliance

☑ Commitment to avoidance of negative impacts on threatened and protected species

☑ Commitment to stakeholder engagement and capacity building on environmental issues

Climate-specific commitments

☑ Other climate-related commitment, please specify **:**Please refer to the company's attached policies for specific commitments.

Social commitments

☑ Other social commitment, please specify **:**Social commitments are separately and properly included within the company's Human Rights Policy, Labor Rights Policy, and other policy documents and are publicly available on its website.

Additional references/Descriptions

☑ Other additional reference/description, please specify **:**Please refer to the company's attached policy for specific commitments. Further, whistleblower/grievance reporting is covered in the company's Code of Ethical Business Conduct, publicly available on its website.

(4.6.1.6) Indicate whether your environmental policy is in line with global environmental treaties or policy goals

Select all that apply

☑ Yes, in line with the Paris Agreement

☑ Yes, in line with Sustainable Development Goal 6 on Clean Water and Sanitation

☑ Yes, in line with another global environmental treaty or policy goal, please specify

(4.6.1.7) Public availability

Select from:

☑ Publicly available

(4.6.1.8) Attach the policy

Essential Sustainability and Environmental Policy Draft 2023 Update Final (10).pdf
[Add row]

(4.10) Are you a signatory or member of any environmental collaborative frameworks or initiatives?

	Are you a signatory or member of any environmental collaborative frameworks or initiatives?
	Select from: ☑ No, and we do not plan to within the next two years

[Fixed row]

(4.11) In the reporting year, did your organization engage in activities that could directly or indirectly influence policy, law, or regulation that may (positively or negatively) impact the environment?

(4.11.1) External engagement activities that could directly or indirectly influence policy, law, or regulation that may impact the environment

Select all that apply

☑ Yes, we engaged directly with policy makers

☑ Yes, we engaged indirectly through, and/or provided financial or in-kind support to a trade association or other intermediary organization or individual whose activities could influence policy, law, or regulation

(4.11.2) Indicate whether your organization has a public commitment or position statement to conduct your engagement activities in line with global environmental treaties or policy goals

Select from:

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

(4.11.5) Indicate whether your organization is registered on a transparency register

Select from:

☑ No

(4.11.8) Describe the process your organization has in place to ensure that your external engagement activities are consistent with your environmental commitments and/or transition plan

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.
[Fixed row]

(4.11.2) Provide details of your indirect engagement on policy, law, or regulation that may (positively or negatively) impact the environment through trade associations or other intermediary organizations or individuals in the reporting year.

Row 1

(4.11.2.1) Type of indirect engagement

Select from:

☑ Indirect engagement via a trade association

(4.11.2.4) Trade association

North America

☑ National Association of Water Companies

(4.11.2.5) Environmental issues relevant to the policies, laws, or regulations on which the organization or individual has taken a position

Select all that apply

☑ Climate change

(4.11.2.6) Indicate whether your organization's position is consistent with the organization or individual you engage with

Select from:

☑ Consistent

(4.11.2.7) Indicate whether your organization attempted to influence the organization or individual's position in the reporting year

Select from:

☑ No, we did not attempt to influence their position

(4.11.2.8) Describe how your organization’s position is consistent with or differs from the organization or individual’s position, and any actions taken to influence their position

“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.” No inconsistencies with Essential's climate program noted. Essential elects not to share dues paid to disclosed trade associations and, as such, has inputted dollar value of zero.

(4.11.2.9) Funding figure your organization provided to this organization or individual in the reporting year (currency)

0

(4.11.2.11) Indicate if you have evaluated whether your organization’s engagement is aligned with global environmental treaties or policy goals

Select from:

☑ Yes, we have evaluated, and it is aligned

(4.11.2.12) Global environmental treaties or policy goals aligned with your organization’s engagement on policy, law or regulation

Select all that apply

☑ Paris Agreement

Row 2

(4.11.2.1) Type of indirect engagement

Select from:

☑ Indirect engagement via a trade association

(4.11.2.4) Trade association

North America

☑ Other trade association in North America, please specify **:**American Water Works Association (AWWA)

(4.11.2.5) Environmental issues relevant to the policies, laws, or regulations on which the organization or individual has taken a position

Select all that apply

☑ Climate change

(4.11.2.6) Indicate whether your organization's position is consistent with the organization or individual you engage with

Select from:

☑ Consistent

(4.11.2.7) Indicate whether your organization attempted to influence the organization or individual's position in the reporting year

Select from:

☑ No, we did not attempt to influence their position

(4.11.2.8) Describe how your organization's position is consistent with or differs from the organization or individual's position, and any actions taken to influence their position

"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." No inconsistencies with Essential's climate program noted. Essential elects not to share dues paid to disclosed trade associations and, as such, has inputted dollar value of zero.

(4.11.2.9) Funding figure your organization provided to this organization or individual in the reporting year (currency)

0

(4.11.2.11) Indicate if you have evaluated whether your organization's engagement is aligned with global environmental treaties or policy goals

Select from:

☑ Yes, we have evaluated, and it is aligned

(4.11.2.12) Global environmental treaties or policy goals aligned with your organization's engagement on policy, law or regulation

Select all that apply

☑ Paris Agreement

Row 3

(4.11.2.1) Type of indirect engagement

Select from:

☑ Indirect engagement via a trade association

(4.11.2.4) Trade association

North America

☑ Other trade association in North America, please specify **:**Water Environment Federation (WEF)

(4.11.2.5) Environmental issues relevant to the policies, laws, or regulations on which the organization or individual has taken a position

Select all that apply

☑ Climate change

(4.11.2.6) Indicate whether your organization's position is consistent with the organization or individual you engage with

Select from:

☑ Consistent

(4.11.2.7) Indicate whether your organization attempted to influence the organization or individual's position in the reporting year

Select from:

☑ No, we did not attempt to influence their position

(4.11.2.8) Describe how your organization's position is consistent with or differs from the organization or individual's position, and any actions taken to influence their position

"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." No inconsistencies with Essential's climate program noted. Essential elects not to share dues paid to disclosed trade associations and, as such, has inputted dollar value of zero.

(4.11.2.9) Funding figure your organization provided to this organization or individual in the reporting year (currency)

0

(4.11.2.11) Indicate if you have evaluated whether your organization's engagement is aligned with global environmental treaties or policy goals

Select from:

☑ Yes, we have evaluated, and it is aligned

(4.11.2.12) Global environmental treaties or policy goals aligned with your organization's engagement on policy, law or regulation

Select all that apply

☑ Paris Agreement

Row 4

(4.11.2.1) Type of indirect engagement

Select from:

☑ Indirect engagement via a trade association

(4.11.2.4) Trade association

North America

☑ American Gas Association

(4.11.2.5) Environmental issues relevant to the policies, laws, or regulations on which the organization or individual has taken a position

Select all that apply

☑ Climate change

(4.11.2.6) Indicate whether your organization's position is consistent with the organization or individual you engage with

Select from:

☑ Consistent

(4.11.2.7) Indicate whether your organization attempted to influence the organization or individual's position in the reporting year

Select from:

☑ No, we did not attempt to influence their position

(4.11.2.8) Describe how your organization's position is consistent with or differs from the organization or individual's position, and any actions taken to influence their position

"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." No inconsistencies with Essential's climate program noted. Essential elects not to share dues paid to disclosed trade associations and, as such, has inputted dollar value of zero.

(4.11.2.9) Funding figure your organization provided to this organization or individual in the reporting year (currency)

0

(4.11.2.11) Indicate if you have evaluated whether your organization's engagement is aligned with global environmental treaties or policy goals

Select from:

☑ Yes, we have evaluated, and it is aligned

(4.11.2.12) Global environmental treaties or policy goals aligned with your organization's engagement on policy, law or regulation

Select all that apply

☑ Paris Agreement

[Add row]

(4.12.1) Provide details on the information published about your organization's response to environmental issues for this reporting year in places other than your CDP response. Please attach the publication.

Row 1

(4.12.1.1) Publication

Select from:

☑ In voluntary sustainability reports

(4.12.1.3) Environmental issues covered in publication

Select all that apply

☑ Climate change

☑ Water

☑ Biodiversity

(4.12.1.4) Status of the publication

Select from:

☑ Complete

(4.12.1.5) Content elements

Select all that apply

☑ Strategy

☑ Governance

☑ Emission targets

☑ Emissions figures

☑ Risks & Opportunities

☑ Value chain engagement

☑ Dependencies & Impacts

☑ Biodiversity indicators

☑ Public policy engagement

☑ Content of environmental policies

☑ Other, please specify :Our flagship ESG Report covers all material environmental issues relevant to the organization.

(4.12.1.6) Page/section reference

Entire Report

(4.12.1.7) Attach the relevant publication

2023-essential-esg (23).pdf

(4.12.1.8) Comment

None

Row 2

(4.12.1.1) Publication

Select from:

☑ In voluntary sustainability reports

(4.12.1.3) Environmental issues covered in publication

Select all that apply

☑ Climate change

(4.12.1.4) Status of the publication

Select from:

☑ Complete

(4.12.1.5) Content elements

Select all that apply

☑ Strategy

☑ Governance

☑ Emission targets

☑ Emissions figures

☑ Risks & Opportunities

☑ Content of environmental policies

(4.12.1.6) Page/section reference

Entire Report

(4.12.1.7) Attach the relevant publication

2023-essential-tcfd (7).pdf

(4.12.1.8) Comment

None

Row 3

(4.12.1.1) Publication

Select from:

☑ In other regulatory filings

(4.12.1.3) Environmental issues covered in publication

Select all that apply

☑ Climate change

☑ Water

☑ Biodiversity

(4.12.1.4) Status of the publication

Select from:

☑ Complete

(4.12.1.5) Content elements

Select all that apply

☑ Content of environmental policies

☑ Governance

☑ Strategy

☑ Emissions figures

☑ Emission targets

(4.12.1.6) Page/section reference

Pages 32-33

(4.12.1.7) Attach the relevant publication

2024 Proxy Final.pdf

(4.12.1.8) Comment

None
[Add row]

C5. Business strategy

(5.1) Does your organization use scenario analysis to identify environmental outcomes?

Climate change

(5.1.1) Use of scenario analysis

Select from:
☑ Yes

(5.1.2) Frequency of analysis

Select from:
☑ Annually
[Fixed row]

(5.1.1) Provide details of the scenarios used in your organization's scenario analysis.

