

AN EMERGING BLUEPRINT FOR COMPANIES: STRATEGIES TO ADVANCE LOCAL CLIMATE RESILIENCE



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September 2022

INTRODUCTION

Climate change is causing disastrous impacts on communities and threatening the businesses that operate in or otherwise depend on them. Actions that strengthen climate resilience—the ability to anticipate, prepare for, and respond to acute and prolonged hazardous events—and help communities adapt can lessen the impact of these events and support thriving communities. The historic increases in resilience funding and tools in the 2021 *Infrastructure Investment and Jobs Act* and the 2022 *Inflation Reduction Act* will accelerate adaptation projects across the country, yet the scale of investment and action will still fall short of comprehensively increasing resilience in communities across the country. Therefore, increased investments from additional stakeholders, in particular major companies, are critical to building local resilience. As these large companies are developing strategies to strengthen their own climate resilience, their place-based efforts in the communities they operate in or derive their supply chains from can further bolster local resilience. Additionally, business philanthropy and community stewardship efforts are seeking to address climate vulnerabilities or recovery needs arising from climate-fueled natural disasters.

Building on our work to understand the linkages between climate resilience and local economic competitiveness (*The Resilience Factor* and *The Climate Resilience-Economy Nexus* reports), as well as our *Guide to Public-Private Collaboration on City Climate Resilience Planning*, C2ES seeks to accelerate and advance private sector investment in the climate resilience of the communities where they operate—the same

communities in which their employees live and where they have significant supply chain interests. Through this research we have identified avenues that companies in any sector could take to contribute to the direct reduction of physical risk from climate change or build local capacity to implement resilience projects.

This brief begins with a discussion of (1) why the private sector is motivated to channel resources to

improve climate resilience; (2) why companies share responsibility for and should contribute to the resilience of their local communities; and (3) the reasons that large companies are well-positioned to advance this aim. Then, we describe leadership roles and an “emerging blueprint” of seven strategies that leading companies across sectors are using to shape their domestic resilience efforts. Developed through research and conversations

with dozens of corporate professionals across sectors in the summer of 2022, this emerging blueprint of strategies, and the featured examples that demonstrate how they are being applied, encompass a variety of approaches. Finally, we discuss common practices and themes, and offer a look ahead at further research needs and opportunities to channel corporate action in a robust and impactful way.

BACKGROUND

Climate change-related extreme weather events—including more intense hurricanes and rainfall, extreme heat, wildfires, drought, and sea level rise—are threatening the ability of businesses and communities to adequately function and thrive. The increasing severity and frequency of climate-related disasters and impacts across U.S. communities are physically damaging infrastructure, disrupting community and business operations, increasing financial risk, and creating long-term uncertainty in economic markets.¹

In 2021 alone, estimates indicate that more than 40 percent of Americans lived in counties that experienced a climate-related extreme weather event.² The costs associated with these events are significant: in 2021 the United States spent more than \$145 billion across 20 climate disasters costing at least \$1 billion in damages each.^{3,4} Without concerted action to address climate change, climate-related impacts will continue to affect the broader economy, with 58 percent of U.S. metro areas estimated to experience annual gross domestic product (GDP) losses exceeding 1 percent between 2060 to 2080, and some coastal areas with predicted losses of over 15 percent.⁵ Another recent study found that insufficient climate action could cost the U.S. economy \$14.5 trillion (nearly 4 percent of U.S. GDP) and nearly one million lost jobs over the next 50 years.⁶

For the private sector, climate change threatens not only short-term operations but also long-term stability and growth. Many companies across sectors are already experiencing these effects. For example, in 2008, the manufacturing company Cummins, Inc., sustained more than \$100 million in damages at their research and development centers in Indiana due to flooding from a nearby creek; in 2022 Pacific Gas & Electric (PG&E), the nation’s largest utility, settled for \$55 million as a result of aging powerlines that caused two major wildfires in California; and also in 2022, baby formula maker Abbott shut down their Sturgis, Michigan, plant due to severe thunderstorms that led to flooding inside the plant. In addition, companies are beginning to see how their operational continuity is at risk when employees are exposed to climate hazards either at work or in their homes and communities. This type of risk could lead to staffing disruptions, displacements, and relocations.

The climate resilience of businesses and communities are closely linked. When local governments are able to maintain critical public services (e.g., transportation, drinking water, public safety) in the face of extreme weather events or chronic impacts, the private sector benefits from increased safety and comfort of their employees, operational continuity, and the increased ability of communities to recover quickly from disaster.

At the same time, businesses are key contributors to the climate resilience of local communities. Large companies, in particular, often serve concurrently as major employers, providers of critical services and goods, anchor institutions, sources of valuable local expertise and services, and may be key members of the local supply chain.⁷ When these businesses and their employees are able to operate without interruption, they support a thriving local economy that generates tax revenues and contributes to local quality of life.

As the connections and interdependencies between climate, business, and society become ever more apparent, we anticipate there will be increasing public pressure on companies to expand environmental/social/corporate governance (ESG) efforts and to evolve the role of business in society. We also expect increasing employee pressure for working conditions that are safer in the face of climate hazards. Concurrently, as companies continue to develop their climate risk assessments and risk management plans (facilitated by frameworks like the Task Force on Climate-Related Financial Disclosures [TCFD] and pending federal disclosure regulations), we expect that they will increasingly focus on how their vulnerabilities are linked to those of the communities in which they are located. Given these connections and, more broadly, the integral role that companies play within communities, companies

can share responsibility for—as well as have an intrinsic interest in—ensuring community resilience to climate change. In this brief, we seek to answer the following: What does this responsibility look like, and how exactly can large companies contribute to local climate resilience?

