Climate REPORT

ALLIANT ENERGY CORPORATION

Alliant Energy®

Contents

Forward-looking Statements

This material includes forward-looking statements. These statements can be identified because they include words such as “expects,” “expected,” “plans,” “will,” “outlook,” “estimate,” “target,” “goal,” “potential,” “projected,” projection,” or other words or expressions of similar import. Similarly, statements that describe future plans or strategies, our clean energy vision, transitioning our energy resources, planned resource additions, scenarios and scenario results, and future emissions reductions are forward-looking statements. These forward-looking statements are subject to risks and uncertainties that could cause actual results to differ materially from those expressed in, or implied by, the statements. Actual results could be materially affected by the following factors, among others: regulatory approvals; the ability to obtain regulatory approval for construction projects with acceptable conditions; federal and state regulatory or governmental actions, including the impact of legislation, and regulatory agency orders; unanticipated construction issues, delays or expenditures; the ability to complete construction of renewable generation and storage projects by planned in-service dates and within the cost targets set by regulators due to cost increases of and access to materials, equipment and commodities including due to tariffs, duties or other assessments, such as any additional tariffs resulting from U.S. Department of Commerce investigations into the sourcing of solar project materials and equipment from certain countries, labor issues or supply shortages, the ability to successfully resolve warranty issues or contract disputes, the ability to achieve the expected level of tax benefits based on tax guidelines and project costs, and the ability to efficiently utilize the renewable generation and storage project tax benefits for the benefit of customers; disruptions to ongoing operations and the supply of materials, services, equipment and commodities needed to construct solar generation, battery storage and electric and gas distribution projects, which may result from geopolitical issues, supplier manufacturing constraints, labor issues or transportation issues, and thus affect the ability to meet capacity requirements and result in increased capacity expense; the future development of technologies to reliably store and manage electricity, as well as electrification of other economic sectors; changes to the Midcontinent Independent System Operator, Inc. (MISO) resource adequacy process establishing capacity planning reserve margin and capacity accreditation requirements that may impact how and when new generating facilities such as Interstate Power and Light Company's (IPL’s) and Wisconsin Power and Light Company's (WPL’s) additional solar generation may be accredited with energy capacity, and may require IPL and WPL to adjust their current resource plans, to add resources to meet the requirements of MISO’s new process, or procure capacity in the market whereby such costs might not be recovered in rates; failure of equipment and technology to perform as expected; political conditions in Alliant Energy Corporation’s (Alliant Energy’s) service territories; continued access to the capital markets on competitive terms and rates, and the actions of credit rating agencies; inflation and higher interest rates; employee workforce factors, including the ability to hire and retain employees with specialized skills, impacts from employee retirements, changes in key executives, ability to create desired corporate culture, collective bargaining agreements and negotiations, work stoppages or restructurings; changes to the creditworthiness of, or performance of obligations by, counterparties with which Alliant Energy, IPL and WPL have contractual arrangements; the direct or indirect effects resulting from the ongoing COVID-19 pandemic and the spread of variant strains; economic conditions in Alliant Energy’s service territory; and other risk factors discussed to Alliant Energy’s most recent Annual Report on Form 10-K filed with the U.S. Securities and Exchange Commission, including the section therein titled “Risk Factors,” and its other filings with the SEC. All statements included herein are made as of the publication date hereof and Alliant Energy undertakes no obligation to update publicly such statements to reflect subsequent events or circumstances. This report identifies certain climate-related issues that are not necessarily material for financial reporting purposes.

Executive Summary

Alliant Energy recognizes our stakeholders' increasing interest in understanding our company's approach to addressing climate change. In response, we have prepared the following Climate Report to explain our approach and provide transparency to our stakeholders on our progress to reduce greenhouse gas emissions. We will continue to assess our strategy and our company's role in supporting the transition to a low-carbon economy.

Addressing climate change is an integral component of our strategic plans to provide affordable, safe, reliable and sustainable energy to the customers and communities that we have the privilege to serve. We share information on our strategic plans in Alliant Energy's **Annual Report to Shareowners** and in our annual **Form 10-K report** and updates filed with the U.S. Securities and Exchange Commission (SEC).

In 2015, the Financial Stability Board created the **Task Force on Climate-related Financial Disclosures** (TCFD) to develop voluntary recommendations and guidelines that companies can follow when providing climate-related information. Alliant Energy has elected to organize our Climate Report based on the **TCFD framework**. To provide a helpful resource for our stakeholders who prefer this format, we have also included a summary of our key takeaways in response to TCFD recommendations **(Table 1)**.

Significantly, this report shares outcomes from a climate study completed by the **Electric Power Research Institute** (EPRI) that included transition scenario analysis and a review of physical climate risk. The EPRI climate study results support the conclusion that Alliant Energy's strategies and goals are consistent with the international Paris Agreement **(Figure A-1)**. The results from the scenario analysis will be used to inform our ongoing review of our **Clean Energy Blueprint** plans and progress in achieving our **Clean Energy Vision** greenhouse gas emissions reduction goals. We have also developed appropriate climate-related signposts to monitor future uncertainties that could affect our company's business planning and guide our future strategies in response to climate change **(Table 3)**.

While this report is focused on climate change response, Alliant Energy also shares information on other environmental, social, and governance (ESG) topics in our **Corporate Responsibility Report**. In addition, we recognize that businesses can connect to the United Nations' **Sustainable Development Goals** (SDGs). Alliant Energy's **SDG map** is linked to our company Values. We also share examples of how our **actions** align with the United Nations' goal for affordable and clean energy (SDG 7), as well as other SDGs, to support a better and more sustainable future.

As sustainability reporting practices continue to evolve, we will provide future updates to our Climate Report and Corporate Responsibility Report, considering both voluntary frameworks and mandatory disclosure requirements.

I. Introduction

Who we are

Alliant Energy Corporation (NASDAQ: LNT) is a Midwest U.S. energy company headquartered in Madison, Wisconsin, with annual operating revenues of more than $4.2 billion. Our company is primarily engaged in electric generation and the distribution of electricity and natural gas. We serve approximately 995,000 electric and 425,000 natural gas customers through our two public utility subsidiaries, Interstate Power and Light Company (IPL) and Wisconsin Power and Light Company (WPL). IPL provides retail electric and gas service in Iowa, and sells electricity to wholesale customers in Minnesota, Illinois and Iowa. WPL provides retail and wholesale electric and retail gas service in Wisconsin. Based on electric sales, the largest cities served in Iowa and Wisconsin are Cedar Rapids and Beloit, respectively.

Our mission, purpose and strategy

Alliant Energy's mission is to deliver affordable energy solutions and exceptional service that its customers and communities count on - affordably, safely, reliably, and sustainably. This mission aligns with Alliant Energy's purpose - to serve customers and build stronger communities - which guides it through the ever-changing dynamics of the economy and the energy industry.

Alliant Energy takes its responsibility as a corporate citizen seriously and remains a careful steward of the environment and supports the communities in its service territories. Alliant Energy's mission and purpose is supported by a strategy focused on meeting the evolving expectations of customers while providing an attractive return for investors, and pursuing emerging technologies and safe, sustainable methods of energy production.

Our Values

Six values shape everything we do. To live Our Values, all of our employees are trained on and expected to adhere to our company's **Code of Conduct**.

Task Force on Climate-Related Financial Disclosures

The Task Force on Climate-Related Financial Disclosures (TCFD) was established in 2015 by the Financial Stability Board to develop voluntary, consistent climate-related disclosures for use by companies. Information on our company's energy and climate actions is organized using the **TCFD framework**: Governance, Strategy, Risk Management, Metrics and Targets (Figure 1).[i] A summary of Alliant Energy's key takeaways in response to TCFD recommendations is also provided as a helpful resource for our stakeholders (Table 1). In addition, we share information on our strategic plans in Alliant Energy's **Annual Financial Report** and in our annual **Form 10-K report** and updates filed with the U.S. Securities and Exchange Commission (SEC).

Figure 1. Task Force on Climate-Related Financial Disclosures reporting framework

Table 1. Key takeaways in response to TCFD recommendations

Key takeaways in response to TCFD recommendations	
TCFD mapping	**Key takeaways**
Governance - Disclose the organization's governance around climate-related risks and opportunities.	
a. Describe the Board's oversight of climate-related risks and opportunities.	• Governance systems are in-place to anticipate, plan for and manage climate-related risks and opportunities as part of our broader company strategy. • Oversight of the company strategy (including sustainability) is provided by the Board of Directors (BOD). • Oversight of climate-related matters is provided by appropriate BOD committees including: risks, investments, goals, emissions, regulatory policies, legislation, environmental rules, and other emerging issues as necessary.

Key takeaways in response to TCFD recommendations	
TCFD mapping	**Key takeaways**
b. Describe management's role in assessing and managing climate-related risks and opportunities.	• Our governance structure drives accountability throughout the organization to implement the company's strategic business plans that consider climate-related matters and supporting the transition to a low-carbon economy. • The Chief Executive Officer (CEO) is responsible for overall execution of company strategy and implementation of plans that consider climate change and carbon emissions. • The President and Chief Operating Officer (COO) is responsible for sustainability and provides oversight of regulated utility operations. • The Senior Vice President of Sustainability and Regulatory Strategy is responsible for oversight of environmental, social and governance (ESG) programs including Clean Energy Vision greenhouse gas reduction goals. • Management is responsible for updating and implementing the company strategy, including integration into employee roles and responsibilities. • A company-wide compensation scorecard metric rewards annual progress toward achieving the company's Clean Energy Vision 2030 goal.
Strategy - Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material.	
a. Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long-term.	• Opportunities: Customer-focused investments (Clean Energy Blueprint and integrated grid) and growing customer demand (economic development and electrification). • Risks: Low-carbon transition risks related to business operations, laws and regulations, economic and market conditions. In addition, physical risks associated with adapting to changing climate conditions.
b. Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.	• Our strategy and business plans consider that climate change is one of several factors driving transformation of the energy industry. • Addressing climate change is an integral component of our strategic planning process as we fulfill our obligation to provide affordable, safe, reliable and sustainable energy to our customers. • Our Clean Energy Blueprint and integrated grid capital investments support the transition to a low-carbon economy for our customers and communities.

Key takeaways in response to TCFD recommendations	
TCFD mapping	**Key takeaways**
	• Our plans provide operational savings by retiring coal-fired generation, providing renewable energy production tax credits and leveraging renewable energy financing options.

c. Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	• The Electric Power Research Institute (EPRI) completed a climate study to assess our strategy relative to the international Paris Agreement.
	• The EPRI study modeled CO_2 emissions the primary source of greenhouse gases from Alliant Energy's utility subsidiaries.
	• The EPRI climate study found that Alliant Energy's:
	  ○ Clean Energy Vision CO_2 emission reduction goals are consistent with the Paris Agreement's objective to limit global average temperature rise to well below 2°C above pre-industrial levels and to pursue efforts to limit global average temperature increase even further to 1.5°C.
	  ○ Clean Energy Blueprint plans are consistent with a low-carbon transition under various scenario outcomes that consider different policy, market, technology, social, and economic contexts.
	• The results of EPRI's scenario analysis will be used to inform our ongoing review of Clean Energy Blueprint plans and progress in achieving our Clean Energy Vision goals.

Risk Management - Disclose how the organization identifies, assesses, and manages climate-related risks.	
a. Describe the organization's processes for identifying and assessing climate-related risks.	• We identify, evaluate and report on material risks that may be climate-related or carbon-related in the Risk Factors section of our annual **Form 10-K report** to the U.S. Securities and Exchange Commission (SEC).
b. Describe the organization's processes for managing climate-related risks.	• Our process applies an enterprise risk management program to assess, communicate and develop response strategies to companywide risks (including potential climate-related risks) in a structured framework. • Responses to potential climate-related risks are implemented as part of the company's broader strategy that is described in the management discussion and analysis (MD&A) section of the annual **Form 10-K report**.

Key takeaways in response to TCFD recommendations	
TCFD mapping	**Key takeaways**
c. Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.	• Oversight of Alliant Energy's overall risk profile is provided by the BOD. • Oversight of the enterprise risk management program is provided by the BOD Audit Committee. • An Executive Review and Risk Committee (ERRC) provides overarching risk governance and oversight for Alliant Energy, as delegated by the BOD.
Metrics and Targets - Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.	
a. Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	• To monitor future uncertainties, we have developed appropriate climate-related signposts from EPRI's climate study to guide our company's future business planning. • Key signposts to guide our low-carbon transition include future policy decisions, technology research and development (R&D), economic/market changes, public perception and climate-related energy system trends. • **Table 3** summarizes the signposts and our strategic actions.
b. Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 greenhouse gas (GHG) emissions and the related risks.	• Annual updates for Scopes 1 and 2 greenhouse gas (GHG) emission estimates are published in our Corporate Responsibility Report's **Sustainability Management and Environmental, Social and Governance (ESG) Performance Summary**. • The primary source of greenhouse gases from Alliant Energy's utility subsidiaries (approximately 99%) are the direct emissions of CO_2 from fossil-fueled electric generation. • We are working to achieve our greenhouse gas reduction goals by focusing on our greatest impact opportunity to reduce direct CO_2 emissions through our Clean Energy Blueprint plans to retire coal-fired generation and expand renewable energy.
c. Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	• Our company is striving to accelerate greenhouse gas emission reductions and achieve our Clean Energy Vision goals through implementation of a responsible energy strategy that meets customer energy needs affordably, safely, reliably, and sustainably.

II. Governance

Board of Directors

The Board of Directors (BOD) has appropriate oversight of the Company's key sustainability initiatives (Figure 2). The BOD is responsible for oversight of our strategy, which includes emissions reductions and the expansion of renewable energy. Annually, a strategic planning session is held with the BOD to consider the risks and opportunities facing the Company. Management discusses with the BOD how our strategic plan addresses the risks and opportunities related to climate change. Our carbon-related reduction goals are based on the successful execution of our strategic plan.

The Nominating and Governance Committee is responsible for general oversight of Environmental, Social and Governance (ESG) issues. The Nominating and Governance Committee works with other BOD Committees to ensure that the expertise of those Committees is brought to bear on oversight of various issues, working closely with the Operations Committee on climate change matters and greenhouse gas emissions goals. The Operations Committee reviews climate change risks and greenhouse gas emissions. In addition, the Compensation and Personnel Committee adopts environmental goals as part of the company's short-term incentive compensation plans. Alliant Energy's Chief Executive Officer (CEO), along with other company executives, have overarching responsibility for company strategy, compliance, and operations – including climate change and carbon emissions – and provide regular updates to the BOD and its Committees.