Climate change

(5.1.1.1) Scenario used

Physical climate scenarios
☑ RCP 2.6

(5.1.1.2) Scenario used SSPs used in conjunction with scenario

Select from:
☑ SSP1

(5.1.1.3) Approach to scenario

Select from:

☑ Qualitative and quantitative

(5.1.1.4) Scenario coverage

Select from:

☑ Organization-wide

(5.1.1.5) Risk types considered in scenario

Select all that apply

☑ Policy

☑ Market

☑ Liability

☑ Reputation

☑ Technology

☑ Acute physical

☑ Chronic physical

(5.1.1.6) Temperature alignment of scenario

Select from:

☑ 1.5°C or lower

(5.1.1.7) Reference year

1990

(5.1.1.8) Timeframes covered

Select all that apply

☑ 2025

☑ 2030

☑ 2040

☑ 2070

☑ 2080

☑ 2090

☑ 2050
☑ 2060
☑ 2100

(5.1.1.9) Driving forces in scenario

Local ecosystem asset interactions, dependencies and impacts

☑ Changes to the state of nature
☑ Number of ecosystems impacted
☑ Changes in ecosystem services provision
☑ Speed of change (to state of nature and/or ecosystem services)
☑ Climate change (one of five drivers of nature change)

Finance and insurance

☑ Cost of capital
☑ Sensitivity of capital (to nature impacts and dependencies)

Stakeholder and customer demands

☑ Consumer sentiment
☑ Consumer attention to impact
☑ Impact of nature footprint on reputation
☑ Impact of nature service delivery on consumer
☑ Sensitivity to inequity of nature impacts

Regulators, legal and policy regimes

☑ Global regulation
☑ Political impact of science (from galvanizing to paralyzing)
☑ Level of action (from local to global)
☑ Global targets
☑ Methodologies and expectations for science-based targets

Relevant technology and science

☑ Granularity of available data (from aggregated to local)

☑ Data regime (from closed to open)

Direct interaction with climate

☑ On asset values, on the corporate

☑ Perception of efficacy of climate regime

Macro and microeconomy

☑ Domestic growth

☑ Globalizing markets

(5.1.1.10) Assumptions, uncertainties and constraints in scenario

See response in "Rationale for Choice of Scenario" for full accounting of Essential's approach and understanding of scenario analysis.

(5.1.1.11) Rationale for choice of scenario

(Note: Due to CDP text limitations, the response is split over two entry rows, RCP 2.6 and RCP 8.5.) Villanova University helps facilitate the scenario analysis process for Essential. The first step was to define the geographic scope of the study. The purpose of this step was to identify a selection of six cities in the United States for which future climate change could be assessed that would be representative of business operations. The six cities selected for assessment were: Philadelphia, PA; Pittsburgh, PA; Fort Wayne, IN; Raleigh, NC; Dallas, TX; and Austin, TX. The next step in scoping the study was to decide on the temporal boundaries. Two time periods were selected as a historical baseline and two future time periods were selected for future analysis. The two historical time periods selected were from 1950 to 1980 and from 1990 to 2020. The two future time periods selected were in the short-term from 2030 to 2060 and in the long-term from 2070 to 2100. In this study, observed historical data was obtained from the NOAA Climate Data Online store. Using this tool, observed precipitation and temperature data was downloaded for each of the six cities assessed over the historical time period from 1950 to 2020. The three variables selected for assessment were daily maximum near-surface air temperature, daily minimum near-surface air temperature, and precipitation. For each city, the weather station at the city's airport was selected, as airport stations typically provide the most robust datasets with limited data gaps. CMIP6 climate models were downloaded through the European Commission's Copernicus Climate Data Store. Essential decided to assess future climate in both a low and high emissions scenario. The SSP selected for the low emissions scenario was the sustainability pathway (SSP1-2.6) and the high emissions scenario was the fossil fuel development pathway (SSP5-8.5). When downloading climate data, not every model on the Copernicus site had data available for every geographic site. We selected four climate models at random that had the necessary data. A quantitative analysis was then performed for each location utilizing the climate data and internally established significant events thresholds. First, the number of events per year for each model and climate scenario was calculated for each geographic location.

Climate change

(5.1.1.1) Scenario used

Physical climate scenarios

☑ RCP 8.5

(5.1.1.2) Scenario used SSPs used in conjunction with scenario

Select from:

☑ SSP5

(5.1.1.3) Approach to scenario

Select from:

☑ Qualitative and quantitative

(5.1.1.4) Scenario coverage

Select from:

☑ Organization-wide

(5.1.1.5) Risk types considered in scenario

Select all that apply

☑ Policy

☑ Market

☑ Liability

☑ Reputation

☑ Technology

☑ Acute physical

☑ Chronic physical

(5.1.1.6) Temperature alignment of scenario

Select from:

☑ 4.0°C and above

(5.1.1.7) Reference year

1990

(5.1.1.8) Timeframes covered

Select all that apply

☑ 2025
☑ 2030
☑ 2040
☑ 2050
☑ 2060
☑ 2070
☑ 2080
☑ 2090
☑ 2100

(5.1.1.9) Driving forces in scenario

Local ecosystem asset interactions, dependencies and impacts

☑ Changes to the state of nature
☑ Number of ecosystems impacted
☑ Changes in ecosystem services provision
☑ Speed of change (to state of nature and/or ecosystem services)
☑ Climate change (one of five drivers of nature change)

Finance and insurance

☑ Cost of capital
☑ Sensitivity of capital (to nature impacts and dependencies)

Stakeholder and customer demands

☑ Consumer sentiment
☑ Consumer attention to impact
☑ Impact of nature footprint on reputation
☑ Impact of nature service delivery on consumer
☑ Sensitivity to inequity of nature impacts

Regulators, legal and policy regimes

☑ Global regulation

☑ Political impact of science (from galvanizing to paralyzing)
☑ Level of action (from local to global)
☑ Global targets
☑ Methodologies and expectations for science-based targets

Relevant technology and science
☑ Granularity of available data (from aggregated to local)
☑ Data regime (from closed to open)

Direct interaction with climate
☑ On asset values, on the corporate
☑ Perception of efficacy of climate regime

Macro and microeconomy
☑ Domestic growth
☑ Globalizing markets

(5.1.1.10) Assumptions, uncertainties and constraints in scenario

See response in "Rationale for Choice of Scenario" for full accounting of Essential's approach and understanding of scenario analysis.

(5.1.1.11) Rationale for choice of scenario

(As noted above, due to CDP text limitations, the response that began in RCP 2.6 row continues here in RCP 8.5) Then the number of annual events was averaged across the four models at each location under the high emissions (SSP5 – 8.5) and low emissions (SSP1 – 2.6) climate scenarios. Additionally, the number of significant events for each site over the historical periods of 1950-1980 and 1990-2020 were calculated. Then the percent change in total significant events relative to the historical period of 1990-2020 was calculated for the short term (2030-2060) and long term (2070-2100) time frames. The objective of a subsequent workshop process was to leverage the expertise of leaders to obtain a list of possible climate change implications. The meeting began with a presentation from the Villanova which summarized the state of the climate according to the CMIP6 climate data in the different scenarios reviewed. Once future climate had been discussed, Villanova facilitated a discussion to understand how these projected outcomes could impact the business. Following the identification of potential risks and opportunities, the next step for the group was to prioritize these. Workshop participants scored different categories that aligned with CDP. Participants provided scores for the categories of time horizon, likelihood, magnitude of impact, cost to manage, potential financial impact, and applicable regions of the risk or opportunity. Each category had an agreed upon definition that Essential Utilities defined during prior meetings. There were several options for the participant to choose from when scoring each category. The group discussed their reasoning for choosing different answers and were given the opportunity to make final adjustments to their scores,

which were compiled. Where there was an obvious consensus among participants for a certain category, this answer was selected. When there was no clear consensus, the most conservative choice was selected. The group went through each of the categories for each risk and each opportunity until all fields had been selected and the group felt comfortable with the answers. Finally, subsequent meetings with specific area leaders were held to discuss potential financial drivers for each risk or opportunity. Where feasible, quantitative estimates were compiled. If not, an understanding was reached of what such rigorous analysis, fit for public consumption, would potentially require in the future.
[Add row]

(5.1.2) Provide details of the outcomes of your organization's scenario analysis.

Climate change

(5.1.2.1) Business processes influenced by your analysis of the reported scenarios

Select all that apply

☑ Risk and opportunities identification, assessment and management

☑ Strategy and financial planning

☑ Resilience of business model and strategy

☑ Capacity building

☑ Target setting and transition planning

(5.1.2.2) Coverage of analysis

Select from:

☑ Organization-wide

(5.1.2.3) Summarize the outcomes of the scenario analysis and any implications for other environmental issues

Essential established the following focal questions for which climate scenario analysis sought to address: 1) Which climate risks and opportunities are most material to Essential's operations across various time horizons? 2) What implications do various climate scenarios have on key elements of Essential's business strategy? 3) Have key climate forecasts or business operating landscapes changed materially since the prior analysis? The answers to these questions are distributed throughout Essential's CDP submission and we ask that readers consult those other responses. These include our detailed discussion of identified risks and opportunities, how identified material climate risks and opportunities influence Essential's strategy, and detailed discussion of how Essential constructs and conducts its scenario analysis process. Essential respectfully believes CDP's prompt to summarize such scenario analysis outcomes in 5.1.2 is redundant with much of the rest of section 5 as well as other components of the overall CDP Report.
[Fixed row]

(5.2) Does your organization’s strategy include a climate transition plan?

(5.2.1) Transition plan

Select from:

☑ No and we do not plan to develop a climate transition plan within the next two years

(5.2.15) Primary reason for not having a climate transition plan that aligns with a 1.5°C world

Select from:

☑ Other, please specify **:**Please refer to associated written explanation.

(5.2.16) Explain why your organization does not have a climate transition plan that aligns with a 1.5°C world

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 this prompt 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 this prompt and low-carbon transition plans, which is why climate matters and initiatives are a key part of our ongoing strategic discussions.
[Fixed row]

(5.3) Have environmental risks and opportunities affected your strategy and/or financial planning?

(5.3.1) Environmental risks and/or opportunities have affected your strategy and/or financial planning

Select from:

☑ Yes, both strategy and financial planning

(5.3.2) Business areas where environmental risks and/or opportunities have affected your strategy

Select all that apply

☑ Products and services

☑ Upstream/downstream value chain

☑ Investment in R&D

☑ Operations

[Fixed row]

(5.3.1) Describe where and how environmental risks and opportunities have affected your strategy.

Products and services

(5.3.1.1) Effect type

Select all that apply

☑ Risks

☑ Opportunities

(5.3.1.2) Environmental issues relevant to the risks and/or opportunities that have affected your strategy in this area

Select all that apply

☑ Climate change

(5.3.1.3) Describe how environmental risks and/or opportunities have affected your strategy in this area

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 2023, we recycled to the groundwater recharge via spray irrigation, drip irrigation and subsurface infiltration approximately 631.7 million gallons of treated wastewater. This is about 6% of the total wastewater treated in 2022, 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 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. For the second consecutive year, we have co-hosted an industrial conference in the Pittsburgh region with the aim of developing the local hydrogen economy. We are partnering with University of Pittsburgh to explore feasibility of hydrogen blending. Further, we have invested in efficient fuel cell technology through our partnership with WATT Fuel Cell, which could potentially operate on hydrogen too.