As we will demonstrate, companies can offer a variety of resources to local communities, as well as adjust and expand their climate resilience-related activities. In some cases, these contributions to local resilience are a natural outgrowth of companies' efforts manage their own climate risks and increase the resilience of the business. These activities can include investments to protect company properties and assets from climate hazards, initiatives to improve the resilience or capacity of producers within the supply chain, and developing resilience services using core competencies. In other cases, the contributions originate from corporate social responsibility (CSR) efforts that aim to improve social outcomes, such as resilience-building support for under-resourced communities and public-private partnerships that accelerate large investments in resilience infrastructure, among other aims. In sum, companies are refining their internal approaches to climate change and their external roles as responsible corporate citizens to fill emerging needs in the communities they depend on.

METHODOLOGY

To better understand how companies are currently contributing to community climate resilience and inform the development of an emerging blueprint for accelerated resilience action, C2ES conducted interviews with businesses to learn how they are approaching efforts to build local resilience in communities across the country. We interviewed 14 companies representing various sectors including electric utilities, agriculture and food, finance, technology, oil and gas, and heavy

manufacturing. Our research was supplemented by a review of available literature discussing the connections between the private sector and local climate resilience, as well as examples of current business practices that are supporting community resilience. Finally, we held a workshop with 27 corporate leaders and other stakeholders to gather input on our emerging blueprint of strategies and insights into how to advance corporate action that supports local resilience.

■ AN EMERGING CORPORATE BLUEPRINT FOR ADVANCING LOCAL CLIMATE RESILIENCE

As communities' need for climate resilience grows, the leadership roles that companies can play to support them (**Figure 1**) are coming into focus. Based on recent insights, these leadership roles include:

- **Risk management leader to advance the resilience of company operations**, which can support both physical and economic resilience in the community. By maintaining resource-efficient and safe operations that are resilient to extreme weather and other climate impacts, companies can continue to provide local employment, offer critical services, and decrease their use of local energy and water resources.
- **Developer of resilience solutions**, by building resilience in the company's supply chain and offering resilience services and technologies to communities.

- **Catalyst and partner for local resilience**, to build capacity in communities to address physical risks and fund resilience initiatives and infrastructure projects.
- **Advocate and thought leader**, to influence public policy at all levels to support community resilience, convene local stakeholders and decisionmakers, and advance research into remaining questions for resilience.

Companies may assume any one of these roles or a combination of them, depending on community needs, their business offerings, expertise, community engagement, or internal goals.

Below, we describe seven strategies (**Figure 2**) that comprise an emerging blueprint for companies to assume these leadership roles. These strategies

FIGURE 1: Climate Resilience Leadership Roles for Businesses



were informed by our analysis of current efforts and represent various activities that companies can take to support community climate resilience. They range from initiatives focused on increasing the resilience of company assets that have indirect benefits for communities, to direct investments in community resilience projects.

As this discussion is nascent, this group of strategies is the product of discussions with a set of leading companies and focuses on activities that support local capacity building and physical risk reduction. It should be viewed as a starting place for the development of a broader set of options. For example, although not featured here, we see opportunities for companies to contribute their voices to support public policies and thought leadership in ways that advance local resilience. This is an important role that some companies are already taking on to some degree and are likely already

exploring ways to expand their efforts, and is worth continued focus in future efforts to characterize this space.

Here, we describe these resilience strategies and explore example initiatives where companies are already implementing them:

1. Reduce risks of company assets and operations.
2. Develop products and services that enable resilience.
3. Support resilience within the company’s supply chain.
4. Support community stakeholders in planning for resilience.
5. Empower employees to volunteer to support community resilience.
6. Fund community resilience projects through public-private partnerships.
7. Fund community-led resilience initiatives.

FIGURE 2: Corporate Strategies to Advance Community Climate Resilience



STRATEGY 1: REDUCE RISKS OF COMPANY ASSETS AND OPERATIONS

Private sector assets and operational continuity are at risk from the impacts of climate change. Climate hazards can threaten worker health and safety, damage company infrastructure, and stall operations. In response, companies are working to increase their resilience by assessing and managing their risks, as explored in the recent C2ES report *Emerging Practices in TCFD-aligned Climate Risk and Opportunity Analysis and Disclosure*. In many cases, these business-focused actions can benefit the neighboring communities. For example, when critical service providers, like electric utilities, telecommunications companies, and banks, increase the resilience of their assets and operations, they can directly support local community resilience and business continuity. For other companies, improving their water or energy efficiency, or investing in energy storage and backup, for example, can reduce demand for critical resources, which is especially important during periods of drought or extreme heat when community demand for electricity or water is high. Companies more broadly can directly support their employees in building resilience or recovering from climate impacts. For example, Bank of America has established an employee relief fund through which they provide funding to those who have experienced natural disasters.⁸

Efforts by Southern California Edison (SCE) and Intel that focus on building business resilience, while also providing benefits for communities and customers, are described below.