Figure 2. Board committee ESG focus areas

E - Environmental, S - Social, G - Governance

Management

Alliant Energy's governance structure drives accountability throughout the organization to implement the company's strategic business plans that consider climate-related matters and support the transition to a low-carbon economy. The CEO is responsible for overall execution of the company strategy and operations that consider climate change and carbon emissions. The President and Chief Operating Officer (COO) reports to the CEO and is responsible for customer experience, supply chain, corporate strategy, sustainability and regulatory strategy. The COO also serves as CEO of Alliant Energy's utility subsidiaries, IPL and WPL, and provides oversight of operations in Iowa and Wisconsin. The Senior Vice President of Sustainability and Regulatory Strategy reports to the COO and is responsible for oversight of the company's ESG programs, sustainability, regulatory strategy and solutions teams and resource development. This role leads the teams driving the transition to cleaner sources of energy generation and planning for future resources necessary to meet the needs of our customers. In addition, this role is responsible for developing priorities and communicating progress on the company's ESG performance, including achievement of Alliant Energy's Clean Energy Vision greenhouse gas reduction goals.

Management is responsible for updating and implementing the company strategy. All employees are reviewed periodically throughout the year by their manager or supervisor for performance relative to their job responsibilities. For certain employees, these roles specifically support execution of our Clean Energy Blueprint and Clean Energy Vision goals, such as: tracking progress on greenhouse gas emissions reduction targets, retirement of coal-fired facilities, expansion of company-owned renewable energy sources (wind and solar), enabling customer-owned and community distributed generation and renewable purchase power agreements (PPAs), completing integrated grid projects (energy storage, undergrounding electric distribution lines, digital technology initiatives), and on-going support for customer demand-side management including conservation and energy efficiency programs.

Furthermore, Alliant Energy's short-term annual incentive compensation plan includes operational goals that reflect our company's Purpose, Values and commitment to ESG-related matters. To drive leadership accountability, these ESG-related goals are applicable company-wide, including executive management, directors, managers, supervisors and all non-bargaining company employees. This includes an environmental emissions reduction goal that rewards annual progress toward achieving a 50% reduction in CO_2 emissions by 2030 from 2005 levels. Metrics on emissions levels are tracked and progress toward achieving the CO_2 reduction goal is communicated throughout the year in a Corporate Scorecard.

III. Strategy

Our Clean Energy Vision

Alliant Energy is advancing clean energy and recognizes the importance of using resources responsibly in the company's Clean Energy Vision goals. These goals align with our Value to ***Act for tomorrow*** – we use resources wisely, care for the environment and continuously improve ourselves and our company. To accomplish this, our company is finding innovative ways to address environmental challenges, operate more efficiently and provide flexible energy resources.

Our Clean Energy Vision Goals

Successful execution of our Strategy will enable us to achieve our clean energy initiatives.

By 2030:

- Reduce greenhouse gas emissions from our utility operations by 50% from 2005 levels
- Reduce our electric utility water supply by 75% from 2005 levels
- Electrify 100% of our company-owned light-duty fleet vehicles

By 2040:

- Eliminate all coal from our generation fleet
- Reduce greenhouse gas emissions from our utility operations by 80% from 2005 levels

By 2050:

- Aspire to achieve net-zero greenhouse gas emissions from our utility operations

We will continue to review and update our Sustainable Energy Plan and Clean Energy Vision, based on future economic developments, evolving energy technologies and emerging trends in the communities we serve.

This report explains the pathway to achievement of our Clean Energy Vision goals through implementation of our strategy and plans. Our updated greenhouse gas goals reflect our company's role in supporting the transition to a low-carbon economy. Key aspects of our goals include:

- Covering Scope 1 emissions of carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O).
- Providing both near-term and interim quantifiable greenhouse gas emissions reductions in addition to retiring our company's owned and operated coal generation.
- Addressing electricity generation and natural gas distribution from our regulated utility operations.
- Measuring performance based on the U.S. Environmental Protection Agency Mandatory Reporting of Greenhouse Gases Rule (40 CFR part 98: Subparts C, D and W).

Risks and opportunities

Alliant Energy's Strategy and business plans consider that climate change is one of several factors driving transformation of the energy industry. As an electric utility company, we must also consider:

- Customer options and affordability
- Legislation and regulatory policy
- Technology advancement
- Asset retirements
- Infrastructure replacement
- Evolving energy markets
- Electrification expansion
- Economic development
- Socioeconomic changes

Therefore, climate change risks and opportunities are considered as part of a broader process that supports development of our company's business strategy and associated plans.

Planning process

Our electric utility subsidiaries, IPL and WPL, are market participants in the Midcontinent Independent System Operator, Inc. (MISO) Regional Transmission Organization. By participating in MISO's wholesale electricity markets, we provide customers in our service area with reliable and affordable power. Through technical analysis, MISO establishes requirements for the long-term efficiency and reliability of the electrical system. Adequate generation supply, including a reserve margin, is a key component to planning a reliable electric network, and we are obligated to satisfy those supply requirements.

Our company's approach to assess and develop strategic initiatives for our low-carbon transition is supported by an integrated resource planning process. Integrated resource planning is a technical process that uses computer models to examine the potential impacts of different operational decisions. The models assess the performance of various energy resource alternatives over a planning horizon that typically covers 15 to 30 years.

The planning process includes evaluation of how energy and capacity needs balance with supply. This evaluation includes using a year-by-year load forecast of both the energy required at the time of maximum consumption and the total amount of energy consumed over time. We utilize economic projections for model inputs including fuel prices, capacity prices, and environmental costs such as carbon pricing or zero emissions credits. Energy supply options are then modeled using expected performance characteristics, operating costs and capital costs.

We use energy-market modeling to consider forecasts over both the short and medium term. Regional energy resource characteristics and transmission-constraints are factored into simulations that assess economic dispatch of electric generation into the energy markets. This supports portfolio optimization and risk analyses across planning alternatives.

Ultimately, the results from the integrated resource planning process are further assessed by considering our strategy and non-quantifiable risks that cannot be adequately considered in a resource planning computer model. This guides our decisions on the best future energy resources to meet our customers' electricity needs. Using this process supports Alliant Energy's focus on managing energy costs for customers, meeting reliability requirements and preparing our company for a carbon-constrained future.

Strategic initiatives

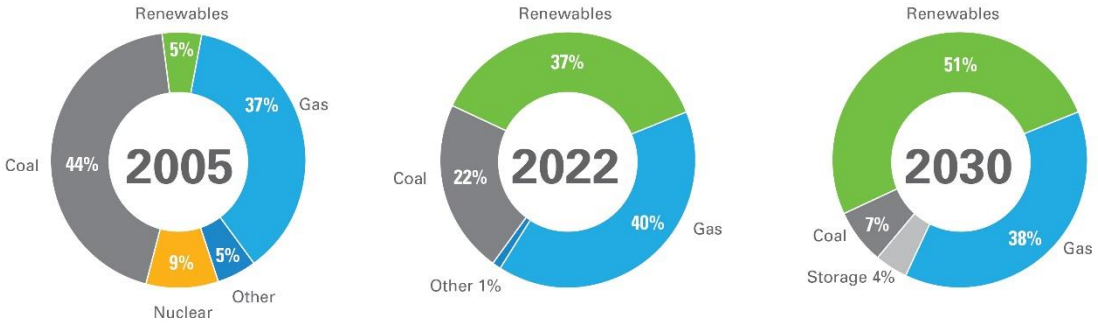
Alliant Energy is focused on executing a long-term strategy that meets customer energy needs affordably, safely, reliably, and sustainably. Our **Clean Energy Blueprint** guides our low-carbon transition to successfully provide for customers' future energy needs by expanding cost-effective renewable resources and implementing alternative energy resources. We support renewable growth in our service area and provide customer-focused energy solutions. We're also investing in our distribution infrastructure to make it smarter and adaptable to support evolving energy technologies as well as stronger and more resilient to changing climate conditions.

Clean Energy Blueprint

We have completed our plan to add 1,150 megawatts of wind production, expanding our owned and operated regulated wind capacity to nearly 1,800 megawatts. In addition, our company now owns approximately 266 megawatts of solar generation and 9 megawatts of battery storage. Our plans include development and acquisition of additional renewable energy including approximately 1,200 megawatts of solar generation by the end of 2024 plus 350 megawatts of energy storage by the end of 2025. We are continuing to evaluate opportunities to add more renewable generation (repowering of existing wind farms, community solar and other distributed energy resources), energy storage systems and natural gas resources in order to meet reliability standards that ensure sufficient capacity is available to meet our customers' energy needs.

By 2030, we expect that approximately 51% of our generation capacity will be provided from renewables (Figure 3).

Figure 3. Transitioning our energy resources



Based on approximate capacity in megawatts (MW) as of May 2023 including owned generation resources and utility purchase power agreements. Includes Alliant Energy® renewable programs (Customer-Hosted Renewables, Community Solar, Renewable Energy Partner), Public Utility Regulatory Policies Act (PURPA) resources from non-utility power producers and other distributed energy resources based on these renewable energy agreements. Actual energy in megawatt-hours (MWh) to serve customer load will differ from the approximate capacity shown above due to participation in the Midcontinent Independent System Operator (MISO) regional energy markets. Future projections are subject to change and Alliant Energy undertakes no obligation to update publicly such statements to reflect subsequent events or obligations.

Future updates to our plans will be disclosed in our annual reports on Form 10-K and quarterly reports on Form 10-Q filed with the Securities and Exchange Commission.

Enabling more renewables

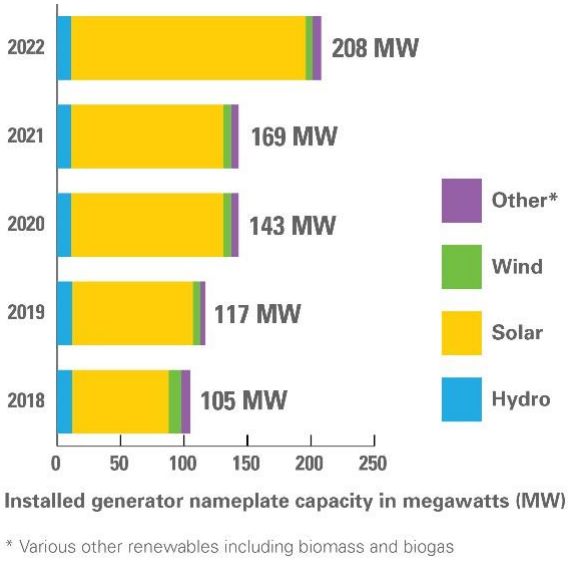
In addition to our Clean Energy Blueprint, Alliant Energy enables non-utility owned renewable energy resources to connect to our electric distribution systems. This includes customer-owned distributed renewables and Independent Power Producers (IPPs).

Customers can connect their owned renewable generation to our electric distribution system. For years, we've purchased the excess power from customers who have installed solar panels, small wind turbines and other renewable generation sources. They sell power to us when their distributed generation produces more energy than they need and likewise use our electric distribution system to buy power from us when there is insufficient energy produced to reliably meet their demand.

Furthermore, under the Public Utility Regulatory Policy Act (PURPA), our regulated utilities also purchase electricity from qualifying IPP renewable energy projects through interconnection contracts. This includes small-scale PURPA qualified renewable facilities and parallel generation that are not covered under long-term purchase power agreements. Alliant Energy's electric distribution system provides the access required for PURPA facilities to the broader MISO energy markets.

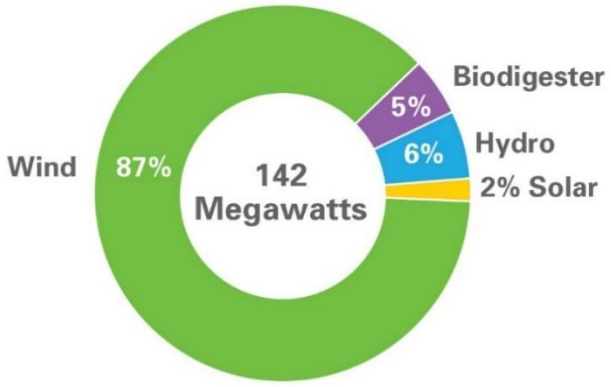
There are approximately 208 megawatts of customer-owned distributed renewable resources (Figure 4) and 142 megawatts of IPP renewables (Figure 5) directly connected to our electric distribution system. By leveraging the value of our grid, Alliant Energy is expanding the low-carbon energy transition by enabling the integration of these renewable resources.

Figure 4. Customer-owned renewable growth



* Various other renewables including biomass and biogas

*Figure 5. Renewable generation from qualified independent power producers**



* includes small-scale PURPA qualifying renewable facilities

Customer solutions

Alliant Energy's growing portfolio of customer-focused energy solutions includes programs and products that support reductions in carbon emissions.

- **Energy efficiency**: Our company's energy efficiency portfolio includes programs targeted at reducing total energy usage as well as to support managing peak periods by reducing or shifting energy use through demand response. These are implemented through IPL's Energy Efficiency Plan in Iowa and WPL's participation in the state-managed Focus on Energy (FoE) program in Wisconsin. Alliant Energy's customers benefit from our energy efficiency programs as an option to conserve energy, reduce costs, and help the environment.
- **Customer-renewable options**: Our **Second Nature®** program provides an option for our residential and non-residential customers to support electricity generated from wind and solar resources located in Iowa and Wisconsin. Customers simply select a participation level, and a third party verifies annually that all electricity purchased on behalf of Second Nature participants comes from qualified renewable resources. In addition, we offer various renewable energy options directly to our customers through green tariffs and other customizable utility rate designs. This currently includes our Alliant Energy® **Community Solar**, **Customer-Hosted Renewables** and **Renewable Energy Partner** programs.
- **Electrification initiatives**: We support electrification initiatives as an opportunity to enable broader, economy-wide carbon reductions, especially from transportation — which is now the highest CO_2 emitting sector in the United States[ii]. As the power sector transitions by expanding renewable and other cleaner energy resources, electric vehicles can reduce emissions by charging with electricity from the grid. At industrial and commercial facilities, providing emissions-free work-site conditions significantly benefits equipment operators. Our company is encouraging business adoption of various **electrification** options such as electric forklifts, electric truck refrigeration units and electric cars and trucks. We also support residential adoption by sponsoring educational events. Alliant Energy will lead by example through our Clean Energy Vision goal of electrifying 100% of our company-owned light-duty fleet vehicles by 2030.

Our Corporate Responsibility Report provides additional details about these programs, initiatives, and annual results in the **Sustainability Management and Environmental, Social and Governance (ESG) Performance Summary**.