Upstream/downstream value chain

(5.3.1.1) Effect type

Select all that apply

☑ Risks

☑ Opportunities

(5.3.1.2) Environmental issues relevant to the risks and/or opportunities that have affected your strategy in this area

Select all that apply

☑ Climate change

(5.3.1.3) Describe how environmental risks and/or opportunities have affected your strategy in this area

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 and this was achieved, as evidenced by our dramatic decrease this year in Scope 2 emissions. 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. About 56% of this RNG is transported by Essential into an interstate pipeline or to a third-party pool operator. The remaining 44% 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

(5.3.1.1) Effect type

Select all that apply

☑ Risks

☑ Opportunities

(5.3.1.2) Environmental issues relevant to the risks and/or opportunities that have affected your strategy in this area

Select all that apply

☑ Climate change

(5.3.1.3) Describe how environmental risks and/or opportunities have affected your strategy in this area

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 elsewhere, 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 have invested in a state-of-the-art new lab at our headquarters in Bryn Mawr, PA and additional cutting-edge capabilities that will allow us, in part, to better respond to such emerging issues related to climate change 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, such as a hydrogen research partnership with University of Pittsburgh.

Operations

(5.3.1.1) Effect type

Select all that apply

☑ Risks

☑ Opportunities

(5.3.1.2) Environmental issues relevant to the risks and/or opportunities that have affected your strategy in this area

Select all that apply

☑ Climate change

(5.3.1.3) Describe how environmental risks and/or opportunities have affected your strategy in this area

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 significantly in the past several years.
[Add row]

(5.3.2) Describe where and how environmental risks and opportunities have affected your financial planning.

Row 1

(5.3.2.1) Financial planning elements that have been affected

Select all that apply
☑ Direct costs
☑ Indirect costs
☑ Capital expenditures

(5.3.2.2) Effect type

Select all that apply
☑ Risks
☑ Opportunities

(5.3.2.3) Environmental issues relevant to the risks and/or opportunities that have affected these financial planning elements

Select all that apply
☑ Climate change

(5.3.2.4) Describe how environmental risks and/or opportunities have affected these financial planning elements

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 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 elsewhere. 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 billions of dollars in infrastructure improvements and replaced well over a thousand miles of aging water main in the past decade. 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 hundreds of millions of dollars of capit
[Add row]

(5.4) In your organization's financial accounting, do you identify spending/revenue that is aligned with your organization's climate transition?

	Identification of spending/revenue that is aligned with your organization's climate transition
	Select from: ☑ No, and we do not plan to in the next two years

[Fixed row]

(5.10) Does your organization use an internal price on environmental externalities?

(5.10.1) Use of internal pricing of environmental externalities

Select from:
☑ No, and we do not plan to in the next two years

(5.10.3) Primary reason for not pricing environmental externalities

Select from:

☑ Lack of internal resources, capabilities, or expertise (e.g., due to organization size)

(5.10.4) Explain why your organization does not price environmental externalities

Essential does not currently apply an internal price on carbon or otherwise formally price environmental externalities. We continue to monitor and follow US utility industry best practices and will continue to informally incorporate environmental externalities into our financial and strategic decision-making. If Essential does ultimately move forward with applying environmental pricing, it will be as a result of extended research, consultation, and study paired with a provision of sufficient internal resources and expertise.
[Fixed row]

(5.11) Do you engage with your value chain on environmental issues?

	Engaging with this stakeholder on environmental issues	Environmental issues covered
Suppliers	*Select from:* ☑ Yes	*Select all that apply* ☑ Climate change
Customers	*Select from:* ☑ Yes	*Select all that apply* ☑ Climate change
Investors and shareholders	*Select from:* ☑ Yes	*Select all that apply* ☑ Climate change
Other value chain stakeholders	*Select from:* ☑ Yes	*Select all that apply* ☑ Climate change

[Fixed row]

(5.11.1) Does your organization assess and classify suppliers according to their dependencies and/or impacts on the environment?

	Assessment of supplier dependencies and/or impacts on the environment
Climate change	*Select from:* ☑ No, we do not assess the dependencies and/or impacts of our suppliers, and have no plans to do so within two years

[Fixed row]

(5.11.2) Does your organization prioritize which suppliers to engage with on environmental issues?

Climate change

(5.11.2.1) Supplier engagement prioritization on this environmental issue

Select from:

☑ No, we do not prioritize which suppliers to engage with on this environmental issue

(5.11.2.3) Primary reason for no supplier prioritization on this environmental issue

Select from:

☑ Lack of internal resources, capabilities or expertise (e.g., due to organization size)

(5.11.2.4) Please explain

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. 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
[Fixed row]

(5.11.5) Do your suppliers have to meet environmental requirements as part of your organization's purchasing process?

Climate change

(5.11.5.1) Suppliers have to meet specific environmental requirements related to this environmental issue as part of the purchasing process

Select from:

☑ Yes, suppliers have to meet environmental requirements related to this environmental issue, but they are not included in our supplier contracts

(5.11.5.2) Policy in place for addressing supplier non-compliance

Select from:

☑ No, we do not have a policy in place for addressing non-compliance

(5.11.5.3) Comment

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. 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
[Fixed row]

(5.11.9) Provide details of any environmental engagement activity with other stakeholders in the value chain.

Climate change

(5.11.9.1) Type of stakeholder

Select from:

☑ Other value chain stakeholder, please specify :Electricity suppliers

(5.11.9.2) Type and details of engagement

Other

☑ 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.

(5.11.9.3) % of stakeholder type engaged

Select from:

☑ 100%

(5.11.9.4) % stakeholder-associated scope 3 emissions

Select from:

☑ None

(5.11.9.5) Rationale for engaging these stakeholders and scope of 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.

(5.11.9.6) Effect of engagement and 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. 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. All of these improvements enable Essential to save on expenses which benefits our customers while reducing our Scope 2 emissions.

Climate change

(5.11.9.1) Type of stakeholder

Select from:

☑ Customers

(5.11.9.2) Type and details of engagement

Education/Information sharing

☑ Run an engagement campaign to educate stakeholders about the environmental impacts about your products, goods and/or services

(5.11.9.3) % of stakeholder type engaged

Select from:

☑ 100%

(5.11.9.4) % stakeholder-associated scope 3 emissions

Select from:

☑ 76-99%

(5.11.9.5) Rationale for engaging these stakeholders 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.

(5.11.9.6) Effect of engagement and 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.

Climate change

(5.11.9.1) Type of stakeholder

Select from:

☑ Investors and shareholders

(5.11.9.2) Type and details of engagement

Education/Information sharing

☑ Educate and work with stakeholders on understanding and measuring exposure to environmental risks

☑ Share information about your products and relevant certification schemes

☑ Share information on environmental initiatives, progress and achievements

Innovation and collaboration

☑ Align your organization's goals to support customers' targets and ambitions

(5.11.9.3) % of stakeholder type engaged

Select from:

☑ 100%

(5.11.9.4) % stakeholder-associated scope 3 emissions

Select from:

☑ None

(5.11.9.5) Rationale for engaging these stakeholders and scope of engagement

Essential and its investors both seek to engage each other on climate issues. Investor support and resources dedicated to Essential's environmental initiatives are critical to their success. Essential engages investors through extensive ESG reporting and as part of the company's general investor relations activities. Details about our company's targets, emissions reduction initiatives, strategies, risks and opportunities, and various other aspects of the climate program are shared via engagement.

(5.11.9.6) Effect of engagement and measures of success

Investors have generally been very supportive of Essential's environmental efforts and track record of accomplishment. Support is qualitatively measured through ongoing interactions but more specifically quantitatively measured through investor perception studies conducted periodically. These studies have shown strong support for Essential's quality of reporting and various ESG initiatives.
[Add row]

C6. Environmental Performance - Consolidation Approach

(6.1) Provide details on your chosen consolidation approach for the calculation of environmental performance data.

Climate change

(6.1.1) Consolidation approach used

Select from:

☑ Financial control

(6.1.2) Provide the rationale for the choice of consolidation approach

Essential has historical utilized a financial control approach. Essential has financial control over materially all of its operations and direct emissions sources.

Plastics

(6.1.1) Consolidation approach used

Select from:

☑ Financial control

(6.1.2) Provide the rationale for the choice of consolidation approach

Essential has historical utilized a financial control approach. Essential has financial control over materially all of its operations and direct emissions sources.

Biodiversity

(6.1.1) Consolidation approach used

Select from:

☑ Financial control

(6.1.2) Provide the rationale for the choice of consolidation approach

Essential has historical utilized a financial control approach. Essential has financial control over materially all of its operations and direct emissions sources. [Fixed row]

C7. Environmental performance - Climate Change

(7.1.1) 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?

(7.1.1.1) Has there been a structural change?

Select all that apply

☑ Yes, a divestment

(7.1.1.2) Name of organization(s) acquired, divested from, or merged with

Essential Utilities sold its West Virginia natural gas utility assets to Hope Gas.

(7.1.1.3) Details of structural change(s), including completion dates

The sale was completed on October 2nd, 2023. West Virginia operations immaterially contributed to overall Essential Utilities emissions and, as such, no re-baselining or other adjustments were deemed necessary as per established procedures outlined in Essential's Inventory Management Plans. West Virginia's data pertaining to the period prior to close of sale was retained as part of this CDP disclosure.
[Fixed row]

(7.1.2) Has your emissions accounting methodology, boundary, and/or reporting year definition changed in the reporting year?

(7.1.2.1) Change(s) in methodology, boundary, and/or reporting year definition?

Select all that apply

☑ Yes, a change in methodology

(7.1.2.2) Details of methodology, boundary, and/or reporting year definition change(s)

Essential has shifted from AR4-based emissions factors to AR5. This means that methane's 100-year emissions factor is now 28, rather than 25. We applied this material change to all historical years reported.
[Fixed row]

(7.1.3) Have your organization’s base year emissions and past years’ emissions been recalculated as a result of any changes or errors reported in 7.1.1 and/or 7.1.2?