Southern California Edison: Identifying climate vulnerabilities of the electric grid

Electric utility SCE recently completed an assessment of the climate risks to its assets and operations, which it detailed in its climate adaptation vulnerability assessment (CAVA), filed with the California Public Utilities Commission. The CAVA will inform planning for SCE's electric infrastructure, operations, and services with the goal of building and maintaining a climate-resilient grid. Using global climate model projections, SCE studied its exposure and vulnerabilities to climate hazards (e.g., wildfire, sea level rise, extreme heat, precipitation, drought) and potential adaptation actions. Key findings from this

exercise include the importance of incorporating future climate scenarios into long-term planning across both government and industrial sectors; the importance of collaboration between local communities, regional planning authorities, and government to address critical infrastructure risks and community resilience; and the need for immediate funding and investment in climate adaptation investments.⁹

Through this process, SCE also identified communities that are the most impacted when electric service is disrupted. Using this information, SCE partnered with environmental, community, and faith-based organizations to craft strategies for effective community outreach. This work culminated in their Climate Adaptation Community Engagement Plan, which includes approaches for engaging and sharing information with their customer communities based on their unique needs.¹⁰

Intel: Implementing water conservation and water restoration programs

Access to water is essential to powering Intel's semiconductor manufacturing. Yet, Intel recognizes the responsibility and the role it can play by managing water resources efficiently—both within the communities it operates and across the broader business community.¹¹ The company has set a goal of achieving “net-positive” water by 2030, which focuses on returning and restoring more freshwater back to communities and watersheds than the amount the company consumes. To accomplish this goal, Intel has identified ways to conserve water in its operations and through partnerships with local municipalities to reduce its use of freshwater. The company is also investing in water projects to restore freshwater to watersheds.¹²

To date, Intel has achieved net-positive water use in three countries, including the United States, and has funded more than 40 water restoration projects where the company has a presence. Collectively, these projects are restoring billions of gallons of water back to local watersheds each year. For example, Intel has funded 21 water restoration projects benefitting Arizona, including native plant habitat restoration and revegetating areas burned by wildfires. Once completed, these projects will cumulatively restore one billion gallons of water each year.¹³

STRATEGY 2: DEVELOP PRODUCTS AND SERVICES THAT ENABLE RESILIENCE

As climate impacts intensify, products and services that support resilience will become increasingly important for communities. Companies are well positioned to respond to demand for solutions to new or worsening challenges brought about by climate change. This category includes both products and services that can help communities implement and monitor resilience projects (e.g., mapping and real-time monitoring tools), as well as critical products and services that are accessible during or after climate-related events to help communities recover. To develop these offerings, companies can evolve their existing lines of business to meet emerging challenges or pursue new ones to meet demand in the marketplace. For example, in San Diego, Shell is working with Gridscape Solutions to deliver clean, reliable power with eight microgrids that are providing service to police, fire, and parks facilities in the city.¹⁴

Below, we highlight two other companies adapting their goods and services to support community resilience during extreme weather events. These include navigation application company Waze's real-time flood alerts and Wells Fargo's post-disaster banking services.

Waze: Integrating real-time flood data to alert users of driving hazards

Waze is engaging in city partnerships to leverage its smartphone routing platform and data to incorporate new features that reduce risks for drivers. One notable partnership is in the coastal community of Norfolk, VA, which is very vulnerable to flooding and sea level rise. In this project, startup company Floodmapp, facilitated by resilience technology accelerator RISE Resilience Innovations, creates predictive flood modeling data for Waze's API. Waze uses this data to send alerts and show information to users about flooded streets in the app.¹⁵

Waze is interested in expanding these features to other cities and hazards, including wildfire and air quality impacts caused by wildfires.¹⁶ Through its Waze for Cities program, the company already shares data with city planners to assist in infrastructure and transportation decision-making. There is growing interest from cities to tap into additional insights to better predict and build resilience against future events.

Wells Fargo: Providing access to banking services post-disaster

After Hurricane Sandy in 2012, Wells Fargo established a Mobile Response Unit and Customer Assistance Recovery (CARE) team. The unit and team are comprised of employee volunteers that set up mobile recovery centers in areas hit by tornadoes, hurricanes, wildfires, and other natural disasters. Since inception, the unit and volunteer team have deployed 18 times and offered disaster relief to over 6,500 customers across the United States.¹⁷ The company's community outreach strategy is focused on meeting customers face and also virtually through a dedicated support line that allow for immediate and personalized responses.¹⁸ Wells Fargo uses deployed vehicles as mobile ATMs and hubs for emergency response information. Specialists provide critical services related to disaster relief such as endorsing insurance checks for Wells Fargo mortgages, explaining next steps in the property damage recovery process, answering questions about fee waivers on credit cards and other lines of credit, and longer-term support services.¹⁹

STRATEGY 3: SUPPORT RESILIENCE WITHIN THE COMPANY'S SUPPLY CHAIN

Corporate action to enhance the resilience of supply chains can support companies' suppliers, and by extension the resilience of the communities where suppliers are located. These actions are particularly important for smaller suppliers to major companies, given that small business owners are less likely to have the resources and capacity to address climate risks on their own. Large companies can support the resilience of their suppliers by providing decision-useful climate information, directing technical assistance, and funding or other support to implement resilience projects and practices.

While all companies should consider the opportunities to engage their supply chains, agriculture and food companies are primed to support resilience of small businesses through extensive farming supply chains. Cargill's RegenConnect program, detailed below, is an example of such a program that is supporting environmental and economic resilience outcomes in the United States.

Cargill: Building the resilience of farms in its supply chain

To support Cargill’s sustainability commitments to reduce greenhouse gas emissions and protect water resources, the company has committed to help farmers advance regenerative agricultural practices across ten million acres of land in North America by 2030. These practices, which help reduce on-farm emissions, can also provide local resilience benefits including supporting local water quality, maintaining local water supplies (which is especially important for drought-prone farming regions), helping crops become more resilient to drought and extreme heat, and increasing farmer profitability through access to new and emerging markets.²⁰

To help achieve this regenerative agriculture goal, the company established Cargill RegenConnect, a program which pays eligible grain and cotton farmers for improved soil health and positive environmental outcomes, including carbon sequestration and regeneratively-sourced cotton.²¹ Farmers in the program receive one-on-one support from soil and conservation experts to help them transition to regenerative farming practices including zero tillage, reduced tillage, and cover crops. The program connects farmers to new and emerging markets, like the carbon marketplace, and brands and retailers in the cotton space, with the aim of helping to scale the voluntary adoption of regenerative agricultural practices and improve soil health.²² In 2022, Cargill expanded RegenConnect from 6 to 15 states, enrolling hundreds of farmers in the program.²³ Cargill is interested in continuing to grow the program, including through providing payments to farmers for positive water outcomes.