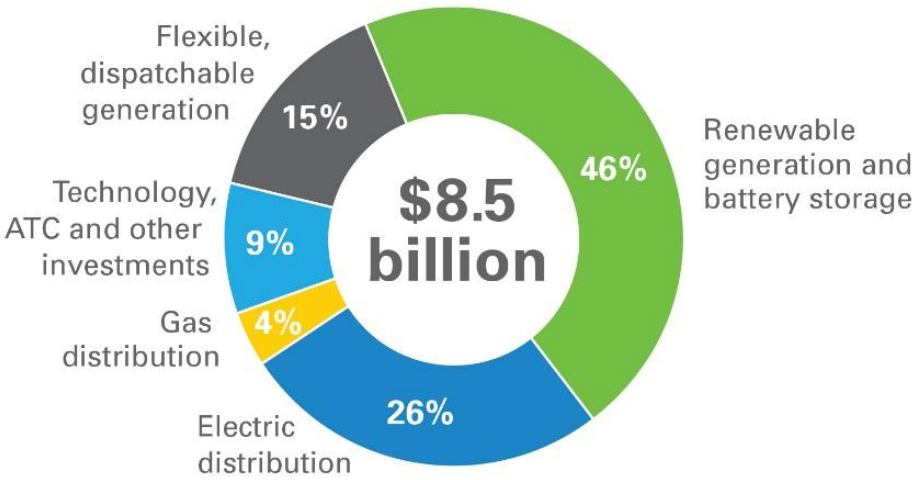
Integrated grid

Our integrated grid strategic initiatives include customer-focused investments to replace, modernize and upgrade infrastructure. Electric distribution system investments will focus on areas such as improving reliability and resiliency. These investments include undergrounding new and replacement lines, enabling distributed energy solutions with higher capacity 25-kilovolt lines, leveraging advanced metering infrastructure, testing new digital technologies, and optimizing performance with an advanced distribution management system. In addition, gas system investments will focus on pipeline replacement to ensure safety and pipeline expansion to support reliability and economic development. We are also improving our telecommunication network by installing fiber optic routes to strengthen and improve the integrated grid network in order to help serve our customers.

Capital investments

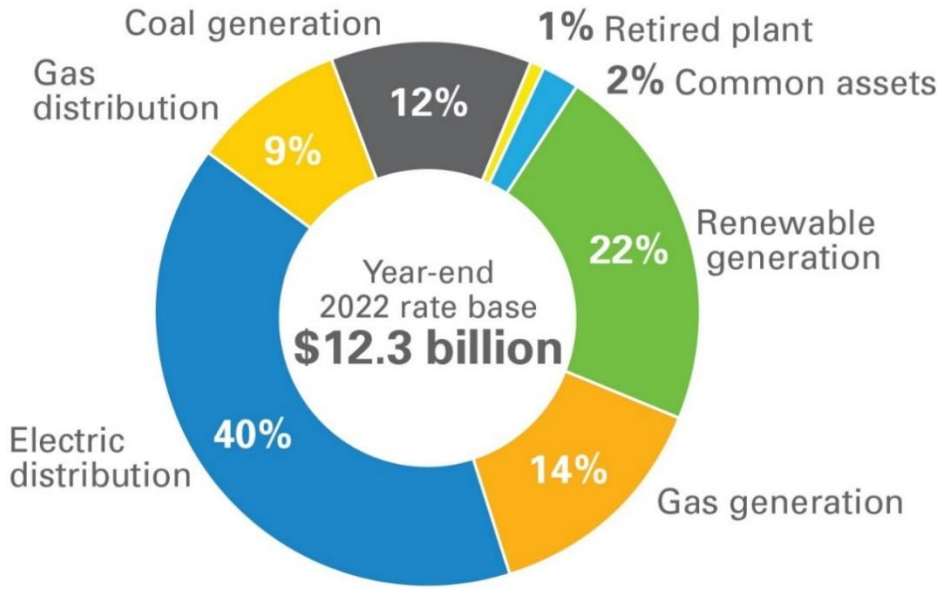
Alliant Energy's capital investments directly reflect our strategic plan opportunities related to climate change and low-carbon transition (Figure 6). Implementation of our Clean Energy Blueprint is expected to result in cost savings for our utility customers through the planned transition away from coal-fired generation and toward the expansion of renewable resources. This includes fuel savings, utilization of renewable project tax equity financing, renewable energy investment and production tax credits. Our integrated grid strategic initiatives will benefit our customers by reducing the frequency and duration of outages, mitigating power quality issues and security threat risks, providing more accurate and timely information to help customers manage energy usage, and creating operational efficiencies and easier integration of distributed clean energy solutions. In addition, we have issued $2.3 billion in **green bonds** to finance these environmentally beneficial projects.

Figure 6. Capital expenditures 2023-2026 forecast



As a regulated utility company, our revenue is driven by the allowed rate of return on rate base. Rate base consists of the value of assets used to provide service. The portion of our rate base dedicated to renewable generation to produce electricity continues to grow as a percentage of our total rate base. In 2022, 22% of Alliant Energy's rate base was renewable generation (Figure 7) and our company expects this to increase to approximately 36% by 2026.

Figure 7. 2022 year-end percentage of Total Utility Rate Base



Climate transition

Alliant Energy has assessed our strategy to consider how it aligns with the carbon reductions and climate goals relative to the international Paris Agreement. The Paris Agreement's central aim is to strengthen the global response to the threat of climate change. This involves keeping a global temperature rise this century well below 2 degrees Celsius (2°C) above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius (1.5˚C).

This assessment was prepared in collaboration with the Electric Power Research Institute (EPRI). EPRI is a nonprofit, scientific research organization with a public benefit mandate. In addition to expertise in energy systems and climate analyses, EPRI staff contribute as lead authors for the **Intergovernmental Panel on Climate Change** reports assessing the state of knowledge of climate change.

EPRI completed a study to provide a long-term perspective on the possible effects of climate change on Alliant Energy's regulated electric utility operations, IPL and WPL. The study objective was to assess the potential impacts of low-carbon transition on Alliant Energy's broader strategy, Clean Energy Vision goals and Blueprint plans. The EPRI study modeled CO_2 emissions, which are the primary source of greenhouse gases from Alliant Energy's utility subsidiaries. In addition, the study considered the physical aspects of changing climate in Alliant Energy's service area and potential adaptation responses.

The key outcomes from Alliant Energy's climate transition assessment are summarized below. The EPRI study results support that Alliant Energy's strategies and goals are consistent with the international Paris Agreement. The results of this scenario analysis will be used to inform our ongoing review of Clean Energy Blueprint plans and our progress in achieving our Clean Energy Vision goals. To monitor future uncertainties, we have also developed appropriate climate-related signposts from EPRI's climate study to guide our company's future business planning.

The appendices to this report provide further details on how our company assessed climate-related futures and insights gained from the scenario analysis.

- **Appendix A** – Climate transition scenario analysis results
- **Appendix B** – Quantitative low-carbon transition scenario analysis
- **Appendix C** – Physical risk review of historical and projected climate change in the Midwest

Climate Transition Assessment Outcomes*

Alliant Energy's Clean Energy Vision CO_2 emission reduction goals are consistent with the Paris Agreement's objective to limit global average temperature rise to well below 2 °C above pre-industrial levels and to pursue efforts to limit global average temperature increase even further to 1.5°C **(Figure A-1)**.

- Scenario modeling for Iowa and Wisconsin of a range of potential state-level pathways to net-zero electric sector CO_2 emissions in 2050 are also aligned with limiting warming to 1.5°C and 2°C.

Alliant Energy's Clean Energy Blueprint plans are consistent with a low-carbon transition under various scenario outcomes that consider different policy, market, technology, social, and economic contexts.

- Significant wind and solar resources, energy storage, expanded electrification, and natural gas units all play a role in the least cost mix at net-zero in 2050 unless explicitly prohibited by policy.
- To reach its climate targets, Alliant Energy will ultimately have to make investments in technologies that are not commercialized today.

The climate has changed in the Midwest since 1900 and current trends are likely to continue — with changes in temperature, humidity, precipitation, and extreme weather conditions observed.

- Climate change is not projected to have a significant long-term impact on wind and solar resources – however, improving forecasting of annual variation and fluctuations would be helpful to future planning.

Understanding the future direction of key drivers will influence the long-term climate change strategy and low-carbon goals that Alliant Energy can ultimately achieve.

- Future policy decisions at the state and federal level, as well as technology research and development, are the two most critical climate-related signposts to monitor in guiding Alliant Energy's transition.
- Changes in climate, economic, and energy system trends are key signposts to monitor in guiding Alliant Energy's approach to physical climate change.

* Results are based on an EPRI 2022 climate study to assess Alliant Energy's strategy relative to the international Paris Agreement. The EPRI study modeled CO_2 emissions from fossil-fueled electric generation, which are the primary source of greenhouse gases (approximately 99%) from Alliant Energy's regulated utility subsidiaries.

IV. Risk Management

Identification and reporting

We identify, evaluate and report on material risks that may be climate-related or carbon-related in the Risk Factors section of our company's annual **Form 10-K report** to the U.S. Securities and Exchange Commission (SEC). These may be transition risks related to business operations, laws and regulations, or economic and market conditions. In addition, there are physical risks associated with adapting to changing climate conditions and extreme weather events. These transition and physical risks could potentially include changes in energy demand, technology, public policy, legislation, environmental rules, regulatory oversight, tax incentives, fuel prices, material supplies, customer preferences, seasonal weather patterns and natural disasters.

Assessment and response

We have an enterprise risk management program to assess, communicate and manage significant risks in a structured framework. The risk assessment process identifies key themes and trends, quantifies our key risks and develops management plans and strategies. Responses to potential climate-related risks are implemented as part of the company's broader strategy (Table 2).

The management discussion and analysis (MD&A) section of the annual **Form 10-K report** provides an overview of the company's strategy as well as qualitative discussion and quantitative results on the company's performance relative to implementation of the strategy. The MD&A includes financial results of operations, investments to expand company-owned renewable generation as well as to modernize grid infrastructure, and provides our annual progress on voluntary environmental-related goals.

Table 2. Response strategies for climate-related risks

Response strategies for climate-related risks	
Operational	• Fossil-fueled generation retirements • Wind and solar renewables expansion • Innovation investments and partnerships • Technology research and pilot studies • Customer engagement and solutions
Regulatory	• Routine communication with regulators • Progressive rate design structures • Technical and policy committee participation • Public comment submissions
Physical	• Grid infrastructure design and investments • Outage center and power restoration processes • Emergency planning and preparedness drills • Physical security design and prevention measures • Advanced metering and communications technologies • Site-specific risk assessments and adaptation plans • Industry collaboration

Overall risk management

The Board of Directors (BOD) is responsible for overseeing Alliant Energy's overall risk profile. The Audit Committee has been specifically delegated the responsibility for overseeing the enterprise risk management program. Programs, plans and actions are put in place to respond to risks that may be associated with climate or carbon concerns.

The Executive Review and Risk Committee (ERRC) provides overarching risk governance and oversight for Alliant Energy, as delegated by the BOD. Responsibilities of the ERRC include review of business, financial, reputational and operational risks that may be material to Alliant Energy, as well as review of those processes that control, mitigate and/or monitor the risks. Relevant processes reviewed consist of internal policies and procedures, risk assessments and risk mitigation plans and oversight of the Energy Risk Management and Trading Committee (ERMTC). The ERMTC reviews, approves, monitors and makes recommendations regarding the company's energy portfolio strategy, trading activities (including renewable energy credit transitions), hedging and commodities transactions, and risk tolerance.

V. Metrics and Targets

Signpost guides

Insights from the EPRI climate study were used to develop appropriate climate-related signposts as forward-looking measures and indicators to monitor relevant uncertainties over time. Signposts can help to provide a better understanding of whether uncertainties are evolving in a consistent or inconsistent manner with transition scenario assumptions (Table 3).

These climate-related signposts can be periodically reviewed to guide determination of what strategic actions might be valuable to address potential risks and enable opportunities for our company in the transition toward a low-carbon economy. Alliant Energy will continue to track policy, technology, market, economic and social developments against these signposts to inform our future business plans.

Table 3: Climate-related signpost guides

Climate-related signpost guides			
Category	**Uncertainty**	**Signposts**	**Our strategic actions**
Policy	Climate policy developments (state, national, or sectoral) and how these include policy alternatives affecting regulatory flexibility, timing and scope of coverage	Proposed legislation or regulation to reduce greenhouse gas emissions or to create renewable or clean energy standards Stakeholder viewpoints regarding climate change impacts and possible solutions Policy developments affecting tax credits, energy subsidies and other financial incentives for renewables and alternative energy technologies	Track and review emerging issues such as agency guidance, proposed rules and legislation Educate and advocate for reasonable policy approaches that ensure affordable, safe, reliable and sustainable energy for our customers Participate in local and state efforts to evaluate climate change and develop response plans
Technology	Technology research and development (R&D) for emerging generation and storage technologies necessary to maintain resource adequacy and grid reliability	Government R&D funding availability that might alter the relative competitiveness of emerging technologies and/or reduce risk Evolution of long-duration storage technologies, carbon capture technologies, hydrogen production and storage technologies Commercialization strategies for next generation energy technologies	Monitor grid-scale demonstration projects to learn from early adopters and implement pilot-scale projects Support R&D programs that monitor evolving technologies and demonstration projects Review levelized cost trends for renewable energy and low-carbon energy technologies Track actual deployment and market-viability of new energy technologies

Climate-related signpost guides			
Category	**Uncertainty**	**Signposts**	**Our strategic actions**
Market/ Economic	Changes in operational conditions impacting energy demand, generation resource mix, and reliability	Policies and other factors indicative of increased or decreased electrification Progression of MISO energy markets to support low-carbon resources	Collaborate in industry-wide efforts to educate, guide and deploy electric vehicle (EV) fast charging infrastructure Track trends such as EV charger installations, residential heat pump sales, commercial and industrial customer fleet electrification, or requests for new loads due to fuel switching Participate in MISO stakeholder engagement and planning processes for resource adequacy, transmission expansion, and market rule reforms to address energy mix resource changes
Social	Support for low-carbon energy transition and adoption of climate targets	Public perception towards renewable resources, negative emissions technologies and carbon offsets	Monitor public participation in regulatory rate-case public hearings for renewables and other clean generation resources Track energy and climate-related discussions occurring in municipal and other community meetings in Alliant Energy's service area
Physical	Climate change impacts on utility operations	Changes in climate, economic, and energy system trends	Review new research reports on climate change variable trends or projections relevant for planning Support research related to power system climate change resiliency

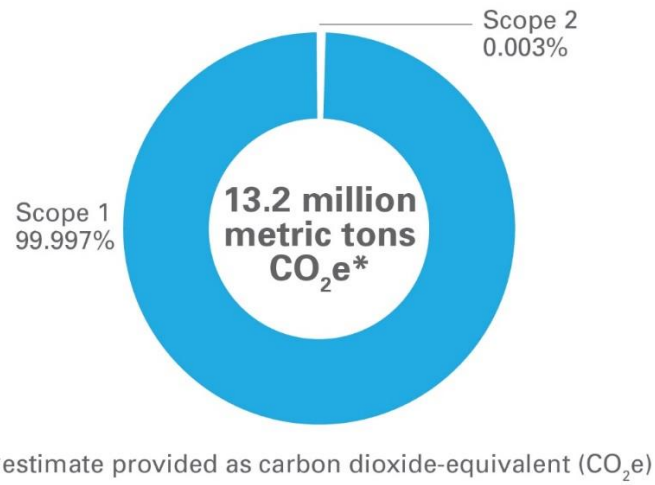
Greenhouse gas emissions

Scopes 1 and 2

Scope 1 greenhouse gas (GHG) emissions are direct emissions from owned or controlled sources. Alliant Energy reports GHG emissions annually to the U.S. Environmental Protection Agency (EPA) as required by the Clean Air Act (CAA) regulations for the Mandatory Greenhouse Gas Reporting Program (40 C.F.R. Part 98). In addition, our company estimates other Scope 1 GHG emissions that are not required to be reported to the EPA. The estimated Scope 1 GHG emissions for Alliant Energy in 2022 based on available information was approximately 13.2 million metric tons of CO_2-equivalent (CO_2e). Our total CO_2e is estimated with the global warming potentials (GWP) applied by the EPA mandatory program as follows: carbon dioxide (CO_2) = 1, methane (CH_4) = 25, nitrous oxide (N_2O) = 298.