(7.1.3.1) Base year recalculation

Select from:
☑ Yes

(7.1.3.2) Scope(s) recalculated

Select all that apply
☑ Scope 1

(7.1.3.3) Base year emissions recalculation policy, including significance threshold

As part of the Inventory Management Plan, Essential will regularly review appropriate IPCC guidance, GHG Protocol Standards, US EPA literature, and other relevant websites and reference sources to determine whether calculation methodologies, emission factors and/or relevant emission sources have been updated or added that would trigger a significant cumulative change in the company’s base year emissions. For eGRID factors, it is best practice to use the most recent set released that reporting year and apply to past years as relevant (i.e., release of 2012 eGRID factors in 2015 are applied to all years back to 2012), but not recalculate the base year emissions because the grid factors are a temporal representation of the grid mix. For other fuels, if it is determined that a change is significant, Essential will use the latest methodologies and/or emission factors to recalculate emissions for the base year. All emission factors are reviewed annually at the end of the reporting period. As applicable, emission factors are applied to past years (e.g., release of 2012 eGRID factors in 2015 are applied to all years back to 2012). Emission factors (other than eGRID) for stationary combustion, mobile sources, and GWPs will be updated to reflect best practice reporting and will become mandatory if the new emission factors result in an individual or cumulative 5% change.

(7.1.3.4) Past years’ recalculation

Select from:

☑ Yes

[Fixed row]

(7.3) Describe your organization’s approach to reporting Scope 2 emissions.

(7.3.1) Scope 2, location-based

Select from:

☑ We are reporting a Scope 2, location-based figure

(7.3.2) Scope 2, market-based

Select from:

☑ We are reporting a Scope 2, market-based figure

(7.3.3) 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 2023. 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.

[Fixed row]

(7.5) Provide your base year and base year emissions.

Scope 1

(7.5.1) Base year end

12/31/2019

(7.5.2) Base year emissions (metric tons CO2e)

503637

(7.5.3) Methodological details

Essential maintains two inventory management plans, one for its gas operations and one for its water and wastewater operations. These documents contain detailed procedures and information that comprise the methodology for calculation emissions. Due to space constraints, Essential is unable to reproduce these meaningfully within this response. However, the company follows best industry practices and frameworks and, in addition to working with multiple third party experts to ensure quality, has for the past two years engaged a third party auditor to review this information. Changes have been made to the base year value to account for a switch in methane emissions factor from AR4 to AR5 values.

Scope 2 (location-based)

(7.5.1) Base year end

12/31/2019

(7.5.2) Base year emissions (metric tons CO2e)

125908.0

(7.5.3) Methodological details

Please refer to the response to Question 7.3 for information on how Essential calculates Scope 2 emissions. This process has remained consistent from 2019 through 2023.

Scope 2 (market-based)

(7.5.1) Base year end

12/31/2019

(7.5.2) Base year emissions (metric tons CO2e)

117393.0

(7.5.3) Methodological details

Please refer to the response to Question 7.3 for information on how Essential calculates Scope 2 emissions. This process has remained consistent from 2019 through 2023.

Scope 3 category 1: Purchased goods and services

(7.5.1) Base year end

12/31/2019

(7.5.2) Base year emissions (metric tons CO2e)

35765.0

(7.5.3) Methodological details

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 contracted purchased chemicals was provided by Purchasing Department. Emission factors for top bulk chemicals was gathered from SimaPro LCA software. 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.

Scope 3 category 2: Capital goods

(7.5.1) Base year end

12/31/2019

(7.5.2) Base year emissions (metric tons CO2e)

37845.0

(7.5.3) Methodological details

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 the average CO2 emissions factors for a cradle to grave life cycle from an LCI from three sources; The emissions factors (EFs) for the production of the pipes were obtained from a 2020 published LCA study titled "Environmental Assessment of Construction and Renovation of Water Distribution Networks Considering Uncertainty Analysis". A ratio for the different sized pipelines was used to adjust the EFs, these can be seen in Table X of the tab "PVC and DI Pipe". The emissions due to backfull are calculated using cradle-to-grave emissions factors gathered from LCI data from Ecoinvent-3 for crushed and washed limestone, consequential systems GLO. The emissions due to the asphalt were calculated using emissions factors for embodied energy of asphalt gathered from an LCI done by the Michigan Technology University for the National Asphalt and Pavement Association. Data from suppliers is not available.

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

(7.5.1) Base year end

12/31/2019

(7.5.2) Base year emissions (metric tons CO2e)

28742.0

(7.5.3) Methodological details

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). Essential used location-based Scope 2 emissions for this calculation.

Scope 3 category 4: Upstream transportation and distribution

(7.5.1) Base year end

12/31/2019

(7.5.2) Base year emissions (metric tons CO2e)

0

(7.5.3) Methodological details

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.

Scope 3 category 5: Waste generated in operations

(7.5.1) Base year end

12/31/2019

(7.5.2) Base year emissions (metric tons CO2e)

0.0

(7.5.3) Methodological details

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. Although this was not disclosed in 2019, the following explanation relates to 2023. Emissions for wastewater sludge transportation for all wastewater operations in eight states were calculated based on reported dry metric tons, translated to gallon equivalents under an assumption of 2% solids. Other factors in the calculations include trip length and relevant CO2, CH4, and N2O emissions factors for medium- and heavy-duty trucks on a ton-mile basis from the EPA (updated in March 2023). Emissions factors for greenhouse gas inventories were also used from the EPA (https://www.epa.gov/climateleadership/center-corporate-climate-leadership-ghg-emission-factors-hub). Finally, GWP conversion factors from CH4 and N2O to an equivalent amount of CO2 were utilized.

Scope 3 category 6: Business travel

(7.5.1) Base year end

12/31/2019

(7.5.2) Base year emissions (metric tons CO2e)

115.0

(7.5.3) Methodological details

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 for water and wastewater operations and would be far lower if also considering Essential's gas operations.

Scope 3 category 7: Employee commuting

(7.5.1) Base year end

12/31/2019

(7.5.2) Base year emissions (metric tons CO2e)

2447.0

(7.5.3) Methodological details

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 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 were 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 company's Scope 1 emissions. Based on 2021 HR records of employees working from home following the introduction of our work location flexibility program, the 2019 calculations were revised for 2021 and now account for work from home days. For 2023, and due to low level of materiality of this figure, we assumed the same emissions from this source.

Scope 3 category 8: Upstream leased assets

(7.5.1) Base year end

12/31/2019

(7.5.2) Base year emissions (metric tons CO2e)

0.0

(7.5.3) Methodological details

Essential does not have upstream leased assets.

Scope 3 category 9: Downstream transportation and distribution

(7.5.1) Base year end

12/31/2019

(7.5.2) Base year emissions (metric tons CO2e)

0

(7.5.3) Methodological details

As a utility company, we provide water and gas as a product that is distributed through a pipe water system directly to the customer's point of use. Therefore emissions are already included in Scopes 1 and 2. Similarly, wastewater is discharged, after treatment, to a discharge point (either a stream or river adjacent to the facility) and any energy expended is captured in Essential's Scopes 1 and 2.

Scope 3 category 10: Processing of sold products

(7.5.1) Base year end

12/31/2019

(7.5.2) Base year emissions (metric tons CO2e)

0

(7.5.3) Methodological details

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

Scope 3 category 11: Use of sold products

(7.5.1) Base year end

12/31/2019

(7.5.2) Base year emissions (metric tons CO2e)

0

(7.5.3) Methodological details

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. Essential first calculated and disclosed its Scope 3 emissions in 2020 (8,533,075 metric tons CO2e).

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

(7.5.1) Base year end

12/31/2019

(7.5.2) Base year emissions (metric tons CO2e)

0

(7.5.3) Methodological details

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

Scope 3 category 13: Downstream leased assets

(7.5.1) Base year end

12/31/2019

(7.5.2) Base year emissions (metric tons CO2e)

0

(7.5.3) Methodological details

Essential has no downstream leased assets.

Scope 3 category 14: Franchises

(7.5.1) Base year end

12/31/2019

(7.5.2) Base year emissions (metric tons CO2e)

0

(7.5.3) Methodological details

Essential has no franchises.

Scope 3 category 15: Investments

(7.5.1) Base year end

12/31/2019

(7.5.2) Base year emissions (metric tons CO2e)

1058.0

(7.5.3) Methodological details

Essential used to own 49% of a joint venture, Aqua-ETC Water Solutions, LLC. The sale of this stake occurred in 2020. In 2019, Essential utilized the same methodology to calculate these emissions as it had for its own market-based inventory.

Scope 3: Other (upstream)

(7.5.1) Base year end

12/31/2019

(7.5.2) Base year emissions (metric tons CO2e)

4703.0

(7.5.3) Methodological details

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 emission factors for each state, defined as Tonnes CO2e/Million Gallons x volume of purchased Tonnes CO2e.

Scope 3: Other (downstream)

(7.5.1) Base year end

12/31/2019

(7.5.2) Base year emissions (metric tons CO2e)

0.0

(7.5.3) Methodological details

Essential has no other downstream emissions.
[Fixed row]

(7.6) What were your organization’s gross global Scope 1 emissions in metric tons CO2e?

Reporting year

(7.6.1) Gross global Scope 1 emissions (metric tons CO2e)

463065

(7.6.3) Methodological details

Essential maintains two inventory management plans, one for its gas operations and one for its water and wastewater operations. These documents contain detailed procedures and information that comprise the methodology for calculation emissions. Due to space constraints, Essential is unable to reproduce these meaningfully within this response. However, the company follows best industry practices and frameworks and, in addition to working with multiple third party experts to ensure quality, has for the past two years engaged a third party auditor to review this information.

Past year 1

(7.6.1) Gross global Scope 1 emissions (metric tons CO2e)

489132

(7.6.2) End date

12/31/2022

(7.6.3) Methodological details

Essential maintains two inventory management plans, one for its gas operations and one for its water and wastewater operations. These documents contain detailed procedures and information that comprise the methodology for calculation emissions. Due to space constraints, Essential is unable to reproduce these meaningfully within this response. However, the company follows best industry practices and frameworks and, in addition to working with multiple third party experts to ensure quality, has for the past two years engaged a third party auditor to review this information. Changes have been made to the 2022 value to account for a switch in methane emissions factor from AR4 to AR5 values.
[Fixed row]

(7.7) What were your organization’s gross global Scope 2 emissions in metric tons CO2e?

Reporting year

(7.7.1) Gross global Scope 2, location-based emissions (metric tons CO2e)

118580

(7.7.2) Gross global Scope 2, market-based emissions (metric tons CO2e) (if applicable)

41392

(7.7.4) Methodological details

Please refer to the response to Question 7.3 for information on how Essential calculates Scope 2 emissions. This process has remained consistent from 2019 through 2023.