STRATEGY 4: SUPPORT COMMUNITY STAKEHOLDERS IN PLANNING FOR RESILIENCE

Many federal and state programs provide information and technical assistance to communities for climate risk assessment and implementing resilience strategies; however, due to resource constraints, these governmental programs are limited in how many communities to which they can provide direct technical assistance and tailored information. This issue is especially acute for under-resourced or small communities that lack the capacity and expertise needed to assess and manage risks, processes that can be very technical, and time and resource intensive. Large companies that have technical

expertise, information, best practice insights, and tools can help fill this gap by sharing these resources with communities to help them assess climate risks and identify solutions.

Below, we detail two initiatives by AT&T and Bank of America to develop and share technical resilience planning resources and best practice guidance with communities.

AT&T: Sharing a Climate Analysis Tool for community risk assessment and planning

In 2019, AT&T developed its Climate Change Analysis Tool (CCAT) to assess how climate change will impact its network and operations at the neighborhood level up to 30 years into the future.²⁴ The tool combines AT&T’s infrastructure data with regional climate modeling from the Department of Energy’s Argonne National Laboratory. Initially piloted in four Southeastern states hit hard by hurricanes and flooding, the tool now covers all of the continental United States and includes data on wildfires and droughts.²⁵

AT&T makes the data underlying its CCAT publicly available and has facilitated use of this data through its 2020 Climate Resiliency Community Challenge. The challenge invited colleges and universities to submit proposals for projects exploring climate risks to infrastructure, public health, emergency management, and similar fields, with a focus on socioeconomic impacts. Through this initiative, AT&T awarded over \$250,000 to five universities in the southeast to work with their local governments. Awardees included the University of Georgia, which partnered with Athens-Clarke County to develop flood inundation maps and inform local infrastructure planning.²⁶ The research team found that Black, Hispanic, and low-income communities have a 38–185 percent higher than average flood risk.²⁷ The study also identified areas not currently recognized as flood zones, but where flood risk exists and how climate change may affect flooding and socioeconomic impacts in the future.

Bank of America: Integrating resilience assessment steps into community development lending guidance

In addition to Bank of America’s efforts to directly support climate resilience and disaster recovery (such as employee relief funds and financial support to disaster relief non-profits), the bank is a significant investor

in community development financial institutions (CDFIs), which provide financial products and services to underserved communities.²⁸ While many CDFIs recognize the need to incorporate climate risks into their lending to facilitate the development of resilient and low-carbon communities that are already being economically impacted by climate change, these organizations need additional capacity to be able to deploy these strategies comprehensively.²⁹ To support this process, Bank of America has worked with stakeholders in the Resilient Community Development Finance Initiative to develop the Resilience Assessment Tool for CDFI Lending Programs.³⁰ This tool aims to help CDFI lending staff assess climate risks within loans and facilitate opportunities for building greater resilience into loans and in the greater community, like accelerating the deployment of energy efficiency projects for resilience and emissions reductions.³¹ By supporting the development of this tool, Bank of America is working to steer community investments in underserved communities toward climate resilience and support more sustainable communities.

STRATEGY 5: EMPOWER EMPLOYEES TO VOLUNTEER TO SUPPORT COMMUNITY RESILIENCE

Donating in-kind expertise and time is another way for companies to address resilience needs and build capacity at the local level while engaging employees. This strategy can take the form of employee volunteer programs that allow company employees to spend time sharing their skills with community members and initiatives, either before or after extreme weather events. Two examples of this strategy, detailed below, are Entergy's pro bono legal assistance program and AT&T's employee engagement program, which has guided the development of a community emergency preparedness app.

Entergy: Offering pro-bono legal advice post-disaster

Since 2012, energy company Entergy's legal department has donated over 17,000 pro bono hours to help low-income community members by partnering with area nonprofits and legal firms to answer community questions around family, housing, and employment-related issues.³² In 2018, Entergy hired a full-time attorney to lead the company's pro bono efforts, making it the first U.S. company and one of three companies

globally with such a position.³³ This attorney works closely with the CSR team to design and invest in projects, such as the pro bono day of service described below, that add value to local communities in the areas of environment, education, poverty solutions, and workforce development. They also work with the sustainability, public affairs, and investor relations departments to align pro bono work with company-wide sustainability initiatives.

Most recently, after Hurricane Ida, Entergy held its first "Day of Pro Bono Service", a virtual legal clinic that answered questions submitted by low-income community members on topics such as hurricane-related job termination or housing issues.³⁴ While not all submitted questions were explicitly disaster-related, in the aftermath of extreme weather events like Hurricane Ida, Entergy's pro bono legal services give customers access to legal advice that help them recover from disasters and build long-term stability.

AT&T: Harnessing employee expertise for resilience technology applications

AT&T has set corporate goals to engage at least 50 percent of its employees in community volunteerism and giving initiatives, as well as to help one million people prepare for and recover from disasters by 2030. Through its Community Engagement team, the company offers a variety of company-coordinated events for employees throughout the year, including disaster response activities.