Scope 2 emissions are indirect GHG emissions from the generation of purchased energy. At some facilities, IPL and WPL purchase electricity for business operations outside of the Alliant Energy service area. The Scope 2 GHG emissions estimated for this purchased energy in 2022 was approximately 452 metric tons of CO_2e using the location-based method or 436 metric tons of CO_2e using the market-based method based on the **World Resources Institute guidance for Scope 2** emissions calculations. Overall, the contribution of Scope 2 emissions from our company are very small compared to our Scope 1 emissions (Figure 8).

Figure 8. 2022 Scope 1 and Scope 2 total greenhouse gas emissions



The primary GHG source from Alliant Energy's utility subsidiaries (approximately 99%) are direct emissions of CO_2 from fossil-fueled electric generation (Figures 9 and 10). In addition, there are combustion emissions from our general facilities' use of natural gas for space heating and operation of our company's vehicle fleet. Fossil-fueled electric generating unit CO_2 emissions are monitored as required by CAA regulations (40 C.F.R. Part 75). This includes operation of continuous emissions monitoring systems (CEMS), fuel flow meters and supplier fuel analysis. For 2022, CEMS were over 98% accurate and over 99% available based on independent third-party test results. The Mandatory Relative Accuracy Test Audit (RATA) compliance reports for CEMS are submitted to the EPA and certified under penalty of law. The CO_2 emissions reported for our natural gas electric generating units utilize certified fuel flow meters that are over 99% accurate, certified supplier fuel analysis and EPA emission factors specifying carbon content.

There are also GHG emissions from our natural gas distribution system operations, which are primarily (approximately 99%) from fugitive methane (CH_4) losses. Our distribution system is monitored closely to minimize product loss as well as ensure regulatory compliance with applicable environmental and safety requirements. In accordance with Pipeline and Hazardous Materials Safety Administration (PHMSA) regulations, Alliant Energy's integrity management program has been developed to maintain safe, compliant natural gas pipelines for our local distribution system operations. Our company completes regular distribution system inspections including leak surveys, implements routine maintenance to minimize releases of natural gas, and submits regulatory reports on program compliance results.

Figure 9. 2022 Scope 1 greenhouse gas emissions by contribution

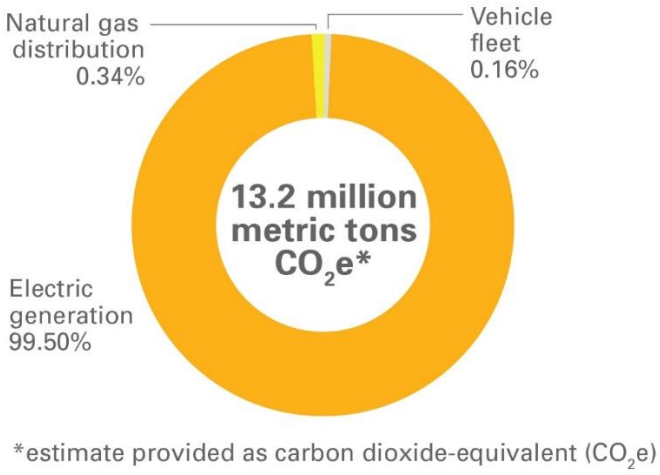
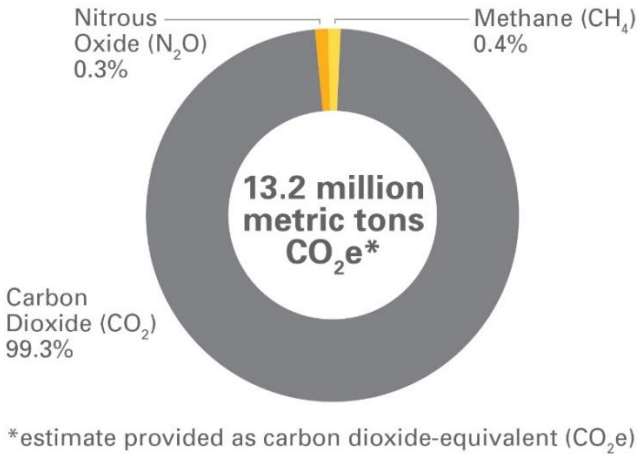


Figure 10. 2022 Scope 1 greenhouse gas emissions by type



Our company is continuing to evaluate our Scope 1 and 2 greenhouse gas inventories to include other potential sources of emissions based on available data, updated guidance and estimating protocols. Our Corporate Responsibility Report provides annual updates for our currently estimated Scope 1 and Scope 2 GHG emissions in the **Sustainability Management and Environmental, Social and Governance (ESG) Performance Summary**.

Scope 3

Scope 3 emissions are the result of activities from assets our company does not own or control. These activities indirectly impact our business operations through upstream and downstream actions in the asset's value chain. Alliant Energy recognizes that numerous stakeholders have a growing desire for companies to quantify and address Scope 3 GHG emissions impacts. However, there are several quantification challenges when accounting for value chain GHGs, because the current estimating methods are based on voluntary protocols and general guidelines only. [iii] In addition, there remains a lack of clarity on complex technical issues as well as important considerations related to data availability, accessibility and accuracy. Finally, there is significant potential for double-counting of GHG emissions between companies when doing Scope 3 GHG emissions estimates. [iv]

In order to help address some of these challenges, Alliant Energy supported an EPRI project to improve our industry's understanding of voluntary corporate GHG accounting protocols. The **technical report** from this project is publicly available and discusses key technical issues related to applying these guidelines to estimate Scope 3 GHGs to utility operations. Our company continues to work collaboratively on technically sound approaches for evaluating Scope 3 GHGs in order to gain any insights this information could provide to support our future planning efforts.

Goals and performance

Clean Energy Vision progress

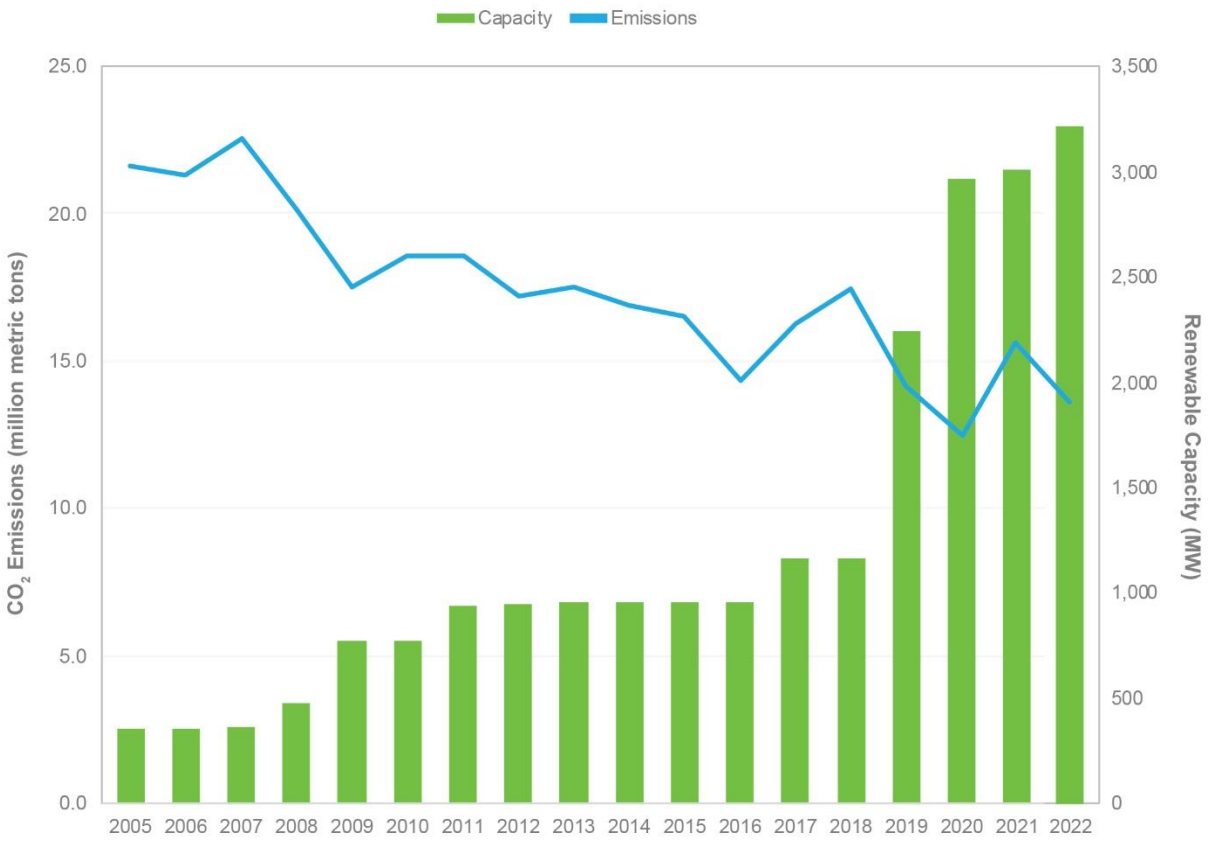
Alliant Energy has a long history of environmental stewardship focused on meeting customers' energy needs in an economical, efficient, reliable and sustainable manner. We proactively consider future environmental compliance requirements and proposed regulations in our planning, decision-making, construction and ongoing operations activities.

We are focused on executing a long-term strategy to deliver reliable and affordable energy with lower emissions, independent of changing policies and political landscape. To achieve these long-term goals, Alliant Energy will transition away from coal-fired electric generation by incorporating renewable energy, distributed energy resources, energy efficiency, demand response, highly-efficient natural gas-fired electric generation and other emerging technologies such as energy storage.

Adopting a long-term strategy prepares us to achieve environmental compliance requirements. It also provides flexibility to adjust our plans if needed. Metrics and targets guide our future environmental plans. Our **Corporate Responsibility Report** updates the annual progress made toward achievement of our **Clean Energy Vision** goals.

With respect to climate change, Alliant Energy's greatest impact opportunity is to reduce our direct CO_2 emissions from electricity generation. Our company has already made significant progress achieving CO_2 reductions by retiring coal-fired generation and expanding renewable resources, as reflected in our historical progress since 2005 (Figure 11).

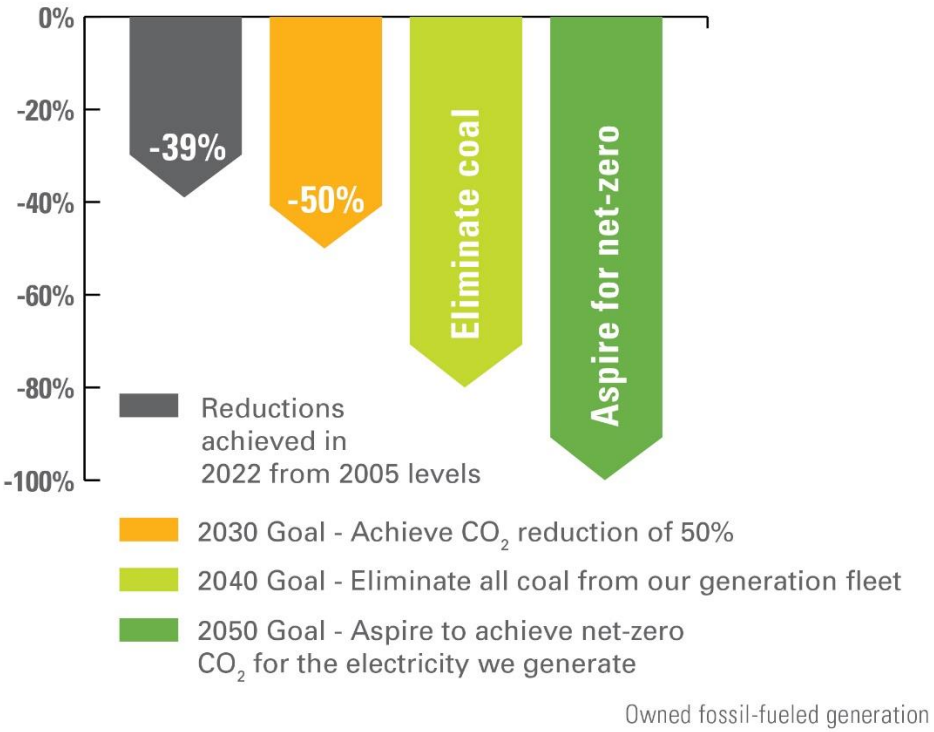
Figure 11. Annual CO_2 emissions and renewable capacity



As our energy mix transitions, our annual CO_2 emissions may fluctuate due to various factors – such as electricity production needed in response to MISO energy market reliability requirements, evolution of new energy technologies, and customer adoption of electrification. However, these influences were considered in setting our Clean Energy Vision goals. Thus, Alliant Energy expects to achieve our interim 2030 goal of 50% reduction from 2005 levels through successful implementation of our Clean Energy Blueprint plans.

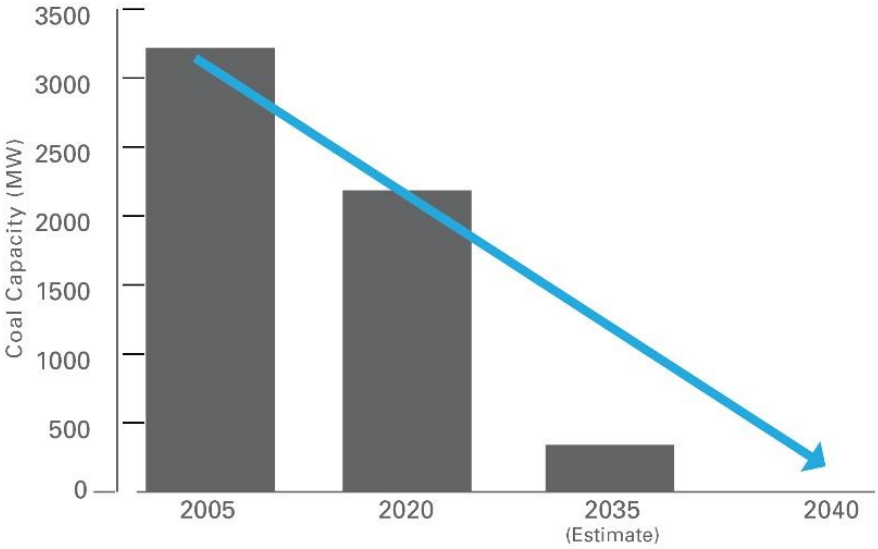
Furthermore, Alliant Energy's short-term incentive compensation plan includes metrics to drive leadership accountability for efforts to advance our Clean Energy Vision. These metrics are applicable company-wide including executive management, directors, managers, supervisors and non-bargaining employees. This includes an environmental emissions reduction goal that rewards annual progress toward achieving a 50% reduction in CO_2 emissions by 2030 from 2005 levels. Metrics on emissions levels are tracked and progress toward achieving the CO_2 reduction goal is communicated throughout the year in a Corporate Scorecard. Our company exceeded the 2022 target level of 30% by successfully achieving 39% reduction of our annual CO_2 emissions from fossil-fueled electric generation (Figure 12). The Corporate Scorecard target level for 2023 performance is set at 44% annual CO_2 reduction from 2005 levels.