Past year 1

(7.7.1) Gross global Scope 2, location-based emissions (metric tons CO2e)

125765

(7.7.2) Gross global Scope 2, market-based emissions (metric tons CO2e) (if applicable)

51008

(7.7.3) End date

12/31/2022

(7.7.4) Methodological details

Please refer to the response to Question 7.3 for information on how Essential calculates Scope 2 emissions. This process has remained consistent from 2019 through 2023.
[Fixed row]

(7.8) Account for your organization’s gross global Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

30810

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Other, please specify **:**Please see explanatory text.

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

0

(7.8.5) 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 contracted purchased chemicals from 2023 was provided by Purchasing Department. Emission factors for top bulk chemicals was gathered from SimaPro LCA software. LCI data for 95% of the sum of the bulk weight of chemicals was obtained.

Capital goods

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

59070

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Other, please specify **:**Please see explanatory text.

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

0

(7.8.5) 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 the average CO2 emissions factors for a cradle to grave life cycle from an LCI from three sources; The emissions factors (EFs) for the production of the pipes were obtained from a 2020 published LCA study titled "Environmental Assessment of Construction and Renovation of Water Distribution Networks Considering Uncertainty Analysis". A ratio for the different sized pipelines was used to adjust the EFs, these can be seen in Table X of the tab "PVC and DI Pipe". The emissions due to backfull are calculated using cradle-to-grave emissions factors gathered from LCI data from Ecoinvent-3 for crushed and washed limestone, consequential systems GLO. The emissions due to the asphalt were calculated using emissions factors for embodied energy of asphalt gathered from an LCI done by the Michigan Technology University for the National Asphalt and Pavement Association

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

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

26916

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Other, please specify **:**Please see explanatory text.

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

0

(7.8.5) 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). Essential used location-based Scope 2 emissions for this calculation.

Upstream transportation and distribution

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) 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

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

747

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Other, please specify **:**Please see explanatory text.

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

0

(7.8.5) 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, translated to gallon equivalents under an assumption of 2% solids. Other factors in the calculations include trip length and relevant CO2, CH4, and N2O emissions factors for medium- and heavy-duty trucks on a ton-mile basis from the EPA (updated in March 2023). Emissions factors for greenhouse gas inventories were also used from the EPA (https://www.epa.gov/climateleadership/center-corporate-climate-leadership-ghg-emission-factors-hub). Finally, GWP conversion factors from CH4 and N2O to an equivalent amount of CO2 were utilized.

Business travel

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) 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 for water and wastewater operations and would be far lower if also considering Essential's gas operations.

Employee commuting

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

1682

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Other, please specify **:**Please see explanatory text.

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

0

(7.8.5) 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 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 were 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 company's Scope 1 emissions. Based on 2021 HR records of employees working from home following the introduction of our work location flexibility program, the 2019 calculations were revised for 2021 and now account for work from home days. For 2023, and due to low level of materiality of this figure, we assumed the same emissions from this source.

Upstream leased assets

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) Please explain

Essential does not have upstream leased assets.

Downstream transportation and distribution

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) Please explain

As a utility company, we provide water and gas as a product that is distributed through a pipe water system directly to the customer's point of use. Therefore emissions are already included in Scopes 1 and 2. Similarly, wastewater is discharged, after treatment, to a discharge point (either a stream or river adjacent to the facility) and any energy expended is captured in Essential's Scopes 1 and 2.

Processing of sold products

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) 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

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

8070212

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Other, please specify **:**Please see explanatory text.

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

0

(7.8.5) Please explain

Emissions from the combustion of natural gas delivered to end-users calculated using U.S. EPA stationary combustion emission factors for natural gas. 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

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) Please explain

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

Downstream leased assets

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) Please explain

Essential has no downstream leased assets.

Franchises

(7.8.1) Evaluation status

Select from:
☑ Not relevant, explanation provided

(7.8.5) Please explain

Essential has no franchises.

Investments

(7.8.1) Evaluation status

Select from:
☑ Not relevant, explanation provided

(7.8.5) Please explain

Essential has no qualifying investments.

Other (upstream)

(7.8.1) Evaluation status

Select from:
☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

5448

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Other, please specify **:**Please see explanatory text.

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

0

(7.8.5) 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 emission factors for each state, defined as Tonnes CO2e/Million Gallons x volume of purchased Tonnes CO2e.

Other (downstream)

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) Please explain

Essential has no other downstream emissions.
[Fixed row]

(7.8.1) Disclose or restate your Scope 3 emissions data for previous years.

Past year 1

(7.8.1.1) End date

12/31/2022

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

37359

(7.8.1.3) Scope 3: Capital goods (metric tons CO2e)

35404

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

28319

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

0

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

826

(7.8.1.7) Scope 3: Business travel (metric tons CO2e)

0

(7.8.1.8) Scope 3: Employee commuting (metric tons CO2e)

1682

(7.8.1.9) Scope 3: Upstream leased assets (metric tons CO2e)

0

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

0

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

0

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

8911126

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

0

(7.8.1.14) Scope 3: Downstream leased assets (metric tons CO2e)

0

(7.8.1.15) Scope 3: Franchises (metric tons CO2e)

0

(7.8.1.16) Scope 3: Investments (metric tons CO2e)

0

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

5710

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

0

(7.8.1.19) Comment

No additional comments.
[Fixed row]

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

	Verification/assurance status
Scope 1	*Select from:* ☑ Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	*Select from:* ☑ Third-party verification or assurance process in place
Scope 3	*Select from:* ☑ No third-party verification or assurance

[Fixed row]

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

Row 1

(7.9.1.1) Verification or assurance cycle in place

Select from:
☑ Annual process

(7.9.1.2) Status in the current reporting year

Select from:

☑ Underway but not complete for reporting year – previous statement of process attached

(7.9.1.3) Type of verification or assurance

Select from:
☑ Limited assurance

(7.9.1.4) Attach the statement

Keramida 2022 Letter.docx

(7.9.1.5) Page/section reference

All pages.

(7.9.1.6) Relevant standard

Select from:
☑ ISO14064-3

(7.9.1.7) Proportion of reported emissions verified (%)

100
[Add row]

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

Row 1

(7.9.2.1) Scope 2 approach

Select from:
☑ Scope 2 market-based

(7.9.2.2) Verification or assurance cycle in place

Select from:

☑ Annual process

(7.9.2.3) Status in the current reporting year

Select from:

☑ Underway but not complete for reporting year – previous statement of process attached

(7.9.2.4) Type of verification or assurance

Select from:

☑ Limited assurance

(7.9.2.5) Attach the statement

Keramida 2022 Letter.docx

(7.9.2.6) Page/ section reference

All pages.

(7.9.2.7) Relevant standard

Select from:

☑ ISO14064-3

(7.9.2.8) Proportion of reported emissions verified (%)

100
[Add row]

(7.10.1) 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 renewable energy consumption

(7.10.1.1) Change in emissions (metric tons CO2e)

8418

(7.10.1.2) Direction of change in emissions

Select from:

☑ Decreased

(7.10.1.3) Emissions value (percentage)

1.7

(7.10.1.4) Please explain calculation

This is driven by water and wastewater utility accounts covered by renewables. Scope 2 emissions reduction for water and wastewater operations applied to this category, due to materiality.

Other emissions reduction activities

(7.10.1.1) Change in emissions (metric tons CO2e)

27266

(7.10.1.2) Direction of change in emissions

Select from:

☑ Decreased

(7.10.1.3) Emissions value (percentage)

5.4

(7.10.1.4) Please explain calculation

Gas pipeline replacement activities contributed to emissions reduction. Emissions reductions associated with gas operations accounted for in this category, due to materiality.

Divestment

(7.10.1.1) Change in emissions (metric tons CO2e)

0

(7.10.1.2) Direction of change in emissions

Select from:

☑ No change

(7.10.1.3) Emissions value (percentage)

0

(7.10.1.4) Please explain calculation

Not applicable.

Acquisitions

(7.10.1.1) Change in emissions (metric tons CO2e)

0

(7.10.1.2) Direction of change in emissions

Select from:

☑ No change

(7.10.1.3) Emissions value (percentage)

0

(7.10.1.4) Please explain calculation

Not applicable.

Mergers

(7.10.1.1) Change in emissions (metric tons CO2e)

0

(7.10.1.2) Direction of change in emissions

Select from:
☑ No change

(7.10.1.3) Emissions value (percentage)

0

(7.10.1.4) Please explain calculation

Not applicable.

Change in output

(7.10.1.1) Change in emissions (metric tons CO2e)

0

(7.10.1.2) Direction of change in emissions

Select from:

☑ No change

(7.10.1.3) Emissions value (percentage)

0

(7.10.1.4) Please explain calculation

Not applicable.

Change in methodology

(7.10.1.1) Change in emissions (metric tons CO2e)

0

(7.10.1.2) Direction of change in emissions

Select from:
☑ No change

(7.10.1.3) Emissions value (percentage)

0

(7.10.1.4) Please explain calculation

Not applicable.

Change in boundary

(7.10.1.1) Change in emissions (metric tons CO2e)

0

(7.10.1.2) Direction of change in emissions

Select from:

☑ No change

(7.10.1.3) Emissions value (percentage)

0

(7.10.1.4) Please explain calculation

Not applicable.

Change in physical operating conditions

(7.10.1.1) Change in emissions (metric tons CO2e)

0

(7.10.1.2) Direction of change in emissions

Select from:

☑ No change

(7.10.1.3) Emissions value (percentage)

0

(7.10.1.4) Please explain calculation

Not applicable.

Unidentified

(7.10.1.1) Change in emissions (metric tons CO2e)

0

(7.10.1.2) Direction of change in emissions

Select from:
☑ No change

(7.10.1.3) Emissions value (percentage)

0

(7.10.1.4) Please explain calculation

Not applicable.

Other

(7.10.1.1) Change in emissions (metric tons CO2e)

0

(7.10.1.2) Direction of change in emissions

Select from:
☑ No change

(7.10.1.3) Emissions value (percentage)

0

(7.10.1.4) Please explain calculation

Not applicable.
[Fixed row]

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

Row 1

(7.15.1.1) Greenhouse gas

Select from:
☑ CO2

(7.15.1.2) Scope 1 emissions (metric tons of CO2e)

85832

(7.15.1.3) GWP Reference

Select from:
☑ IPCC Fifth Assessment Report (AR5 – 100 year)

Row 2

(7.15.1.1) Greenhouse gas

Select from:
☑ CH4

(7.15.1.2) Scope 1 emissions (metric tons of CO2e)

377099

(7.15.1.3) GWP Reference

Select from:
☑ IPCC Fifth Assessment Report (AR5 – 100 year)

Row 3

(7.15.1.1) Greenhouse gas

Select from:

☑ N2O

(7.15.1.2) Scope 1 emissions (metric tons of CO2e)

92

(7.15.1.3) GWP Reference

Select from:

☑ IPCC Fifth Assessment Report (AR5 – 100 year)

[Add row]

(7.16) Break down your total gross global Scope 1 and 2 emissions by country/area.