To help meet these goals, AT&T developed a partnership with SBP, a disaster recovery and resiliency nonprofit. AT&T empowered its TechDev engineers to work with SBP to build Equip, a free mobile app that helps communities prepare for and quickly recover from disasters.³⁵ The app consolidates easy-to-use tools, resources, expert advice, and checklists in one place on topics including home preparedness steps for various hazards, flood insurance, and navigating disaster assistance. To develop this app, AT&T held "designathons," interviewed community members to understand the gaps it could fill, and leveraged personal experience with the goal of building an app that will drive community and household resilience to extreme weather events.³⁶

STRATEGY 6: FUND COMMUNITY RESILIENCE PROJECTS THROUGH PUBLIC-PRIVATE PARTNERSHIPS

Large companies can support resilience through public-private partnerships where both companies and governments contribute funding to projects. These funding partnerships are especially important for infrastructure initiatives, including structural elevation, emergency resource centers, and green infrastructure, among others, as these assets can be cost-prohibitive for communities. In embarking in a public-private partnership for infrastructure, it is critical that businesses and government decisionmakers ensure that community members are involved in decision-making. Robust community engagement is important given the risks that infrastructure development poses to low-income and marginalized communities (e.g., gentrification and pricing out of neighborhoods, decreased access to public services) if it is not designed equitably.

PG&E and Meta: Funding infrastructure projects to prepare for sea level rise

PG&E and Meta have agreed to contribute funding to the Strategy to Advance Flood Protection, Ecosystems, and Recreation along the San Francisco Bay (SAFER Bay) project, which plans to build both green and grey infrastructure to support resilience to sea level rise and tidal flooding in Menlo Park, California. The infrastructure will be designed to help protect critical commercial infrastructure, including Meta's Classic Campus and PG&E's Ravenswood substation, which provides power to residents from San Mateo to Palo Alto, as well as the nearby underserved neighborhood of Belle Haven.³⁷

This effort is led by a public-private partnership between the City of Menlo Park, PG&E, the San Francisquito Creek Joint Powers Authority, and Meta. It is anticipated that the project will be supported by a \$50 million grant from the U.S. Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure and Communities (BRIC) program, pending final confirmation. Like many federal grants, the BRIC program requires a state/local match totaling

25 percent of the grant (or 10 percent for small and impoverished communities). When communities are unable to meet this match requirement, private funding can be critical to unlock federal funding. The SAFER Bay project was initially scoped for a \$30 million grant, with PG&E committing \$10 million in local cost share; Meta's cost share contribution of \$7.8 million then unlocked an additional \$20 million in potential federal grant funding.³⁸

STRATEGY 7: FUND COMMUNITY-LED RESILIENCE INITIATIVES

When companies provide funding to local stakeholders for community-led resilience initiatives, they can catalyze initiatives in need of financial support and ensure that resilience efforts reflect and prioritize the needs of local communities. These community-led initiatives can include risk assessment, community engagement, resilience planning, and project implementation; they are often facilitated by funding and technical support from federal, state, and non-profit partners (both national non-profits and local, community-based organizations). Companies can help accelerate these efforts by driving critical funding toward them, thereby building the capacity of local organizations and communities to take the lead in resilience planning.

Below, we detail six business efforts that are funding community-led resilience initiatives or those with strong community partnerships, including Salesforce's ecosystem restoration partnership, Entergy's post-disaster small business recovery grants, Shell's funding of local government resilience leadership, GM's support of workforce development for resilience, PG&E's efforts to fund resilience hubs, and Duke Energy's emergency preparedness grant program.

Salesforce: Funding ecosystem restoration and climate justice efforts

In 2021 Salesforce announced a \$100 million, 10-year commitment through its Ecosystem Restoration and Climate Justice Fund for direct funding, technology donations, and employee volunteer hours to nonprofits working on ecosystem restoration, climate justice, and resilience.³⁹ It was created by the company's philanthropy

and sustainability teams, who were looking for a unique way to use philanthropic donations as a strategic financing tool. The fund supports organizations that work alongside local communities to implement nature-based climate solutions.⁴⁰

Salesforce released its first round of funding in April 2022, awarding \$11 million to twelve nonprofits around the globe. Included in this round of funding is Save the Bay, a regional San Francisco organization that works to restore the bay's wetland ecosystems to protect local wildlife species and increase coastal resilience to sea level rise for shoreline communities.⁴¹

Entergy: Providing disaster recovery grants to minority-owned businesses

After Hurricane Ida in 2021, Entergy committed \$1.25 million to help Louisiana communities recover from the storm.⁴² The company provided funding to nonprofits and local partners for immediate disaster relief needs, as well as assistance with rebuilding and longer-term recovery. Entergy has made similar contributions after several large storms, with a particular focus on underserved communities that are often more exposed to and impacted by extreme weather events.