Figure 12. Reducing our CO_2 emissions



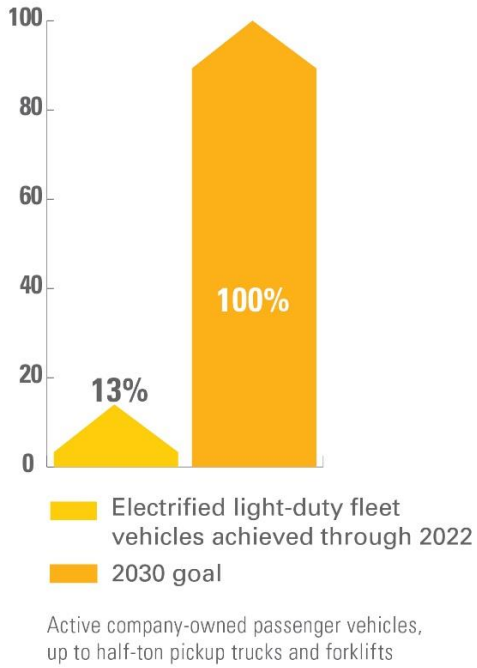
We are accelerating efforts to reach our 2040 goal to eliminate all coal from our generation fleet and our aspirational goal to achieve net-zero greenhouse gas emissions from our utility operations. We have retired over 1,200 megawatts of coal since 2005 and have announced plans to retire another 1,300 megawatts of coal (Figure 13). Plans continue to be developed for phasing out of service the remaining fossil-fueled electric generation units based on commercial availability of new technologies as well as customer affordability and energy reliability needs.

Figure 13. Path to zero coal generation



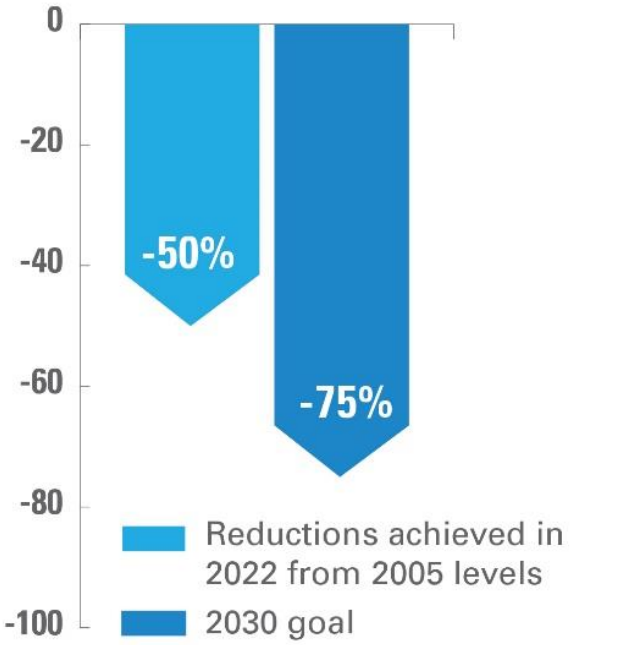
In 2020, our company **announced** a goal to electrify 100% of our active light-duty fleet by 2030. By the end of 2022, 13% of our passenger vehicles, up to half-ton pickups, and forklifts were a battery electric vehicle or plug-in hybrid electric vehicle (Figure 14). Replacing our existing fossil-fueled vehicles will reduce the associated greenhouse gas emissions as our energy resource mix becomes less carbon-intensive. We will continue to replace end-of-life vehicles with electric models and pursue new models as they become available to reach our fleet electrification goal.

Figure 14. Electrifying our light-duty fleet vehicles



Alliant Energy continues to track progress on our 75% reduction goal for water withdrawals. Our water reduction goal covers all of our electric utility operations, including owned fossil-fueled electric generation and our supporting facility operations. In 2022, we achieved 50% reduction compared to 2005 levels, equating to a reduction in volume of over 231 billion gallons of water (Figure 15). Our company's future efforts will continue to focus on implementing water conservation measures and adding renewable resources to further reduce water use from our electric utility operations.

Figure 15. Reducing our electric utility water supply



VI. Our Path Forward

Stakeholder outreach

Alliant Energy will continue to participate in climate change and clean energy discussions with our stakeholders. These recent efforts have included: Wisconsin Clean Energy Taskforce, Dane County Council on Climate Change, Iowa Carbon Sequestration Task Force, Linn County Sustainability and Resiliency Advisory Committee, and Cedar Rapids Community Climate Advisory Committee. We will also continue to work directly with our customers and local communities to advance the transition to a low-carbon economy through implementation of our Clean Energy Blueprint. In addition, we plan to provide customer-focused options such as energy efficiency, renewable energy and electrification as well as pursue other sustainable energy solutions.

Regulatory advocacy on clean energy and climate-related policies at both the federal and state levels is a critical aspect of our company's efforts to support the transition to a low-carbon economy. Our key advocacy areas include electrification, wind and solar tax credits, clean energy technology expansion, economic development, grid infrastructure modernization, improving regulatory efficiency, broadband deployment, telecommunications and transmission policies, and supporting energy assistance programs for low-income households.

Our company advocacy also entails membership in national trade associations including the **Edison Electric Institute**, **American Clean Power Association**, **American Gas Association** and the **Business Roundtable** (BRT), all of which are active in climate change policy discussions. Our company joined several other businesses and investors in signing a **letter** supporting U.S. commitment to climate action by setting an ambitious Nationally Determined Contribution (NDC) pursuant to the Paris Agreement. We also joined BRT in crafting a **message** highlighting the importance of sustainability in the work we do to deliver energy to our customers and communities.

Collaborative innovation

Pilot projects

Well-designed and executed pilot projects are important elements of Alliant Energy's integrated grid program to modernize our infrastructure into a digital system delivering continuous two-way flow of electricity and information. The projects within our company's program are evaluating new technologies, tools, data and practices to meet emerging customer requirements.

Pilot projects are a way for us to test new technologies, partner with local communities, leverage scientific expertise and take advantage of external funding sources. This approach helps our company to ensure that our customers receive maximum value as we learn the best ways to transform our energy delivery systems. Recent **examples** include our battery project in Decorah, Iowa and micro-grid project in Boaz, Wisconsin.

Energy Impact Partners

In 2017 Alliant Energy joined **Energy Impact Partners** (EIP) a collaborative strategic investment firm leading the transition to a sustainable energy economy. EIP seeks to invest for immediate carbon reductions, accelerate the zero-carbon journey of its industrial partners, and set new standards on environmental, social and governance (ESG) measurement and reporting.

In 2021 EIP made its first five investments from the Frontier Deep Decarbonization Fund, a new fund dedicated to investing in companies at the forefront of deep decarbonization technology. EIP also launched the Elevate Future Fund, a fund dedicated to investing in companies that are led by people from underrepresented groups, empowering diverse talent, and/or creating economic opportunity for underserved communities.

EIP has built a platform with more than 100 experienced investors, researchers and operators by working with their portfolio of over 100 companies, covering key asset classes of the net-zero carbon transition (e.g., electric transportation; intelligent operations; smart homes, buildings and cities; etc.) and enabling a more inclusive energy transition. This unique partnership is funded through our non-utility affiliate, Alliant Energy Finance, LLC. Additional information on sustainability progress through this partnership is available in **EIP's 2022 ESG and Impact Performance Report**.

Energy Impact Partners leading on ESG impact:

- EIP's unique investment model was recognized as the #1 globally impactful climate venture capital firm by Climate 50, an annual list that aims the recognize the most impactful global climate investors
- Committed to setting standards on ESG reporting, transparency, and measurement, encouraging accountability
- Signatory to the **United Nations Principles for Responsible Investment** (UNPRI)
- Member of the Initiative Climate International (iCI), a subgroup of UNPRI specifically formed to work on reducing carbon emissions of private equity-backed companies and securing sustainable investment performance by incorporating material climate risks in investment decisions
- Supporter of the Task Force on Climate-related Financial Disclosures (TCFD) as EIP believes the TCFD recommendations provide a useful framework for increasing transparency on climate-related risks and opportunities within financial markets

Research and development

We support technological research and development (R&D) projects to better understand long-term planning to implement our strategy including efforts that will help to reduce greenhouse gas emissions. In 2022, Alliant Energy invested $2.0 million in various R&D programs. This amount is reported annually to the Federal Energy Regulatory Commission (FERC) on Form 1, which includes both discretionary research funds and funds collected from customer billings as mandated by state regulations. R&D investments provide valuable insights to plan for evolving innovations and technology development in the energy industry. This includes projects to expand knowledge on our clean energy transition, such as analyzing the impacts of emerging technologies, strategies for electric vehicles and customer electrification, and integration of distributed renewables and energy storage. Alliant Energy is also participating in two initiatives specifically focused on low-carbon transition.

Low-Carbon Resources Initiative

As Alliant Energy moves forward with our Clean Energy Vision, we have joined with a multi-faceted group of like-minded partners in a five-year effort to swiftly develop and demonstrate low- and zero-carbon energy technologies. The **Low-Carbon Resources Initiative** (LCRI) is spearheaded by the Electric Power Research Institute (EPRI) and the Gas Technology Institute (GTI). EPRI and GTI have created LCRI to evaluate pathways for deployment of alternative energy carriers in support of decarbonization across the energy economy by mid-century.

LCRI will focus on exploring new promising technologies to reduce energy-related carbon emissions from the electric and gas industries in order to accelerate their development and demonstration. Some of the research areas LCRI is seeking to advance are clean hydrogen, bioenergy, energy storage, end-use electrification, and renewable natural gas – with the goal to develop affordable integrated approaches across all industries to reduce carbon emissions associated with climate change. The results of this important work will help guide our company as we work toward our aspirational goal to achieve net-zero greenhouse gas emissions from our utility operations by 2050.

Climate READi

Alliant Energy is one of fifteen founding members of a new EPRI three-year initiative called **Climate READi™**: Power (RElsilience and ADaptation initiative). The goal of this initiative is to develop a comprehensive, integrated approach to physical climate risk assessment. Climate READi will bring together energy companies, climate scientists, regulators, and other stakeholders to develop a consistent framework for analyzing applying climate data related to electric generation and delivery systems. This will broadly support future planning, design, and operation of energy infrastructure to make them both reliable and resilient for our customers and communities.

VII. Conclusion

Net-zero carbon outlook

Alliant Energy aspires to achieve net-zero greenhouse gas emissions from our utility operations. Our path will be guided by new policies, economic developments, evolving energy technologies and emerging trends in the communities we serve.

There are many perspectives on the impacts of climate change and the best path to decarbonization of the global energy system. Our Clean Energy Vision is dependent on broader changes in the energy sector. Our pathway will be multi-faceted as we strive toward our aspirational goal. As we make progress to advance our plans, our company will consider future opportunities including:

- Enabling public policies and support by our regulators and other stakeholders
- Two-way flow of energy using smaller and decentralized energy resources
- Broad adoption of electric end-use technologies, including transportation
- Increased use of renewable energy and battery-storage systems
- Leveraging data systems to build smart and efficient infrastructure
- Exploration of carbon-free or neutral energy carriers such as hydrogen or renewable natural gas
- Evolution of clean energy technologies and offsets to enable carbon emission elimination or mitigation beyond current capabilities

Advancing our clean energy future

At Alliant Energy, our customers are at the heart of everything we do. Building stronger communities is what drives and inspires our optimism for the future. How we deliver on our Purpose reflects our broader responsibility to our customers, employees and shareowners.

Alliant Energy will continue to evaluate our Clean Energy Vision and Blueprint plans to address our stakeholders' expectation that our company's actions are aligned with the carbon reductions and climate goals pledged by the U.S. under the international Paris Agreement. As the future pathway to net-zero global carbon unfolds, our company will remain flexible and adapt our strategic plans to play a supporting role in this endeavor.

As we move forward, we will maintain sight of the fact that the energy we generate must remain affordable, safe, reliable and sustainable. Through continued partnerships with customers, communities, regulators and stakeholders, we will successfully progress toward achieving our goals – and creating clean energy.

We will continue to communicate our efforts and plans as they evolve, and welcome input from our stakeholders.

Appendix A – Climate transition scenario analysis results

Alliant Energy's strategy and consistency with international climate goals

In 2015, the Paris Agreement was established as an international treaty with an objective "to avoid dangerous climate change by limiting global warming to well below 2°C and pursuing efforts to limit it to 1.5°C," with participating countries submitting greenhouse gas emissions reduction pledges in support of this objective.

Companies are trying to understand how to relate their low-carbon transition plans and greenhouse gas goals to the Paris Agreement. Over the last few years, the Electric Power Research Institute (EPRI) has assessed the science defining the relationship between a company and global average temperatures.[v,vi] This research informed the climate study that EPRI completed for Alliant Energy.