	Scope 1 emissions (metric tons CO2e)	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
United States of America	*463065*	*118580*	*41392*

[Fixed row]

(7.17.1) Break down your total gross global Scope 1 emissions by business division.

Row 1

(7.17.1.1) Business division

Aqua Illinois

(7.17.1.2) Scope 1 emissions (metric ton CO2e)

1601

Row 2

(7.17.1.1) Business division

Aqua Indiana

(7.17.1.2) Scope 1 emissions (metric ton CO2e)

344

Row 3

(7.17.1.1) Business division

Aqua North Carolina

(7.17.1.2) Scope 1 emissions (metric ton CO2e)

2982

Row 4

(7.17.1.1) Business division

Aqua New Jersey

(7.17.1.2) Scope 1 emissions (metric ton CO2e)

533

Row 5

(7.17.1.1) Business division

Aqua Pennsylvania

(7.17.1.2) Scope 1 emissions (metric ton CO2e)

6228

Row 6

(7.17.1.1) Business division

Aqua Ohio

(7.17.1.2) Scope 1 emissions (metric ton CO2e)

1960

Row 7

(7.17.1.1) Business division

Aqua Virginia

(7.17.1.2) Scope 1 emissions (metric ton CO2e)

734

Row 8

(7.17.1.1) Business division

Aqua Texas

(7.17.1.2) Scope 1 emissions (metric ton CO2e)

1753

Row 9

(7.17.1.1) Business division

Peoples Natural Gas Company

(7.17.1.2) Scope 1 emissions (metric ton CO2e)

371095

Row 10

(7.17.1.1) Business division

Peoples Gas Pennsylvania

(7.17.1.2) Scope 1 emissions (metric ton CO2e)

50747

Row 11

(7.17.1.1) Business division

Peoples Gas West Virginia

(7.17.1.2) Scope 1 emissions (metric ton CO2e)

6531

Row 12

(7.17.1.1) Business division

Delta Natural Gas Company

(7.17.1.2) Scope 1 emissions (metric ton CO2e)

18555
[Add row]

(7.17.3) Break down your total gross global Scope 1 emissions by business activity.

	Activity	Scope 1 emissions (metric tons CO2e)
Row 1	*Wastewater Treatment*	*824*
Row 2	*Natural Gas Distribution*	*446929*
Row 3	*Water Production*	*15313*

[Add row]

(7.20.1) Break down your total gross global Scope 2 emissions by business division.

Row 1

(7.20.1.1) Business division

Aqua Illinois

(7.20.1.2) Scope 2, location-based (metric tons CO2e)

15974

(7.20.1.3) Scope 2, market-based (metric tons CO2e)

1969

Row 2

(7.20.1.1) Business division

Aqua Indiana

(7.20.1.2) Scope 2, location-based (metric tons CO2e)

5715

(7.20.1.3) Scope 2, market-based (metric tons CO2e)

5715

Row 3

(7.20.1.1) Business division

Aqua North Carolina

(7.20.1.2) Scope 2, location-based (metric tons CO2e)

9234

(7.20.1.3) Scope 2, market-based (metric tons CO2e)

9234

Row 5

(7.20.1.1) Business division

Aqua New Jersey

(7.20.1.2) Scope 2, location-based (metric tons CO2e)

3713

(7.20.1.3) Scope 2, market-based (metric tons CO2e)

365

Row 6

(7.20.1.1) Business division

Aqua Pennsylvania

(7.20.1.2) Scope 2, location-based (metric tons CO2e)

45951

(7.20.1.3) Scope 2, market-based (metric tons CO2e)

2164

Row 7

(7.20.1.1) Business division

Aqua Ohio

(7.20.1.2) Scope 2, location-based (metric tons CO2e)

16927

(7.20.1.3) Scope 2, market-based (metric tons CO2e)

1238

Row 8

(7.20.1.1) Business division

Aqua Virginia

(7.20.1.2) Scope 2, location-based (metric tons CO2e)

2777

(7.20.1.3) Scope 2, market-based (metric tons CO2e)

2777

Row 9

(7.20.1.1) Business division

Aqua Texas

(7.20.1.2) Scope 2, location-based (metric tons CO2e)

14116

(7.20.1.3) Scope 2, market-based (metric tons CO2e)

14116

Row 10

(7.20.1.1) Business division

Peoples Natural Gas Company

(7.20.1.2) Scope 2, location-based (metric tons CO2e)

3424

(7.20.1.3) Scope 2, market-based (metric tons CO2e)

3128

Row 11

(7.20.1.1) Business division

Peoples Gas Pennsylvania

(7.20.1.2) Scope 2, location-based (metric tons CO2e)

522

(7.20.1.3) Scope 2, market-based (metric tons CO2e)

477

Row 12

(7.20.1.1) Business division

Peoples Gas West Virginia

(7.20.1.2) Scope 2, location-based (metric tons CO2e)

42

(7.20.1.3) Scope 2, market-based (metric tons CO2e)

38

Row 13

(7.20.1.1) Business division

Delta Natural Gas Company

(7.20.1.2) Scope 2, location-based (metric tons CO2e)

185

(7.20.1.3) Scope 2, market-based (metric tons CO2e)

169
[Add row]

(7.20.3) 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)
Row 1	*Wastewater Treatment*	*28008*	*15222*
Row 3	*Natural Gas Distribution*	*4172*	*3812*
Row 4	*Water Production*	*86400*	*22357*

[Add row]

(7.22) Break down your gross Scope 1 and Scope 2 emissions between your consolidated accounting group and other entities included in your response.

Consolidated accounting group

(7.22.1) Scope 1 emissions (metric tons CO2e)

463065

(7.22.2) Scope 2, location-based emissions (metric tons CO2e)

118580

(7.22.3) Scope 2, market-based emissions (metric tons CO2e)

41392

(7.22.4) Please explain

This includes all entities.

All other entities

(7.22.1) Scope 1 emissions (metric tons CO2e)

0

(7.22.2) Scope 2, location-based emissions (metric tons CO2e)

0

(7.22.3) Scope 2, market-based emissions (metric tons CO2e)

0

(7.22.4) Please explain

There are no other entities.
[Fixed row]

(7.30) 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)	*Select from:* ☑ Yes
Consumption of purchased or acquired electricity	*Select from:* ☑ Yes
Consumption of purchased or acquired heat	*Select from:* ☑ No
Consumption of purchased or acquired steam	*Select from:* ☑ No
Consumption of purchased or acquired cooling	*Select from:* ☑ No
Generation of electricity, heat, steam, or cooling	*Select from:* ☑ Yes

[Fixed row]

(7.30.1) Report your organization’s energy consumption totals (excluding feedstocks) in MWh.

Consumption of fuel (excluding feedstock)

(7.30.1.1) Heating value

Select from:
☑ HHV (higher heating value)

(7.30.1.2) MWh from renewable sources

0

(7.30.1.3) MWh from non-renewable sources

429284

(7.30.1.4) Total (renewable and non-renewable) MWh

429284

Consumption of purchased or acquired electricity

(7.30.1.1) Heating value

Select from:
☑ HHV (higher heating value)

(7.30.1.2) MWh from renewable sources

222565

(7.30.1.3) MWh from non-renewable sources

121346

(7.30.1.4) Total (renewable and non-renewable) MWh

349910

Consumption of self-generated non-fuel renewable energy

(7.30.1.1) Heating value

Select from:

☑ HHV (higher heating value)

(7.30.1.2) MWh from renewable sources

6868

(7.30.1.4) Total (renewable and non-renewable) MWh

6868

Total energy consumption

(7.30.1.1) Heating value

Select from:
☑ HHV (higher heating value)

(7.30.1.2) MWh from renewable sources

229433

(7.30.1.3) MWh from non-renewable sources

550629

(7.30.1.4) Total (renewable and non-renewable) MWh

780062
[Fixed row]

(7.30.6) 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	*Select from:* ☑ No
Consumption of fuel for the generation of heat	*Select from:* ☑ Yes
Consumption of fuel for the generation of steam	*Select from:* ☑ No
Consumption of fuel for the generation of cooling	*Select from:* ☑ No
Consumption of fuel for co-generation or tri-generation	*Select from:* ☑ No

[Fixed row]

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

Sustainable biomass

(7.30.7.1) Heating value

Select from:

☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

0

(7.30.7.8) Comment

Not applicable.

Other biomass

(7.30.7.1) Heating value

Select from:
☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

0

(7.30.7.8) Comment

Not applicable.

Other renewable fuels (e.g. renewable hydrogen)

(7.30.7.1) Heating value

Select from:
☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

0

(7.30.7.8) Comment

Not applicable.

Coal

(7.30.7.1) Heating value

Select from:
☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

0

(7.30.7.8) Comment

Not applicable.

Oil

(7.30.7.1) Heating value

Select from:
☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

78656

(7.30.7.8) Comment

Motor Gasoline: 50,269 Diesel: 28,386

Gas

(7.30.7.1) Heating value

Select from:
☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

280131

(7.30.7.8) Comment

Natural Gas: 279,907 Compressed Natural Gas: 223

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

(7.30.7.1) Heating value

Select from:
☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

0

(7.30.7.8) Comment

Not applicable.

Total fuel

(7.30.7.1) Heating value

Select from:
☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

358786

(7.30.7.8) Comment

See other comments.
[Fixed row]

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

Electricity

(7.30.9.1) Total Gross generation (MWh)

6868

(7.30.9.2) Generation that is consumed by the organization (MWh)

6868

(7.30.9.3) Gross generation from renewable sources (MWh)

6868

(7.30.9.4) Generation from renewable sources that is consumed by the organization (MWh)

6868

Heat

(7.30.9.1) Total Gross generation (MWh)

20467

(7.30.9.2) Generation that is consumed by the organization (MWh)

20467

(7.30.9.3) Gross generation from renewable sources (MWh)

0

(7.30.9.4) Generation from renewable sources that is consumed by the organization (MWh)

0

Steam

(7.30.9.1) Total Gross generation (MWh)

0

(7.30.9.2) Generation that is consumed by the organization (MWh)

0

(7.30.9.3) Gross generation from renewable sources (MWh)

0

(7.30.9.4) Generation from renewable sources that is consumed by the organization (MWh)

0

Cooling

(7.30.9.1) Total Gross generation (MWh)

0

(7.30.9.2) Generation that is consumed by the organization (MWh)

0

(7.30.9.3) Gross generation from renewable sources (MWh)

0

(7.30.9.4) Generation from renewable sources that is consumed by the organization (MWh)

0
[Fixed row]

(7.30.14) 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 7.7.