Entergy also committed an additional \$500,000 in grants for minority small business owners, a first-of-its-kind initiative for the company.⁴³ These grants target the small business community who are essential to local resilience and recovery. Entergy awarded grants to three organizations:

- The Urban League of Louisiana's Black Business Works Fund received \$150,000 to provide microgrants of \$2,500 to minority-owned businesses to cover business expenses like repairs, rent, equipment, lost inventory, and employee wages and benefits.
- The Hispanic Chamber of Commerce of Louisiana received \$150,000 to help Latino-owned small businesses cover uninsured losses and other expenses related to impacts from Hurricane Ida.
- Thrive New Orleans and Propeller for Resilience, Green Infrastructure and Recovery Entrepreneur Pipeline received \$200,000 to help increase the share of green infrastructure and storm recovery contracts awarded to Black, Indigenous, and people-of-color small businesses owners and entrepreneurs. As a part of this initiative, Thrive and Propeller held the 11th Annual New Orleans Water Challenge that focuses

on local small, minority-owned businesses working toward improving the region's water economy.⁴⁴

Shell: Funding a resilience position in local government

After Houston experienced several severe flooding disasters, including Hurricane Harvey in 2017, Shell provided \$1.8 million to the Rockefeller Foundation's 100 Resilience Cities program to support the city in building resilience to physical hazards, such as hurricanes, extreme heat, and flooding, as well as other stressors like lack of housing, aging city infrastructure, and social needs.⁴⁵ With this funding, Houston hired its first chief resilience officer (CRO) to lead the city's resilience efforts. Shell committed to sponsor the CRO position for five years and, in partnership with the city and other stakeholders, helped release "Resilient Houston" in 2020, a comprehensive framework to guide the city's flood mitigation and resilience strategies.⁴⁶

GM: Supporting climate resilience workforce development

In 2021, GM established its Climate Equity Fund for community-based climate solutions that advance equity. With a \$50 million commitment through 2025, GM is supporting several programs including the Resilience Eastside Initiative, a partnership between the Eastside Community Network (a Detroit-based community development organization), the City of Detroit, and Elevate, a clean energy and equity-focused nonprofit. The Resilience Eastside Initiative developed the Lenox Center Resilience Hub for residents in the city's historically underserved eastside neighborhoods to use during power outages and home flooding caused by extreme precipitation events. With GM's financial support, the Resilience Eastside Initiative also includes a contractor accelerator program, a workforce development program run by Elevate. This program supports contractor businesses owned by people of color with training, tools, and mentorship to increase their capacity to install solar panels and energy storage solutions.

PG&E: Funding community resilience hubs to provide post-disaster services

PG&E's Resilience Hubs Grant Program offers grants to governments and organizations in California to assess, design, and build resilience hubs. These centers can

provide critical services during disaster periods such as power, shelter, food, water, and information—increasing needs as wildfires, flooding, and other extreme weather events become more frequent. Each year PG&E provides grants totaling \$400,000 to government and nonprofit organizations so these groups can assess the feasibility and needs of new resilience hubs, as well as to design and build spaces, mobile resources, or building retrofits. Priority is given to projects that focus on marginalized and vulnerable communities.⁴⁷

Previous grant recipients include the Blue Lake Rancheria, an indigenous tribe located in Humboldt County, that used resilience hub funding to conduct a feasibility study and identify strategies that ensure access to food and other emergency needs through their Tribal Convenience Store. The City of Richmond used funding to install portable solar panels on two community centers, creating small “power hubs” that allow residents to access continuous and reliable internet and electricity during power outages.⁴⁸

Duke Energy: Supporting emergency preparedness planning

Ahead of the 2022 hurricane season, Duke Energy launched a new Emergency Preparedness and Storm Resiliency Grant Program. Through this program, Duke Energy has awarded \$500,000 in microgrants to organizations in South Carolina that support local resilience and the ability of residents to prepare for and recover from extreme weather events. 34 nonprofits and government agencies across the state received the funding for programs including emergency management training, new technologies to assist in disaster planning, outreach initiatives on disaster preparation and response, mass notification systems, and critical equipment needed to aid recovery.⁴⁹ By funding national emergency preparedness nonprofits, regional municipalities, and other local organizations to carry out community-focused projects, Duke Energy is aiming to empower and prepare communities in the face of intensifying climate hazards.

DISCUSSION

EARLY TRENDS

Companies are taking on different leadership roles and supporting local climate resilience in a variety of ways. Philanthropic resilience initiatives appear to be common and a natural extension of corporate efforts to support communities, whether through formal foundation funding or other company resources. These initiatives can be designed to address not only resilience, but other climate priorities including mitigation and climate justice. For example, programs that focus on energy efficiency or workforce development can also achieve emissions reductions, resilience, and local economic benefits for historically marginalized communities.

With strategies that focus on protecting business operations, assets, services, and the workforce, companies can support both thriving local economies and continued business operations. These focus areas are also a fit for companies that provide critical services to communities and those that have small

businesses in their supply chains. Our research identifies examples of companies developing tools and services for resilience planning and project implementation; these offerings will likely continue to expand as climate impacts affect more communities and the demand for tools and services grows.

Equity and climate justice also appear to be an area of focus for companies’ community resilience efforts—a trend that should continue as companies map out new approaches. Many companies recognize that low-income communities and communities of color are often the most physically exposed to climate hazards and often have the fewest resources and capacity with which to increase their resilience or recover from disasters. In response, companies are focusing their efforts on partnerships that fund local non-profits and community organizations to plan and implement projects. In other cases, they are focusing on workforce development for communities of color on resilience-related skills and service areas, like energy efficiency.

BOX 1: Electric Utilities—Critical Service Providers and Partners for Community Resilience

Electric utilities are on the front lines of extreme weather and chronic climate impacts, and as the provider of a critical service, play a significant role in the communities in which they operate. As evidenced throughout this brief, utilities contribute to community resilience in a variety of ways during and after extreme weather events. Chief among these is by maintaining service reliability, reducing the vulnerability of critical infrastructure, and supporting measures that increase energy efficiency. Increasingly, new grid technologies and systems (e.g., microgrids and equipment that allows for damage isolation and rapid recovery) are creating additional opportunities for utilities to boost the resilience of their operations and that of the communities they serve. The following examples demonstrate how electric utilities are testing and deploying new microgrid technologies and distributed energy resources for community benefit.