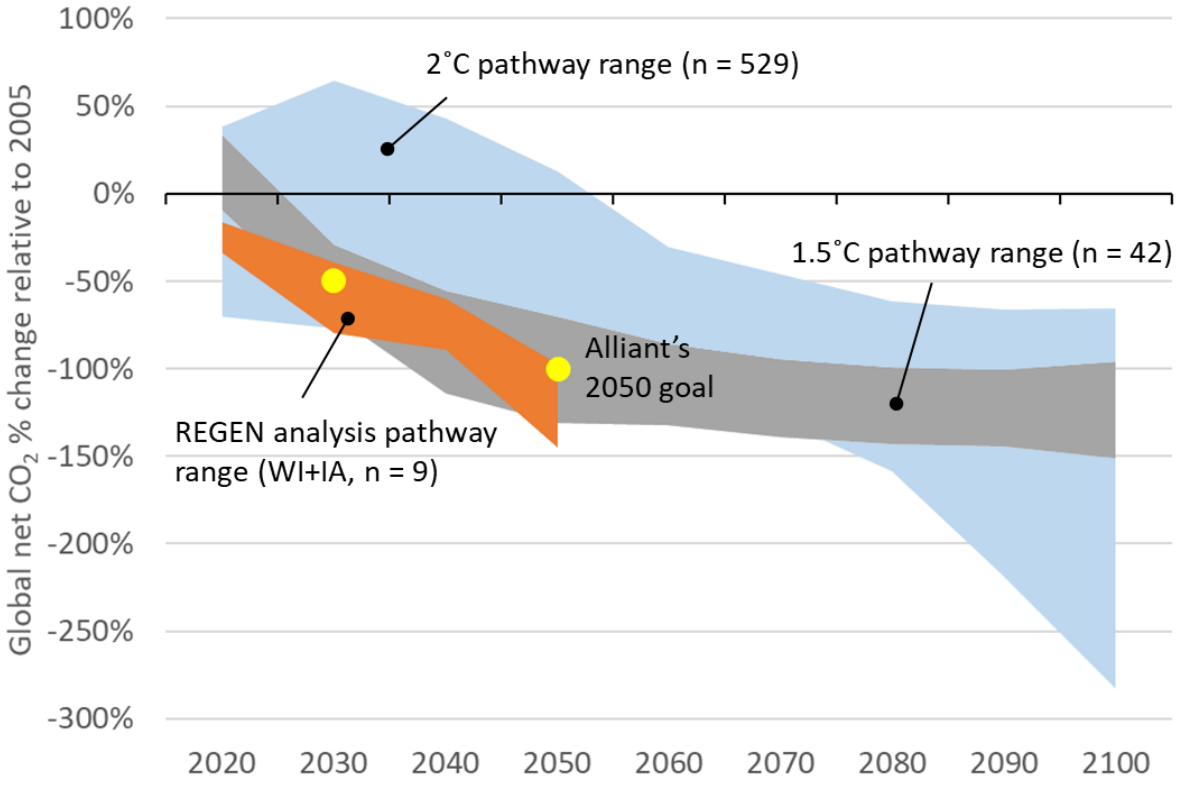
As part of the EPRI climate study, the quantitative scenario analyses described in Appendix B was completed using the **U.S. Regional Economy, Greenhouse Gas, and Energy** (REGEN) model. The REGEN modeling results were reviewed relative to projected global emissions pathways consistent with limiting warming to 1.5°C and 2.0°C prepared by external parties. Completing this assessment can be informative because global climate scenarios developed by external parties represent alternative visions for future developments. However, it is important to recognize that scenarios are not future predictions. There is a broad range of projected pathways consistent with limiting temperature increases associated with climate change. Therefore, scenario analysis does not replace Alliant Energy's integrated planning process used to forecast resources necessary to provide our customers with affordable, safe, reliable and sustainable energy.

The transition scenario modeling for Iowa and Wisconsin from EPRI's climate study reveals a range of potential state-level pathways that could achieve net-zero electric sector carbon dioxide (CO_2) emissions in 2050. The study finds that Alliant Energy's net-zero CO_2 emissions from electricity generation in 2050 strategy and the REGEN Iowa and Wisconsin modeling emissions pathways are aligned with global emissions pathways consistent with limiting warming to 1.5°C and 2°C (Figure A-1 and Table A-1).

Figure A-1 maps Alliant Energy's Clean Energy Vision CO_2 emission reduction goals that were developed from our Clean Energy Blueprint plans across the range of potential scenarios for limiting global temperature warming developed by the Intergovernmental Panel on Climate Change (IPCC) and International Energy Agency (IEA). Additionally, the CO_2 goals are mapped across the potential scenarios evaluated by the EPRI climate study using the REGEN model for achieving net-zero emissions in the electric sector for Iowa and Wisconsin by 2050. The trajectory of Alliant Energy's strategy falls within the international pathways outlined for limiting global temperature to 1.5°C and 2°C as well as the state-wide pathways for Iowa and Wisconsin in achieving net-zero emissions by 2050.

The different ranges showing the composition of pathways for limiting warming to 1.5°C and 2°C represent timing and intensity of action. The pathways resulting in a global temperature warming limit of 1.5°C require immediate action in decreasing emissions, as the global temperature is closer to 1.5°C and emissions presently in the atmosphere will continue to warm global temperatures. Achieving a global warming limit temperature of 2°C includes pathways that allow emissions to continue to rise, but require a peak of global emissions in 2030 in order to achieve the temperature goal by 2100. Rather than taking drastic emission reductions in the near future, some potential pathways to 2°C of warming may see rapid decreases closer to 2100 in order to achieve the limiting warming goal.

Figure A-1. Alliant Energy climate scenario analysis for various emissions pathways



The EPRI state-level scenario analysis of carbon dioxide (CO_2) pathways and Alliant Energy's goals (% reductions) fall within or below the ranges of reductions associated with global net CO_2 pathways consistent with limiting global average warming to 1.5°C or 2°C. The blue shaded area represents the range of global emissions pathways found to be consistent with limiting global average warming to 2°C and the grey area represents the range of global pathways found to be consistent with limiting warming to 1.5°C. The orange shaded area represents the range of pathways resulting from EPRI's REGEN modeling quantitative low-carbon transition scenario analysis completed for Alliant Energy discussed in this report. The yellow dots are Alliant Energy's 2030 and 2050 goals to reduce CO_2 emissions along the projected emissions pathway. The associated datapoints for 2030 and 2050 are provided below in Table A-1.

Source: Figure developed from EPRI's climate study quantitative scenario analysis completed for Alliant Energy and EPRI's evaluation of Intergovernmental Panel on Climate Change and International Energy Agency global emissions pathways (Rose and Scott 2018; 2020).

Results are based on an EPRI 2022 climate study to assess Alliant Energy's strategy relative to the international Paris Agreement. The EPRI study modeled CO_2 emissions from fossil-fueled electric generation, which are the primary source of greenhouse gases (approximately 99%) from Alliant Energy's regulated utility subsidiaries.

Table A-1. 2030 and 2050 datapoints for scenario analysis

2030 and 2050 Datapoints for Scenario Analysis						
CO_2 Pathways	2030 Range (maximum to minimum)			2050 Range (maximum to minimum)		
2°C Global	65%	to	-77%	13%	to	-102%
1.5°C Global	-29%	to	-69%	-70%	to	-131%
REGEN (WI+IA)	-39%	to	-80%	-97%	to	-145%
Alliant Energy goal	-50%			-100%		

Emissions reduction ranges from the REGEN modeling state-level analysis and Alliant Energy's goals fall within or below the 2030 and 2050 ranges associated with the global pathways consistent with limiting global average warming to 1.5°C or 2°C in Figure A-1.

Source: Table developed from EPRI's climate study quantitative scenario analysis completed for Alliant Energy and EPRI's evaluation of Intergovernmental Panel on Climate Change and International Energy Agency global emissions pathways (Rose and Scott 2018; 2020).

Figure A-1 represents the range of projected global emissions pathways consistent with limiting warming to 1.5°C (grey) and 2.0°C (blue). The ranges were developed by assessing results from multiple models and assumptions that were published by the IPCC and IEA. The global net change in emissions relative to 2005 is shown as a percentage, and the shaded areas represent the overall range of modeled results (i.e., no single pathway defines either the top or bottom of the range for the entire time horizon).

The figure illustrates that there are many possible pathways to achieving net-zero emissions due to a large number of uncertainties. The wide range of modeled results reflects the variation in how these uncertainties may be considered in the assumptions applied to evaluate projected global emissions pathways. Moreover, it reinforces that there is no single cost-effective strategy or approach due to uncertainty about future population levels, trends in economic growth, estimates of future energy demand, preferences and behavioral change, technological progress, and earth system responses, among other things.

In addition, this figure illustrates the broader range of possibilities for limiting global warming to 2.0°C. More specifically, this can be seen by the range of 2.0°C pathways that go above and below the 1.5°C range, with potential increases in emissions in the near-term and even greater reductions out to 2100. However, there are significantly fewer pathways consistent with limiting global warming to 1.5°C (n=42) versus 2.0°C (n = 529). This is largely attributed to many models being unable to find a solution for limiting warming to 1.5°C. For those models able to solve for 1.5°C emissions pathways, the results are based on very strong, and likely implausible, assumptions regarding immediate harmonized global policy as well as more optimistic technology availability and energy system transitions.

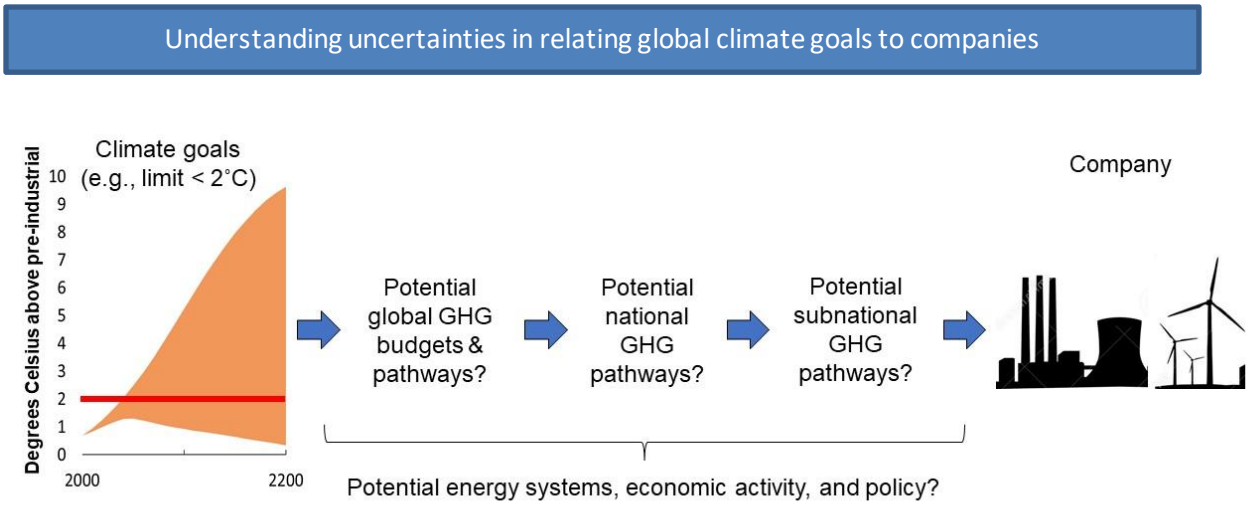
Overall, there is more flexibility when there is a less demanding global temperature constraint of 2.0°C. Many 2.0°C pathways are also based on modeled projections that use a significant amount of **carbon dioxide removal (CDR)** in the last half of the century. By comparison, the 1.5°C global emissions pathways decline immediately, and all depend on near-term and rapid deployment of CDR, which only demonstrates the significant challenge in achieving this level of warming.

Understanding company climate scenarios and emissions goals

EPRI has completed studies that provide a technical foundation and important insights to consider when developing and evaluating company climate transition scenarios or greenhouse gas (GHG) reduction goals. EPRI's technical studies are referenced by the Task Force on Climate-related Financial Disclosures (TCFD) ***Guidance on Scenario Analysis for Non-Financial Companies***.[vii] EPRI assisted in the development of this guidance as a member of the TCFD advisory group that included 13 industry representatives and scientific experts advising on its technical content.

EPRI's research found that there are significant challenges in translating global emissions pathways into actions for nations and sectors, and even more so for companies. At the highest level, there is uncertainty in the relationship between a global temperature goal and global GHG emissions. From there, the uncertainty only increases as we move from global to country to local emissions (Figure A-2).

Figure A-2. Understanding uncertainties in relating global climate goals to companies



EPRI's low-carbon transition risk and goal setting research has found that there are many ways for a company to be consistent with international climate goals and that there are many uncertainties for companies to consider and manage. Planning for a single future or outcome is risky for a company, subjecting it to the very real possibility of a different future being realized.

Key insights include from EPRI's studies include:

- **A broad range of global and sub-global emissions pathways are consistent with any global average temperature outcome.**
- **Global emissions pathways consistent with limiting warming to 2˚C and below are extremely challenging to realize.**
- **Asking all companies to achieve the same goal via the same means will not be cost-effective for society.**
- **Company-specific uncertainties and circumstances should be considered in assessing climate strategies including both policy and non-policy related drivers.**

Since companies are unique (in their assets, systems, markets, and local policy environments), each company will have different opportunities and constraints and different cost-effective emissions reduction strategies in terms of its goals and how it meets them. Applying global modeling results, such as emissions, to all companies within a segment of the economy—like all electric power companies globally—will not result in cost-effective emissions reductions for society. Simply put, a one-size-fits-all approach fails to recognize how individual companies have different opportunities for contributing to the reduction of GHG emissions. In addition, companies need to manage and balance multiple objectives—for example, reliability, affordability, local economic development, environment, and safety.

These are important issues for companies in identifying company-appropriate emissions reduction goals and strategies. However, these issues are frequently not considered in third-party goal-setting methodologies (for example, the Science Based Targets Initiative). EPRI's studies also found that there are important limitations to recognize in using global emissions pathways as points of comparison to company emissions. Furthermore, that these pathways should not solely define the basis for what may be considered a GHG reduction goal or target that is aligned with climate change science.

For instance, comparing an individual electric power company's emissions goal or fossil capacity plans to global scenario electric sector emissions or energy supply results can be very misleading. Global scenarios typically exhibit strong electric sector decarbonization and electrification responses that are contingent on assumed idealized global economy-wide policies. Additionally, these scenarios include the global trading of emissions allowances and optimistic assumptions regarding the availability of advanced low-carbon energy supply technologies. In reality, however, policy design and technology development are critical uncertainties for companies to evaluate and manage.

Finally, it is important to differentiate low-carbon transition risk assessment from GHG goal setting. These two are frequently conflated in public dialogue. Because of uncertainties, there is no one "right" emissions goal/pathway or transition implementation for a company. Depending on the future context (technologies, markets, and policies), a very different goal/pathway and strategy can be economical for a company. Low-carbon transition risk assessment, however, can usefully inform goal-setting.

Appendix B - Quantitative low-carbon transition scenario analysis

The transition to a low-carbon economy in response to climate change presents both risks and opportunities for businesses. These may be driven by changes in policy, technology, social, market and/or economic factors. Alliant Energy had the **Electric Power Research Institute** (EPRI) complete a quantitative scenario analysis to better understand the potential impacts of low-carbon transition on the company's **Clean Energy Blueprint** plans and **Clean Energy Vision** carbon dioxide (CO_2) emissions reduction strategy. This study was based on EPRI's technical research on climate-related risk and modeling. In addition, the **Task Force on Climate-Related Financial Disclosures (TCFD) scenario analysis guidance** was also considered.

Driving forces

Driving forces are external factors subject to future uncertainty that can affect company operations — potentially resulting in positive or negative impacts. Understanding these driving forces provides context on both strategic risks and opportunities related to climate change. The priority driving forces analyzed in the EPRI climate study were identified using the recommended TCFD categories (Table B-1).