Row 1

(7.30.14.1) Country/area

Select from:
☑ United States of America

(7.30.14.2) Sourcing method

Select from:
☑ Retail supply contract with an electricity supplier (retail green electricity)

(7.30.14.3) Energy carrier

Select from:
☑ Electricity

(7.30.14.4) Low-carbon technology type

Select from:
☑ Wind

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

222565

(7.30.14.6) Tracking instrument used

Select from:

☑ Other, please specify :Green-E certified RECs

(7.30.14.7) Country/area of origin (generation) of the low-carbon energy or energy attribute

Select from:

☑ United States of America

(7.30.14.8) Are you able to report the commissioning or re-powering year of the energy generation facility?

Select from:

☑ No

(7.30.14.10) Comment

No additional comments.
[Add row]

(7.30.16) Provide a breakdown by country/area of your electricity/heat/steam/cooling consumption in the reporting year.

United States of America

(7.30.16.1) Consumption of purchased electricity (MWh)

333026

(7.30.16.2) Consumption of self-generated electricity (MWh)

6868

(7.30.16.4) Consumption of purchased heat, steam, and cooling (MWh)

20467

(7.30.16.5) Consumption of self-generated heat, steam, and cooling (MWh)

0

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

360361.00
[Fixed row]

(7.45) 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.

Row 1

(7.45.1) Intensity figure

0.05

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

53716

(7.45.3) Metric denominator

Select from:
☑ unit total revenue

(7.45.4) Metric denominator: Unit total

1153376

(7.45.5) Scope 2 figure used

Select from:

☑ Market-based

(7.45.6) % change from previous year

22.4

(7.45.7) Direction of change

Select from:

☑ Decreased

(7.45.8) Reasons for change

Select all that apply

☑ Change in renewable energy consumption

(7.45.9) Please explain

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 water and wastewater business, 2023 intensity figure (calculated in a similar fashion to total Essential) was 0.05 and experienced a decrease of 22%. This is driven by additional utility accounts covered by our renewable wind REC purchasing plan.

Row 2

(7.45.1) Intensity figure

0.44

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

37670

(7.45.3) Metric denominator

Select from:

☑ Other, please specify **:**Millions of gallons of water produced

(7.45.4) Metric denominator: Unit total

85990

(7.45.5) Scope 2 figure used

Select from:

☑ Market-based

(7.45.6) % change from previous year

0.4

(7.45.7) Direction of change

Select from:

☑ Decreased

(7.45.8) Reasons for change

Select all that apply

☑ Other, please specify **:**Deemed immaterial change.

(7.45.9) Please explain

Deemed immaterial change year-over-year.

Row 3

(7.45.1) Intensity figure

1.4

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

16046

(7.45.3) Metric denominator

Select from:

☑ Other, please specify :Millions of gallons of wastewater treated

(7.45.4) Metric denominator: Unit total

11470

(7.45.5) Scope 2 figure used

Select from:

☑ Market-based

(7.45.6) % change from previous year

10.9

(7.45.7) Direction of change

Select from:

☑ Decreased

(7.45.8) Reasons for change

Select all that apply

☑ Other, please specify :See explanatory text.

(7.45.9) Please explain

Our wastewater volumes are driven by customer consumption patterns and are largely out of Essential's direct control as we must meet demand. Thus, it is difficult to ascertain or control energy intensity on a year-to-year basis.

Row 4

(7.45.1) Intensity figure

0.52

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

450741

(7.45.3) Metric denominator

Select from:

☑ unit total revenue

(7.45.4) Metric denominator: Unit total

863759

(7.45.5) Scope 2 figure used

Select from:

☑ Market-based

(7.45.6) % change from previous year

45

(7.45.7) Direction of change

Select from:

☑ Increased

(7.45.8) Reasons for change

Select all that apply

☑ Change in revenue

(7.45.9) Please explain

For our gas business, 2023 intensity figure (calculated in a similar fashion to total Essential) was 0.52, representing a 45% increase and driven primarily by year-on-year decline in revenues due to a decrease in volume of gas delivered (in turn driven by weather conditions). Decline in gas volumes does not correspond precisely with GHG emissions reductions.

Row 5

(7.45.1) Intensity figure

3.23

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

450741

(7.45.3) Metric denominator

Select from:

☑ Other, please specify **:**Millions of cubic feet of gas delivered

(7.45.4) Metric denominator: Unit total

148090

(7.45.5) Scope 2 figure used

Select from:

☑ Market-based

(7.45.6) % change from previous year

1.8

(7.45.7) Direction of change

Select from:

☑ Decreased

(7.45.8) Reasons for change

Select all that apply

☑ Other, please specify **:**See explanatory text.

(7.45.9) Please explain

For our gas business, the 2023 intensity figure was 3.04, representing a 2% decrease, which is relatively flat on the year.
[Add row]

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

Row 1

(7.52.1) Description

Select from:

☑ Other, please specify **:**Quantity of gas distribution pipe miles replaced versus planned replacements

(7.52.2) Metric value

142

(7.52.3) Metric numerator

Percent of gas distribution pipe miles replaced v

(7.52.4) Metric denominator (intensity metric only)

N/A

(7.52.5) % change from previous year

38

(7.52.6) Direction of change

Select from:

☑ Increased

(7.52.7) Please explain

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 2023, we experienced 142% achievement versus plan, which is greater than than the 103% level of achievement versus plan that we experienced in the previous year. Our 2023 performance marks another year of rapid replacement of gas main.

Row 2

(7.52.1) Description

Select from:

☑ Energy usage

(7.52.2) Metric value

7.59

(7.52.3) Metric numerator

Annual kilowatt hours

(7.52.4) Metric denominator (intensity metric only)

Thousand gallons of wastewater treated

(7.52.5) % change from previous year

1

(7.52.6) Direction of change

Select from:

☑ Decreased

(7.52.7) 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. These energy intensity values are highly dependent on physical factors, which vary not only state to state, but by region and location. Changes in regulations may also lead to more energy-intensive practices over time, making long-term trend analysis difficult. Year-on-year shifts in operations energy intensity are highly affected by rainfall and may not be representative of actual wastewater operation efficiency. Further, as Essential acquires conveyance-only wastewater systems, there is an increase in associated energy consumption without an increase in treated wastewater volumes. Finally, it is inappropriate to assume that a specific percentage decrease in treated wastewater volume will lead to a commensurate decrease in energy consumption, as biologic factors in wastewater treatment are more influential for energy usage patterns than volumetric factors.

Row 3

(7.52.1) Description

Select from:

☑ Energy usage

(7.52.2) Metric value

6.28

(7.52.3) Metric numerator

Annual kilowatt hours

(7.52.4) Metric denominator (intensity metric only)

Thousand gallons of water produced

(7.52.5) % change from previous year

5

(7.52.6) Direction of change

Select from:

☑ Decreased

(7.52.7) 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 long-term enhancements in energy intensity are: greater energy efficiency efforts at the local level and utilization of a more-energy efficient mix of pumping assets. In the short run, energy intensity values are highly dependent on physical factors, which vary not only state to state, but by region and location. Changes in regulations may also lead to more energy-intensive practices over time, making long-term trend analysis difficult. The depth and lift required to gather water and the pressure required to pump water across distance and elevation are the most significant factors in energy intensity. Because of our large number of smaller systems, heating pump stations during the winter can often cause the intensity factor to double during the colder months.

Row 4

(7.52.1) Description

Select from:

☑ Other, please specify **:**Quantity of gas leaks

(7.52.2) Metric value

134

(7.52.3) Metric numerator

Quantity of gas leaks

(7.52.4) Metric denominator (intensity metric only)

N/A

(7.52.5) % change from previous year

58

(7.52.6) Direction of change

Select from:
☑ Decreased

(7.52.7) 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 2023, we recorded 134 gas leaks, which was well below our targeted amount of 205.
[Add row]

(7.53.1) Provide details of your absolute emissions targets and progress made against those targets.

Row 1

(7.53.1.1) Target reference number

Select from:
☑ Abs 1

(7.53.1.2) Is this a science-based target?

Select from:

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

(7.53.1.5) Date target was set

01/01/2021

(7.53.1.6) Target coverage

Select from:

☑ Organization-wide

(7.53.1.7) Greenhouse gases covered by target

Select all that apply

☑ Carbon dioxide (CO2)

☑ Methane (CH4)

☑ Nitrous oxide (N2O)

(7.53.1.8) Scopes

Select all that apply

☑ Scope 1

☑ Scope 2

(7.53.1.9) Scope 2 accounting method

Select from:

☑ Market-based

(7.53.1.11) End date of base year

12/31/2019

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

553530

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

117393

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

0.000

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

670923.000

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

100

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

100

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

100

(7.53.1.54) End date of target

12/31/2034

(7.53.1.55) Targeted reduction from base year (%)

60

(7.53.1.56) Total emissions at end date of target covered by target in all selected Scopes (metric tons CO2e)

268369.200

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

463065

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

41392

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

504457.000

(7.53.1.78) Land-related emissions covered by target

Select from:

☑ No, it does not cover any land-related emissions (e.g. non-FLAG SBT)

(7.53.1.79) % of target achieved relative to base year

41.35

(7.53.1.80) Target status in reporting year

Select from:

☑ Underway

(7.53.1.82) 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.

(7.53.1.83) Target objective

Our target balances ambition with reality and reflects actions that we can take with technologies and processes that exist today. We do not believe in setting a target that we privately feel is unattainable, despite some practices in industry today amongst some peers. We are confident we will achieve the target and we may add to it as circumstances change between now and the target year.

(7.53.1.84) 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. Secondly, beginning in 2022, Essential dramatically increased its renewable electricity procurement to cover the majority of the company's needs, which has led to significant reductions in GHG emissions immediately. There are other actions that achieve emissions reductions, but these are the most significant.

(7.53.1.85) Target derived using a sectoral decarbonization approach

Select from:

☑ No

Row 2

(7.53.1.1) Target reference number

Select from:

☑ Abs 2

(7.53.1.2) Is this a science-based target?

Select from:

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

(7.53.1.5) Date target was set

01/01/2021

(7.53.1.6) Target coverage

Select from:

☑ Business division

(7.53.1.7) Greenhouse gases covered by target

Select all that apply

☑ Carbon dioxide (CO2)

☑ Methane (CH4)

☑ Nitrous oxide (N2O)

(7.53.1.8) Scopes

Select all that apply

☑ Scope 1

☑ Scope 2

(7.53.1.9) Scope 2 accounting method

Select from:

☑ Market-based

(7.53.1.11) End date of base year

12/31/2019

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

16057

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

115124

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

0.000

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

131181.000

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

100

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

100

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

80

(7.53.1.54) End date of target

12/31/2034

(7.53.1.55) Targeted reduction from base year (%)

61.8

(7.53.1.56) Total emissions at end date of target covered by target in all selected Scopes (metric tons CO2e)

50111.142

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

16136

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

37580

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

53716.000

(7.53.1.78) Land-related emissions covered by target

Select from:

☑ No, it does not cover any land-related emissions (e.g. non-FLAG SBT)

(7.53.1.79) % of target achieved relative to base year

95.55

(7.53.1.80) Target status in reporting year

Select from:

☑ Underway

(7.53.1.82) 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. We have set the target year as 2035, to be consistent with the Essential-wide target (Abs1), but we have achieved nearly all of the planned reduction as of 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.