Duke Energy: Piloting battery storage at community disaster hubs

Duke Energy is installing a solar canopy and battery storage microgrid at John Hopkins Middle School in St. Petersburg, Florida, which operates as a special medical needs hurricane operation shelter during power outages and emergencies.⁵⁰ The project features 2,480 solar panels that create a parking carport, including EV charging stations and battery energy storage.⁵¹ The microgrid increases grid reliability and critical services during outages, with the ability to provide 50 hours of power for the emergency shelter. The school benefits from the project as well, exposing students to solar power and renewable energy, and creating science, technology, engineering, and mathematics (STEM) teaching and learning opportunities across the curriculum.

Duke Energy plans to add additional battery energy storage sites across Florida to support public safety during extreme weather, improve overall electric grid efficiency and resiliency, and drive the adoption of battery technology. By the end of 2022, Duke Energy plans to have six battery sites in operation in Florida, totaling 50 megawatts of energy storage.⁵²

Exelon: Building microgrids for energy efficiency and security

ComEd's (an electric utility and division of Exelon) Community of the Future Program partners with northern Illinois neighborhoods to address community resilience through the deployment of sustainable and resilient energy solutions, to advance grid technology, and to encourage STEM education among the area's youth.⁵³ Through the program, ComEd collaborates with local communities to identify needs and pilot smart grid technology and related services. The company also partners with universities, national laboratories, and suppliers to develop and test new microgrid technologies.

As a part of this program, ComEd built the Bronzeville Community Microgrid, the first utility-operated microgrid cluster in the United States. This project is located in the Bronzeville neighborhood in the South Side of Chicago, a largely low-income neighborhood and location of critical public services for the city including the police and fire department headquarters.⁵⁴ This neighborhood has frequently experienced extreme temperatures, high winds, and snowstorms that cause power outages. Informed by engagement with community groups and several city agencies, ComEd identified Bronzeville as the area within their service territory that would most benefit from a microgrid.⁵⁵ As part of the project, ComEd and university partners received over \$5 million in grant funding from the Department of Energy to study how microgrids can increase energy security and resilience and support the integration of clean energy onto the grid.⁵⁶ Using distributed energy resources such as solar and battery energy storage, the microgrid cluster is expected to continue operation during extreme weather, cyber, or physical attack periods without interruptions in service.⁵⁷

KEY CONSIDERATIONS FOR CORPORATE LEADERSHIP

The projects in this brief reveal that a variety of strategies are available to support local climate resilience. These companies must make a number of considerations, detailed below, as they look to increase their role and design and implement projects. These considerations can help forge new paths and ensure that projects achieve resilient outcomes.


First, companies must decide what type of leadership role(s) they want to assume in supporting local climate resilience. As discussed previously and shown in Figure 1, these leadership roles include being a risk management leader to advance the resilience of company operations, developing resilience solutions for communities, catalyzing and partnering to advance local resilience, and advocating for policies or supporting thought leadership that supports community resilience.

Companies should leverage their existing competencies and consider desired outcomes to determine where a climate resilience initiative should be positioned in the organization. Though this decision might be more apparent in some cases (e.g., companies that seek to increase the resilience of critical services will develop initiatives in the operations arm of the enterprise), other companies may have to evaluate

their relative strengths to see where they can best support community resilience. For example, a company with a strong philanthropic capacity that aims to help build local resilience could develop new initiatives for community-based organizations out of its corporate foundation. In some cases, new internal coordination will be necessary for success; for example, a company that seeks to share down-scaled climate data used to assess risks for new warehouse locations with local decision makers might establish a new link between the company’s siting or risk assessment team and its externally focused stakeholder engagement team to coordinate an initiative.

In addition, companies must seek a robust understanding of community risks, resilience opportunities, and the type of support that communities want from private sector stakeholders. The companies featured in this brief recognize that engagement and joint planning with key stakeholders and community-based groups is critical to developing projects that are effective and equitable. This planning is important because no two communities are the same in terms of their specific risks, capacity to address them, and desired solutions, so companies must work to support tailored approaches. Planning can also help ensure that any corporate-funded resilience project fits within a larger community strategy for resilience.

FIGURE 3: Opportunities for the Private Sector to Support Local Climate Resilience



Planning	Investment	Hazard Preparation	Emergency Response	Recovery
Identify vulnerabilities of critical company infrastructure	Pilot new technologies and approaches for community use	Provide emergency preparedness planning grants to communities	Provide access to critical services	Provide recovery grants to affected small businesses (including minority-owned) and employees
Implement company resource conservation programs	Fund infrastructure projects to prepare for climate hazards	Fund community resilience hubs to provide essential services		Offer pro bono legal advice to community members
Engage company’s suppliers to increase supply chain resilience	Fund ecosystem restoration and climate justice efforts	Integrate real-time, localized weather data into products and services to alert users of climate hazards		
Integrate resilience assessment steps into community practices	Build microgrids for energy efficiency and security	Harness employee expertise for resilience technology applications		
Share climate risk assessment, best practices, and planning tools with communities	Support workforce development for climate resilience services			
Fund resilience positions in local government				

The examples featured in this brief demonstrate that there are many opportunities for large companies to contribute to the resilience of local communities. Companies can support proactive resilience by engaging in planning and investment activities, help prepare communities when hazards are imminent, and play an important role after climate impacts during the emergency response and recovery phases.

Companies also need to determine whether they seek to provide support to communities before, during, or after climate impacts occur, or some combination of these. Through this research, we found many examples of how companies can help communities mitigate climate risks and avoid impacts by supporting proactive planning and preparations. However, given the increasing intensity and frequency of climate-related

extreme weather events, there will be a continued need for emergency management and recovery support, and companies operating in affected communities can play an important role at these times as well. **Figure 3** illustrates where the initiatives described in this brief are positioned on this timeline of community needs.