Table B-1. Driving forces identified for transition scenario analysis

Driving Forces Identified for Transition Scenario Analysis	
Category	**Driving Force**
Technology	• Costs for generation capacity, storage, and low-carbon fuels • Commercialization of carbon capture and sequestration (CCS) and long-duration energy storage (LDES) • Electrification adoption for transportation, buildings and industry
Market/ Economic	• Changes to natural gas prices • Flexibility in interstate power flows • Carbon offset availability • Ability to build new interregional transmission
Social	• Enabling conditions for renewables siting • Ability to coordinate electric vehicle (EV) charging to reduce peak loads
Policy	• Rules or legislation limiting CO_2 emissions: state-level, sector-level, and economywide • Policy alternatives affecting regulatory flexibility, timing, and scope of coverage: tax credits to subsidize CO_2 capture and storage; providing interstate allowance permit trading; determining biomass to be carbon-neutral; and allowing the use of negative emissions technologies, including biomass with carbon capture and sequestration (CCS) and Direct Air Capture (DAC)

Scenario design framework

Scenarios were developed to explore a range of different possible futures to assess the potential impacts of low-carbon transition on Alliant Energy's electric utility operations. To gain a broad perspective, the scenarios were designed to test various combinations of assumptions considered to be plausible yet challenging relative to current predictions of business conditions. The development of the scenario design framework (Figure B-1) condensed these external driving forces into two dimensions:

- **Policy actions** from **broad** (more efficient, flexible, lower cost) to **narrow** (targeted to a limited set of technologies, less efficient, more prescriptive)
- **Non-policy actions** from **lower impact** (directions that make decarbonization easier and cheaper) to **higher impact** (directions that make decarbonization harder and more expensive). Non-policy actions include the technology, market, economic and social drivers.

Figure B-1. Scenario design framework boundary conditions

Scenario boundary conditions		**Uncertain non-policy conditions (technology, market, economic and social drivers)**	
		Lower impact	**Higher impact**
Uncertain policy conditions	**Broader**	**Broad policy with lower impact**	**Broad policy with higher impact**
	Narrower	**Narrow policy with lower impact**	**Narrow policy with higher impact**

With this characterization, four scenarios were developed as defined above to evaluate the potential uncertainties within these boundary conditions — in other words, the most pessimistic or optimistic pairing of non-policy outcomes considering the range of future policy outcomes. Broad policy assumed an economywide carbon price applied for CO_2 emissions from all industrial and commercial sectors, plus allowed negative emissions technologies. Narrow policy assumed state-level adoption of a net-zero by 2050 goal with no trading of CO_2 emissions allowances. These were paired with the decarbonization assumptions (lower impact being optimistic and higher impact being pessimistic) for the non-policy external drivers on technology cost, market/economic conditions, and social perspective.

In addition, because the boundary scenarios are necessarily more extreme/less likely, there were five scenarios developed to evaluate in between conditions. These captured alternative choices within this decision-space to better understand the impacts of changes in key drivers. This included evaluating a Clean Energy Standard applied solely to the electric utility sector, adding negative emissions technologies to state-level policies, and adding more restrictive customer perception assumptions.

As suggested by TCFD scenario analysis guidance, the framework was designed to consider a range of scenarios sufficiently diverse in order to create challenging "what-if" analyses and capture a wide range of assumptions about uncertain futures (Table B-2).

Table B-2. Exploratory scenarios considered for Alliant Energy's transition assessment

Exploratory scenarios considered for Alliant Energy's transition assessment				
Scenario summary	Policy type	Non-policy conditions affecting decarbonization		
		Technology cost	Market/ Economic	Social perspective
Economywide carbon price with negative emissions technologies	Broad	Optimistic	Optimistic	Optimistic
Economywide carbon price with negative emissions technologies	Broad	Pessimistic	Pessimistic	Pessimistic
State-level net-zero goal without negative emissions technologies	Narrow	Optimistic	Optimistic	Optimistic
State-level net-zero goal without negative emissions technologies	Narrow	Pessimistic	Pessimistic	Pessimistic
Clean Energy Standard without negative emissions technologies	Electric sector only	Optimistic	Optimistic	Optimistic
Clean Energy Standard with negative emissions technologies	Electric sector only	Pessimistic	Pessimistic	Pessimistic
State-level net-zero goal with negative emissions technologies	Narrow	Optimistic	Optimistic	Optimistic
State-level net-zero goal with negative emissions technologies	Narrow	Pessimistic	Pessimistic	Pessimistic
Economywide carbon price with negative emissions technologies	Broad	Optimistic	Optimistic	Pessimistic

Modeling approach

EPRI completed the scenario analysis using its **U.S. Regional Economy, GHG, and Energy** (US-REGEN) model. The US-REGEN model combines a detailed dispatch and capacity expansion model of the United States electric sector with an economy-wide energy end-use model. The study covered a time horizon extending through 2050. The geographic scope covered the continental United States, with state-level resolution for Iowa and Wisconsin.

The input assumptions used in this analysis were based on EPRI's U.S. National Electrification Assessment to represent the end-use side and EPRI's Powering Decarbonization White Paper for the electric model.[viii,ix] Alliant Energy's Clean Energy Blueprint plans for existing and new units were built into the model based on available data and expected project completion status as of year-end 2021. Announced retirements from other U.S. electric companies were included based on a summary provided by Hitachi Energy Velocity. Existing state policies affecting renewables and carbon emissions were also included. This provided the base model from which the specific scenarios were developed.

For this analysis, Alliant Energy's operating states—Iowa and Wisconsin—were modeled as distinct regions within the larger model, as were the neighboring states Minnesota and North Dakota. The remaining continental states were aggregated into 15 regions for computational tractability. This permitted the modeling to focus on the potential evolution of the electric sector in Iowa and Wisconsin, respectively, while capturing impacts for power, credit, and CO_2 markets across the United States.

Quantitative transition scenario insights

To facilitate review of the scenario results, key metrics of interest to strategic planners and company stakeholders were evaluated across four categories: affordability, stability, optionality, and sustainability. Scenarios are not predictions and cannot replace forecasts, thus the intent of this process was to evaluate different policy designs and non-policy driving forces to better understand the possible influence of these uncertainties. Ultimately, there was no scenario outcome that dominated the others across all metrics—not even the Broad Policy/Lower Impact scenario, which might be considered more optimistic on policy and technology outcomes. Nonetheless, the scenario analysis did provide several high-level insights including:

- Reaching a net-zero CO_2 goal while meeting load in every hour of the year requires a mix of low-cost, low-carbon energy resources and investments in low-carbon dispatchable capacity to provide daily, weekly, and seasonal peaking services.
- Reaching a net-zero CO_2 goal with only renewables, storage, and zero-emitting technologies is more expensive (in terms of cost per MWh served), and also results in higher electric sector emissions due to omitting carbon-negative emissions technologies, as well as the highest economy-wide emissions across all scenarios due to its discouraging electrification.
- Solar and wind generation capacity make up greater than 50% of Iowa and Wisconsin's least cost capacity mix in all scenarios modeled for this analysis, suggesting that solar and wind investments are robust to a wide range of future outcomes.
- Under all scenarios, Alliant Energy will ultimately have to make investments in technologies that are not commercialized today, and emerging technologies may be needed as soon as 2040 (dependent on the policy assumptions for regulatory stringency and flexibility allowed).
- Investments in emerging technologies may be economic earlier with additional government support, and negative emissions technologies do not enter the energy mix until 2045 in any scenario.
- The mix of low-carbon dispatchable technologies to balance renewable intermittency varies widely driven by policy choices and technology costs.
- Six of the nine scenarios include some form of carbon capture and storage (CCS) as part of the least cost capacity mix (excluding those scenarios with low-cost offsets available or that prohibited CCS). If government support were extended, CCS could be economic as soon as 2030; otherwise by 2040, assuming future commercial costs.
- Seven of the nine scenarios have significant investments in hydrogen and long-duration storage technologies, typically in the 2040–2045 timeframe, depending on the degree of renewables deployment.
- Natural gas units without CCS are part of the least cost mix at net-zero in 2050 in seven scenarios (dependent on regulatory policy assumptions that allow these emissions to be offset by forestry-based offsets or negative emissions credits from biomass with CCS or direct air capture units).
- Load growth varies strongly over the nine scenarios and measures to promote electrification (by Alliant Energy or other stakeholders) could result in Alliant Energy needing additional generation capacity beyond the Clean Energy Blueprint plans.
- Storage investments at various levels of duration are economic in all potential futures studied and seasonal storage (such as hydrogen) could be particularly important to balance high renewable deployment.
- CO_2 pathways vary sharply by scenario, and retail prices are strongly and positively correlated with higher, earlier reductions in CO_2 (dependent on policy assumptions, the highest retail prices arise in scenarios with aggressive national policy driving electric sector emissions below net-zero combined with limited technology options).

The range of CO_2 emissions and capacity resulting from the nine planning scenarios provides an overview of the results from the transition scenario analysis (Figures B-2 and B-3).

Figure B-2. Range of CO_2 emissions resulting from the nine planning scenarios

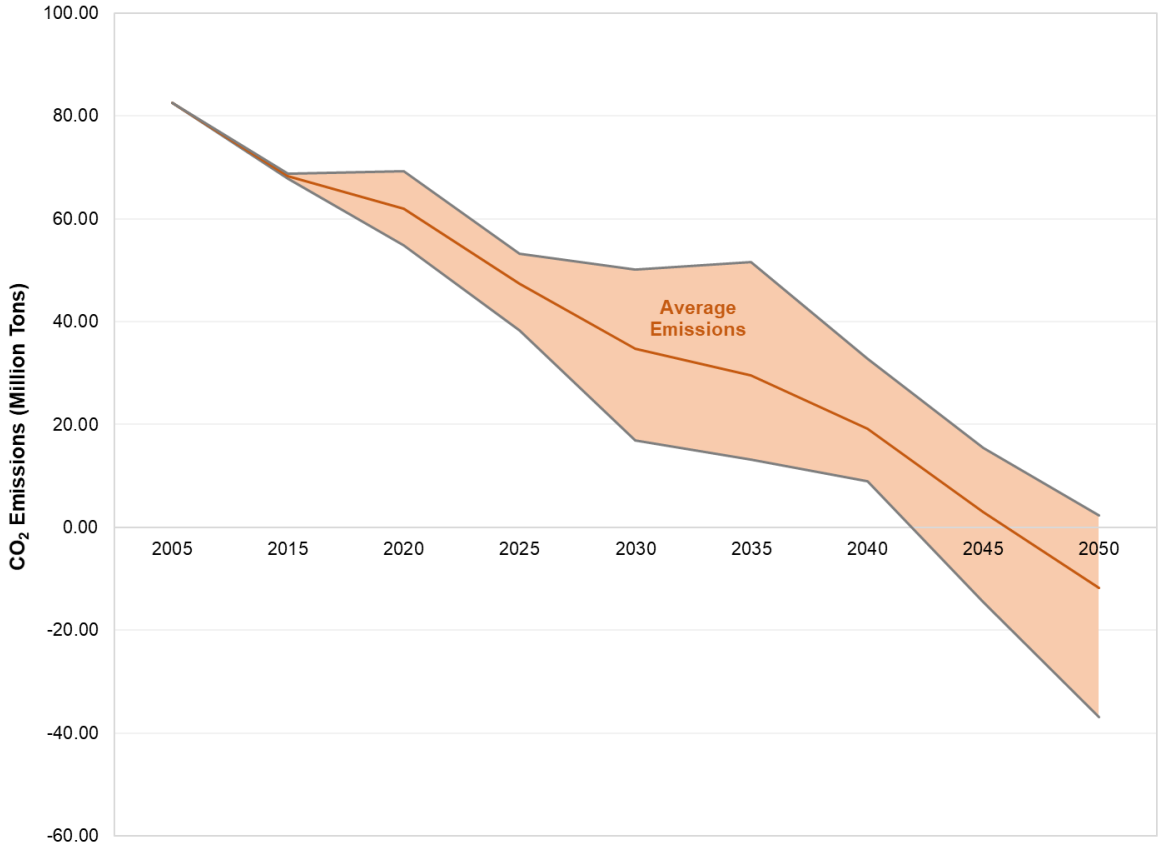
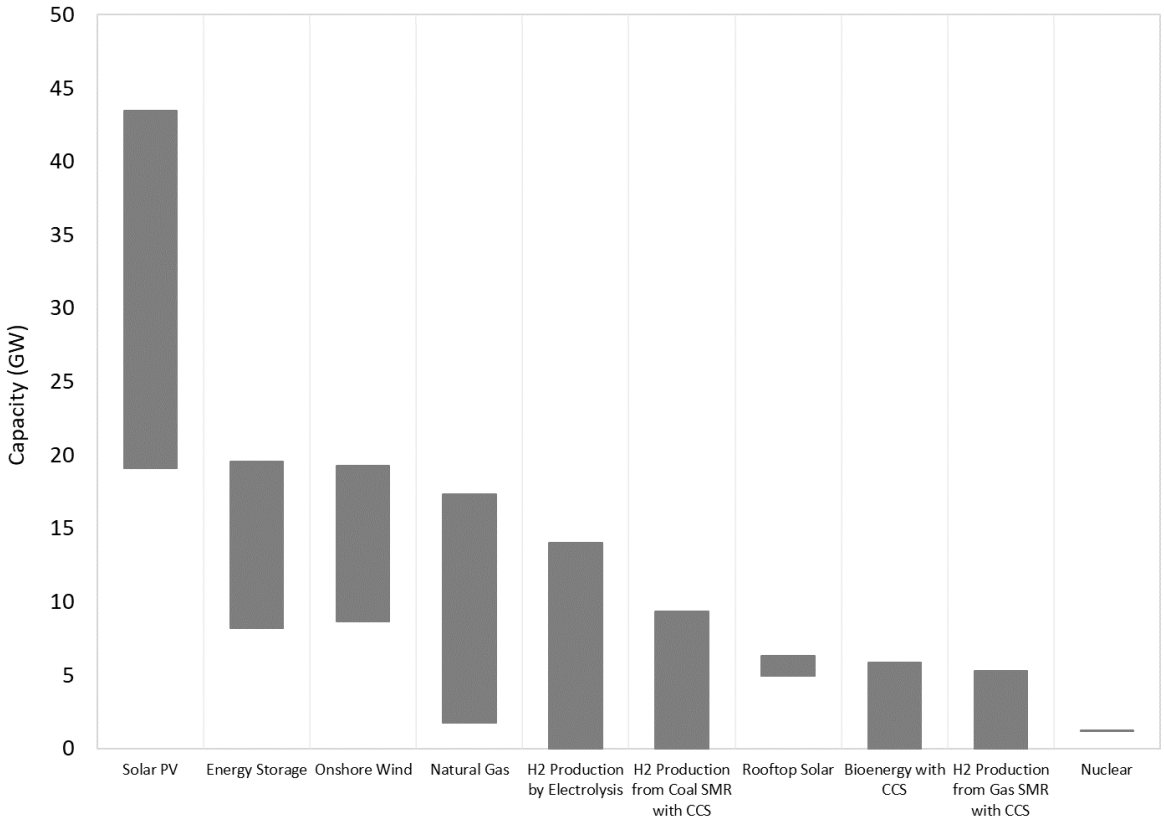


Figure B-3. Ranges in added capacity resulting from the nine planning scenarios



The vertical bars shown represent the overall range of transition scenario results in 2050. The resource capacity additions for each scenario vary throughout this range and are not equally distributed throughout the range. Technologies considered are listed in the order shown on the above figure: Solar Photovoltaic (PV); Energy Storage; Onshore Wind; Natural Gas; Hydrogen (H2) Production by Electrolysis; Hydrogen (H2) Production from Coal Steam Methane Reforming (SMR) with Carbon Capture and Storage (CCS); Rooftop Solar; Bioenergy with Carbon Capture and Storage (Bio CCS); Hydrogen (H2) Production from Gas Steam Methane Reforming (SMR) with Carbon Capture and Storage (CCS); and Nuclear. Technologies considered in the scenario analysis, but not shown in this figure due to small capacity additions in 2050 of less than 1 gigawatt (GW): Hydropower; Cogeneration; and Other Bioenergy.