(7.53.1.83) Target objective

Our target balances ambition with reality and reflects actions that we can take with technologies and processes that exist today. We do not believe in setting a target that we privately feel is unattainable, despite some practices in industry today amongst some peers. We are confident we will achieve the target and we may add to it as circumstances change between now and the target year.

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

This target has been nearly achieved through a contract with a retail power supplier for 100% wind power through Green-e Renewable Energy Certificates which started 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. 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 the development of this target but which presents opportunity for further emissions reduction in states where we don't not have the option to purchase renewable energy. Additionally, we continue to focus on improvements to our energy efficiency at operating plants.

(7.53.1.85) Target derived using a sectoral decarbonization approach

Select from:

☑ No

Row 3

(7.53.1.1) Target reference number

Select from:

☑ Abs 3

(7.53.1.2) Is this a science-based target?

Select from:

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

(7.53.1.5) Date target was set

01/01/2021

(7.53.1.6) Target coverage

Select from:

☑ Business division

(7.53.1.7) Greenhouse gases covered by target

Select all that apply

☑ Carbon dioxide (CO2)

☑ Methane (CH4)

☑ Nitrous oxide (N2O)

(7.53.1.8) Scopes

Select all that apply

☑ Scope 1

☑ Scope 2

(7.53.1.9) Scope 2 accounting method

Select from:

☑ Market-based

(7.53.1.11) End date of base year

12/31/2019

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

537473

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

2269

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

0.000

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

539742.000

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

100

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

100

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

20

(7.53.1.54) End date of target

12/31/2034

(7.53.1.55) Targeted reduction from base year (%)

59.5

(7.53.1.56) Total emissions at end date of target covered by target in all selected Scopes (metric tons CO2e)

218595.510

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

446929

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

3812

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

450741.000

(7.53.1.78) Land-related emissions covered by target

Select from:

☑ No, it does not cover any land-related emissions (e.g. non-FLAG SBT)

(7.53.1.79) % of target achieved relative to base year

27.71

(7.53.1.80) Target status in reporting year

Select from:

☑ Underway

(7.53.1.82) 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.

(7.53.1.83) Target objective

Our target balances ambition with reality and reflects actions that we can take with technologies and processes that exist today. We do not believe in setting a target that we privately feel is unattainable, despite some practices in industry today amongst some peers. We are confident we will achieve the target and we may add to it as circumstances change between now and the target year.

(7.53.1.84) 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 alternative fuel 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, 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.

(7.53.1.85) Target derived using a sectoral decarbonization approach

Select from:

☑ No

[Add row]

(7.55.1) 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*	*`Numeric input*
To be implemented	*0*	*0*
Implementation commenced	*1*	*402552*
Implemented	*1*	*8000*
Not to be implemented	*0*	*`Numeric input*

[Fixed row]

(7.55.2) Provide details on the initiatives implemented in the reporting year in the table below.

Row 1

(7.55.2.1) Initiative category & Initiative type

Fugitive emissions reductions

☑ Oil/natural gas methane leak capture/prevention

(7.55.2.2) Estimated annual CO2e savings (metric tonnes CO2e)

321454

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

Select all that apply

☑ Scope 1

(7.55.2.4) Voluntary/Mandatory

Select from:

☑ Voluntary

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

0

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

4000000000

(7.55.2.7) Payback period

Select from:

☑ No payback

(7.55.2.8) Estimated lifetime of the initiative

Select from:

☑ 16-20 years

(7.55.2.9) 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.

Row 2

(7.55.2.1) Initiative category & Initiative type

Low-carbon energy consumption

☑ Wind

(7.55.2.2) Estimated annual CO2e savings (metric tonnes CO2e)

8000

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

Select all that apply

☑ Scope 2 (market-based)

(7.55.2.4) Voluntary/Mandatory

Select from:

☑ Voluntary

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

0

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

0

(7.55.2.7) Payback period

Select from:

☑ No payback

(7.55.2.8) Estimated lifetime of the initiative

Select from:

☑ 3-5 years

(7.55.2.9) Comment

This item represents a remaining small portion of utility accounts beginning coverage during 2023 under a contract referenced in the previous year's CDP submission. The contract, with a retail electric power supplier, was to procure 100% wind power through Green-e Renewable Energy Certificates for the deregulated power supply for our water and wastewater operations in PA, OH, NJ and IL. Almost all of Essential's utility accounts under the contract were covered by wind power beginning in 2022, but there were some that actually began coverage in 2023 due to timing differences with billing. Now, all utility accounts designated for coverage are under the contract's coverage. This was all achieved without needing to raise rates for customers and represents a substantial and rapid emissions reduction for Essential.
[Add row]

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

Row 1

(7.55.3.1) Method

Select from:

☑ Financial optimization calculations

(7.55.3.2) Comment

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. The mechanism is also formalized through compensation practices, in which team members are monetarily rewarded for qualifying project proposals.

Row 3

(7.55.3.1) Method

Select from:

☑ Other **:**General infrastructure investment needs

(7.55.3.2) Comment

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.
[Add row]

C11. Environmental performance - Biodiversity

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

(11.2.1) Actions taken in the reporting period to progress your biodiversity-related commitments

Select from:

☑ Yes, we are taking actions to progress our biodiversity-related commitments

(11.2.2) Type of action taken to progress biodiversity- related commitments

Select all that apply

☑ Land/water protection

☑ Land/water management

☑ Species management

☑ Education & awareness

☑ Other, please specify :Board-approved biodiversity language has been added to our environmental policy. We regard this as foundational to future initiatives, assessments, and commitments that we are potentially interested in pursuing.

[Fixed row]

(11.3) 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
	Select from:	*Select all that apply*

	Does your organization use indicators to monitor biodiversity performance?	Indicators used to monitor biodiversity performance
	☑ 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

[Fixed row]

(11.4) Does your organization have activities located in or near to areas important for biodiversity in the reporting year?

Legally protected areas

(11.4.1) Indicate whether any of your organization's activities are located in or near to this type of area important for biodiversity

Select from:

☑ Not assessed

(11.4.2) Comment

See below comment

UNESCO World Heritage sites

(11.4.1) Indicate whether any of your organization's activities are located in or near to this type of area important for biodiversity

Select from:

☑ Not assessed

(11.4.2) Comment

See below comment

UNESCO Man and the Biosphere Reserves

(11.4.1) Indicate whether any of your organization's activities are located in or near to this type of area important for biodiversity

Select from:
☑ Not assessed

(11.4.2) Comment

See below comment

Ramsar sites

(11.4.1) Indicate whether any of your organization's activities are located in or near to this type of area important for biodiversity

Select from:
☑ Not assessed

(11.4.2) Comment

See below comment

Key Biodiversity Areas

(11.4.1) Indicate whether any of your organization's activities are located in or near to this type of area important for biodiversity

Select from:

☑ Not assessed

(11.4.2) Comment

See below comment

Other areas important for biodiversity

(11.4.1) Indicate whether any of your organization's activities are located in or near to this type of area important for biodiversity

Select from:

☑ Yes

(11.4.2) Comment

Essential's board has recently approved an expansion of the company's Sustainability and Environmental Policy to include commitments on biodiversity and conservation. While these stated commitments reflect past efforts and guiding principles we have held for generations, we believe memorializing these in a formal policy offers deeper assurance to our stakeholders and promotes greater awareness for our team. The board has received presentations from management on biodiversity with the aims of broadening understanding and awareness, assessing the ESG landscape with regards to this topic, and evaluating current and potential future initiatives for Essential. With our policy amended, the Essential board acknowledges and undertakes responsibility for biodiversity-related issues. Management is tasked with the responsibility of carrying out the commitments outlined in our board-approved policy. Similar education and awareness efforts have been undertaken at the management level, specifically with the ESG Oversight Committee described elsewhere in the CDP submission. In our most recent ESG Report, we disclose the following: -Board and management oversight -How Essential views and defines biodiversity -Our industry's general risks to biodiversity and from degradation of ecosystems -Our new board-approved policy language -The mitigation hierarchy we strive to follow -Our various initiatives in this area, including GIS-aided mapping of our lands, compliance with related regulations, volunteerism activities, local partnerships, dam removal, and various restoration projects Our board-approved commitments are as follows: We strive to: • Comply with environmental regulations and manage our lands to protect and preserve sensitive habitats and species • Support efforts to combat invasive species and restore native species • Avoid sensitive waterways, wetlands, and encounters with endangered species when proposing new pipeline routes and project locations • Apply mitigation hierarchy (avoid, minimize, rehabilitate, offset, and compensate) through all the processes of new construction or modifications that can impact biodiversity • Examine ways to monitor impacts and biodiversity on our lands
[Fixed row]

C13. Further information & sign off

(13.1) Indicate if any environmental information included in your CDP response (not already reported in 7.9.1/2/3, 8.9.1/2/3/4, and 9.3.2) is verified and/or assured by a third party?

	Other environmental information included in your CDP response is verified and/or assured by a third party
	Select from: ☑ Yes

[Fixed row]

(13.1.1) Which data points within your CDP response are verified and/or assured by a third party, and which standards were used?

Row 1

(13.1.1.1) Environmental issue for which data has been verified and/or assured

Select all that apply

☑ Climate change

(13.1.1.2) Disclosure module and data verified and/or assured

Environmental performance – Climate change

☑ Other data point in module 7, please specify :Keramida has, for the second year in a row, conducted a limited assurance audit of Essential's Scope 1 and 2 emissions. Previously, Keramida also examined base year emissions.

(13.1.1.3) Verification/assurance standard

Climate change-related standards

☑ ISO 14064-3

(13.1.1.4) Further details of the third-party verification/assurance process

Please see other comment.

(13.1.1.5) Attach verification/assurance evidence/report (optional)

Keramida 2022 Letter.docx
[Add row]

(13.3) Provide the following information for the person that has signed off (approved) your CDP response.

(13.3.1) Job title

Chief Environmental, Safety, and Sustainability Officer

(13.3.2) Corresponding job category

Select from:

☑ Chief Sustainability Officer (CSO)
[Fixed row]