As shown in Figure B-3, the nine transition scenarios developed by EPRI demonstrate that, no matter the pathway to a net-zero CO_2 goal, added capacity of Solar Photovoltaic (PV), Energy Storage, Onshore Wind, Natural Gas and other various emerging technologies will be needed. The amount of added capacity in gigawatts (GW) for each of the resources in Figure B-3 depends on various driving forces; however, under all nine scenarios of different policy and non-policy assumptions, a pathway to a net-zero CO_2 goal is achievable. The transition scenario results are consistent with Alliant Energy's Clean Energy Blueprint plans to provide a diversified energy mix with more solar, wind, and energy storage supported by highly efficient natural gas capacity. Our strategy also continues to explore new energy solutions by supporting research and implementing pilot-scale projects.

Leveraging scenario analysis insights

Alliant Energy's strategy and business plans already consider that climate change is one of several factors driving transformation of the energy industry. Insights from EPRI's transition scenario analysis reinforces our current Clean Energy Blueprint plans and Clean Energy Vision CO_2 emissions reduction trajectory. It has also identified key drivers and uncertainties relevant to integrating climate change into our future strategic plans that can help us manage potential risks and proactively position for opportunities in the transition toward a low-carbon economy.

The results from the scenario analysis will be used to inform our ongoing review of Clean Energy Blueprint plans and progress in achieving our Clean Energy Vision CO_2 emissions reduction goals. To monitor future uncertainties, we have also developed appropriate climate-related signposts from EPRI's climate study to guide our company's future business planning. We expect that through stakeholder outreach, collaborative innovation, research and development our company will be well-positioned to successfully address and adapt to climate change impacts going forward as well as enable broader economywide carbon reductions through electrification.

Appendix C - Physical risk review of historical and projected climate change in the Midwest

The climate study conducted by EPRI included an initial physical risk review of historical and projected climate change. Climate is the average weather over a set period of time ranging from months to years, whereas weather is a short-term natural event in a specific place and time. Climate conditions were evaluated to align with TCFD scenario analysis guidance including acute periodic extreme weather events as well as chronic longer-term shifts in climate patterns and trends.

Scope and methods

To characterize Midwest climate change trends and potential climate futures, EPRI undertook two scales of climate change assessment: a regional analysis based on published studies, and a customized assessment of four specific locations in Alliant Energy's service area using both detailed weather station and climate projection data. Together, the two assessments using a diverse set of historical evidence and projections regarding climate change provide a more holistic and robust characterization of past, current, and future potential changes in the climate hazard possibly relevant to Alliant Energy's operations and planning.

Historical as well as projected changes in climate variables were analyzed. The assessment also considered changes in extreme values (for example, extreme heat and cold, low wind) and averages as well as intensity and frequency for extreme events to characterize potential future changes in high-impact outcomes. The co-occurrence of changes, such as low winds and low solar during a period of extreme temperatures and high winds during extreme cold, was also analyzed to further investigate contexts in which resource adequacy may be a concern.

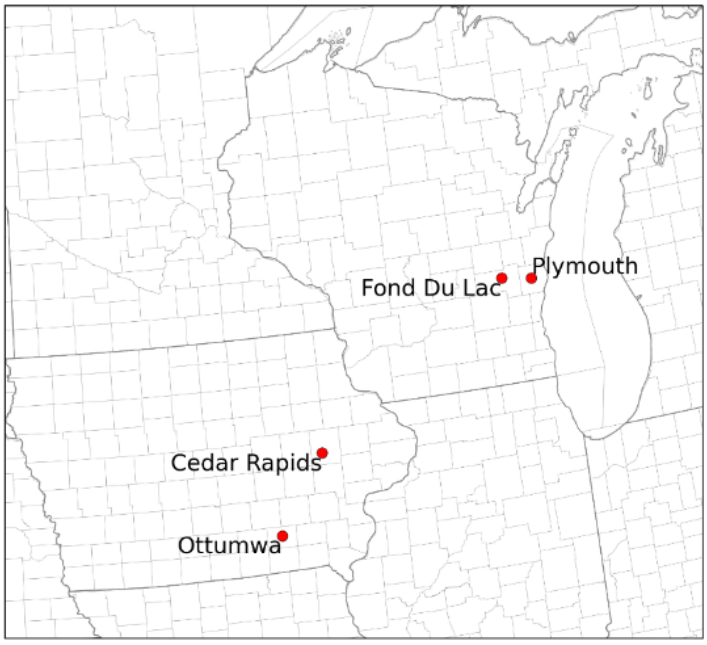
Regional climate change assessment

To characterize climate change trends and projections in the Midwest region, EPRI assessed information available from published studies. Examples of sources used to compile this analysis are the Fourth National Climate Assessment (Volumes I and II[x]), data sets from the National Climate Data Center (for instance, Climate Normals[xi], Climate at a Glance[xii]), and the Wisconsin Initiative on Climate Change Impacts (WICCI[xiii],[xiv]). EPRI focused on regional and state level results, which provides a high-level characterization of climate change in Alliant Energy's service area.

Local climate change assessment

To characterize the latest climate change trends and projections for specific locations in Alliant Energy's service area, EPRI developed and assessed detailed weather station data and high-resolution results from the latest global climate change projections. In collaboration with Alliant Energy, four locations across Alliant Energy's service area were chosen to represent a range of climates: Cedar Rapids, IA, Ottumwa, IA, Fond Du Lac, WI, and Plymouth, WI (Figure C-1).

Figure C-1: Selected locations in Iowa and Wisconsin



A site-specific analysis using historical climate data as well as bias-corrected climate projections was carried out for each location, with the historical period ranging from 1950 to 2020 and a projected period from 2021 to 2060. Historical observational climate data were acquired from four different airport surface weather stations near the chosen locations.

Climate models are one of the primary means for scientists to understand how the climate has changed in the past and may change in the future. Climate model output from the **Coupled Model Intercomparison Project** (CMIP) CMIP6 - ISIMIP3b project was used for the projections of potential future climate change. CMIP6 is the latest generation of climate models that incorporates new Shared Socioeconomic Pathway (SSP) climate scenarios and improved modeling of the climate. **ISIMIP3b** is a bias-corrected subset of the CMIP6 models.

The SSPs are part of a new scenario framework, established by the climate change research community in order to facilitate the integrated analysis of future climate impacts, vulnerabilities, adaptation, and mitigation. They have been used to help produce the **Intergovernmental Panel on Climate Change Sixth Assessment Report** on climate change. Climate projections for a lower (SSP1-2.6) and higher (SSP3-7.0) emissions scenarios were used to characterize upper and lower bounds for this analysis.

Physical risk review insights

These study results were used to develop a summary of projected climate variable changes through mid-century.

Table C-1. Summary of projected climate variable changes through mid-century

Variable	Regional	Cedar Rapids	Ottumwa	Plymouth	Fond du Lac
Extreme Heat	↑↑	↑↑	↑↑	↑↑	↑↑
Extreme Cold	↓↓	↓↓	↓↓	↓↓	↓↓
Heating Degree Days	↓↓	↓↓	↓↓	↓↓	↓↓
Cooling Degree Days	↑↑	↑↑	↑↑	↑↑	↑↑
Heavy Precipitation	↑	↑	↑	↑	↑
Snowfall	NA	↓*	↓*	↓*	↓*
Drought	↓*	↓*	↓*	↓*	↓*
Windspeed	↔	↔	↔	↔	↔
Solar	↔	↔	↔	↔	↔
Streamflow	NA	↑*	↑*	NA	NA
Lightning	↔	↔	↔	↔	↔

An up arrow ↑ denotes an increase while a ↓ denotes a decrease. Two arrows denote greater certainty in the projected change. An asterisk by the arrow denotes that historical trend only was used to inform projected changes. A sideways arrow (↔) represents no significant projected change or uncertain change. The following specific thresholds were defined by EPRI and Alliant Energy for the local climate change assessment: Days >90°F for extreme heat, Days <0°F for extreme cold, and Days >2 inches for heavy precipitation. NA means that either data were not available or the variable was not examined at that particular scope.

In addition, the review also provided several high-level insights including:

- The Midwest is projected to continue to experience more extreme heat, less extreme cold, and heavier precipitation events as the climate warms.
- Extreme heat is projected to increase in frequency through 2060, while extreme cold is projected to decrease in frequency.
- Heavy precipitation is projected to continue to increase with reduced frequency of drought and periods of low streamflow but also higher frequency of flooding.
- Because wind and solar resources are largely driven by local topographical features, climate change is not projected to result in significant long-term impacts through 2060.
- Interannual variability of wind and solar has been shown to be quite large and more attention should be given to predicting year-to-year fluctuations in future planning.
- Climate change can potentially impact many system components of Alliant Energy's business (generation, distribution, and demand) and potential adaptation responses are specific to each combination of climate hazard and system component.
- An integrated system-level analysis would help identify a broader set of potential impacts and adaptation strategies at system and market levels.

Leveraging physical risk insights

Evaluating and planning for the effects of weather on our utility assets and operations is already ingrained in Alliant Energy's efforts to provide reliable energy services to our customers. Our strategy is also focused on making our utilities more resilient in order to prepare for, operate through and recover from significant disruptions, no matter what the cause. Our company's integrated grid initiatives are proactively taking advantage of the opportunity to modernize our infrastructure as the energy system evolves to support more distributed energy resources and to support future electrification. Undergrounding new and replacement electric distribution lines will improve reliability and reduce outages. We are also updating our data systems to include innovative, automated and pro-active stabilization technologies and enhancing our fiber optic telecommunications system. These changes will support our ability to withstand extreme and prolonged weather-related events.

In addition, Alliant Energy has considered the effects of climate change in our application of the Envision® system, which is a framework created by the Institute for Sustainable Infrastructure (ISI) to enhance projects across the full range of environmental, social and economic impacts. Alliant Energy continues to leverage this framework to guide our planning, designing and delivery of sustainable and resilient infrastructure. Specifically, this framework includes review of project plans to minimize greenhouse gas emissions and ensure that infrastructure projects are built to be resilient to withstand changing climate conditions.

However, physical climate risk assessment is much more than simply knowing whether the climate is changing or could change. A sequence of assessments—hazard, exposure, and vulnerability/response assessments—is required (Table C-2). The technical foundation from EPRI's review of historical and projected climate change in the Midwest provides both quantitative and qualitative information that will support Alliant Energy's continued consideration of the possible long-term effects of climate change on the company's assets and operations. We will continue to evaluate the potential types of climate change impacts and identify possible adaptation responses. To further our efforts in this area, our company has signed on as a founding member of EPRI's **Climate READi™**: Power (REsilience and ADaptation initiative) program.[xv]

Table C-2. Physical climate risk assessment process

Physical Climate Risk Assessment Process		
Assessment type	**Specific questions answered**	**Data and analysis requirements**
Hazard assessment (Is the climate changing?)	Is the climate changing, and how might it change in the future? What are the potential physical changes to weather and other natural resources? How likely are those changes?	Historical and projected physical climate and weather change information
Exposure assessment (What is in harm's way?)	What is and could be exposed to the potential hazard changes (assets, customers, operations)?	Current and potential future physical assets, systems, and markets
Vulnerability and response assessment (Does it matter, and what could be done about it?)	What are the risks and opportunities associated with the potential hazard and exposure changes, where risk depends on the magnitude and likelihood of the impact? What are potential responses to the risks/risk management strategies?	Current and potential designs and thresholds, analysis of the implications of potential hazards and exposures, and analysis of alternative responses

References

[i] *Recommendations of the Task Force on Climate-related Financial Disclosures.* TCFD. 2017. https://assets.bbhub.io/company/sites/60/2021/10/FINAL-2017-TCFD-Report.pdf

[ii] *Inventory of U.S. Greenhouse Gas Emissions and Sinks*. U.S. Environmental Protection Agency. 2020. https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks

[iii] *Technical Considerations for Climate-Related Risk Disclosure Rules*. EPRI, Palo Alto, CA: 2022. Report no. 3002024244. https://www.epri.com/research/products/000000003002024244

[iv] *Greenhouse Gas Emissions Accounting for Electric Companies: A Compendium of Technical Briefing Papers and Frequently Asked Questions*. EPRI, Palo Alto, CA: 2021. Report No. 3002022366.

https://www.epri.com/research/products/000000003002022366

[v] *Grounding Decisions: A Scientific Foundation for Companies Considering Global Climate Scenarios and Greenhouse Gas Goals*. EPRI, Palo Alto, CA: 2018. Report No. 3002014510. https://www.epri.com/research/products/000000003002014510

[vi] *Review of 1.5˚C and Other Newer Global Emissions Scenarios: Insights for Company and Financial Climate Low-Carbon Transition Risk Assessment and Greenhouse Gas Goal Setting*. EPRI, Palo Alto, CA: 2020. Report No. 3002018053. https://www.epri.com/research/products/000000003002018053

[vii] *Task Force on Climate-Related Financial Disclosures Guidance on Scenario Analysis for Non-Financial Companies.* TCFD. 2020. https://assets.bbhub.io/company/sites/60/2020/09/2020-TCFD_Guidance-Scenario-Analysis-Guidance.pdf

[viii] *U.S. National Electrification Assessment*. EPRI, Palo Alto, CA: 2018. Report No. 3002013582. https://www.epri.com/research/products/000000003002013582

[ix] *Powering Decarbonization: Strategies for Net-Zero CO_2 Emissions*. EPRI, Palo Alto, CA: 2021. Report No. 3002020700. https://www.epri.com/research/products/000000003002020700

[x] *Fourth National Climate Assessment*. USGCRP. U.S. Global Change Research Program (USGCRP). 2018. Washington, DC. https://nca2018.globalchange.gov

[xi] *U.S. Climate Normals*. National Oceanic and Atmospheric Administration (NOAA). 2021b. National Centers for Environmental Information. http://www.ncei.noaa.gov/products/land-based-station/us-climate-normals

[xii] *Climate at a Glance: Regional Time Series*. NOAA. 2021a. National Centers for Environmental Information. https://www.ncdc.noaa.gov/cag/

[xiii] *Trends and Projections*. Wisconsin Initiative on Climate Change Impacts (WICCI). 2019. https://wicci.wisc.edu/

[xiv] *Wisconsin's Changing Climate: Impacts and Solutions for a Warmer Climate*. WICCI. 2021. https://wicci.wisc.edu/2021-assessment-report/

[xv] *A Starting Point for Physical Climate Risk Assessment and Mitigation: Future Resilience and Adaptation Planning.* EPRI, Palo Alto, CA: 2022. Report No. 3002024895.

https://www.epri.com/research/products/000000003002024895/