LOOKING AHEAD

As climate impacts become more intense and more frequent, the need for resilience action will only increase. The public sector will be challenged to address the resulting societal needs with policies that empower communities and catalyze greater resilience. The private sector will be challenged to address new demands as well—for corporate climate risk mitigation, employee safety, marketable solutions, and evolving societal needs. Large companies are positioned to lead in developing the approaches that will meet these demands; indeed, the initiatives included here indicate that a great deal of innovation and leadership already exists.

This brief presents an emerging blueprint for these approaches and is meant to create space for a new conversation. In fact, many of the featured examples have been launched relatively recently, indicating a burgeoning area of interest. In a fast-developing landscape, the seven strategies and initiatives described are not meant to represent a complete list. Further research and fora for corporate professionals to share best practices and lessons learned would contribute to a fuller picture of the roles that companies can and should play in advancing local level climate resilience. That conversation would uncover and refine additional areas for corporate action.

For example, we identified additional ways that large companies could leverage their resources for community benefit: activities such as policy advocacy and thought leadership are critical in supporting a policy ecosystem and culture that accelerate local climate resilience and represent a significant opportunity for companies. This initial research does not identify examples of companies

advocating for resilience policy, though some companies certainly are already doing so. For example, companies have advocated for expanding federal pre-disaster hazard mitigation programs (e.g., FEMA BRIC). Additionally, many of the companies included in this brief strongly supported the climate provisions in the IJA and IRA, which included significant investments in resilience, though companies generally focused their support on the decarbonization provisions of these policies.⁵⁸ As companies are becoming more vocal in supporting decarbonization, additional investigation could focus on how companies are currently advocating for policies that support community resilience at the federal or state level and how these efforts could be expanded. Additionally, companies can contribute to stakeholder efforts that advance understanding of resilience solutions and outcomes such as sponsorship of local climate resilience events, funding research into remaining resilience questions, op-eds in news publications, and more.

Furthermore, future research and discussion should explore more deeply the motivation for corporate action, which can vary depending on the company, risk landscape, and opportunities for action. Additionally, future research should consider what makes corporate climate resilience contributions robust and impactful. Forming a better understanding these aspects would help companies develop internal and external strategies and communications and could ultimately result in standardized ways to incorporate these activities in CSR and ESG reporting practices and disclosures.

CONCLUSION

Discussions about public and private sector collaboration around climate resilience have centered on three main roles for companies: alignment and participation in collaborative public planning processes, innovating new products and services, and providing funding—especially to public-private partnerships. Despite this delineation of roles, local communities have often struggled to integrate corporate partners into their resilience strategies, indicating a disconnect somewhere along the way; perhaps one that could be addressed with a clear picture of the variety of tangible ways that the private sector can contribute, as this brief begins to explore.

Prior to this effort, there has been no cross-sectoral look at corporate approaches to climate resilience activities that can benefit local communities. With this research, we offer an initial set of strategies for major companies to consider. In addition to now having a set of options that can serve as a draft corporate playbook, the variety of companies and initiatives highlighted here clearly demonstrate that there is broad interest in developing an impactful role for the private sector.

ACKNOWLEDGEMENTS

The Center for Climate and Energy Solutions (C2ES) would like to thank Bank of America and Universal Insurance Holdings for their support of this work.

C2ES is also grateful to Samantha Tarvin for her valuable contributions to this research, and wishes to thank the following experts for their input:

Amy Brusiloff	<i>Bank of America</i>	Lio Barerra	<i>Holcim U.S., Inc</i>
Rich Brown	<i>Bank of America</i>	Michael Lemonds	<i>Holcim U.S., Inc</i>
Ashley McKeon	<i>Cargill</i>	Kelly Eskew	<i>Indiana University</i>
Peter Dahm	<i>Cargill</i>	Fawn Bergen	<i>Intel</i>
Chris Adamo	<i>Danone North America</i>	Rachael Cavanagh	<i>Intel</i>
Sarah Degnan	<i>Duke Energy</i>	Lauren Swezey	<i>Meta</i>
Vicky Sullivan	<i>Duke Energy</i>	Lisa Hook	<i>Meta</i>
Gabriela Collins	<i>Edison International</i>	Nate Bengtsson	<i>PG&E</i>
Lisa Woon	<i>Edison International</i>	Steve Oprea	<i>Shell USA, Inc</i>
Anne Evens	<i>Elevate</i>	Travis Sheehan	<i>Shell USA, Inc</i>
ChaNell Marshall	<i>Elevate</i>	Stephen Torres	<i>Southern California Edison</i>
Jeanine Otte	<i>Elevate</i>	Andrew Stober	<i>Waze</i>
Christy Fast Kane	<i>Entergy</i>	Ahmed Elcott	<i>Wells Fargo & Company</i>
Patty Riddlebarger	<i>Entergy</i>	Chris Schraeder	<i>Wells Fargo & Company</i>
Rick Johnson	<i>Entergy</i>	Eugene Montoya	<i>Wells Fargo & Company</i>
Christopher Burton	<i>Exelon Corporation</i>	Jim Meyhoefer	<i>Wells Fargo & Company</i>
Melissa Lavinson	<i>Exelon Corporation</i>	John Moon	<i>Wells Fargo & Company</i>

APPENDIX

STRATEGY/SECTION	COMPANY	PROJECT/ACTIVITY	PAGE
Reduce risks of company assets and operations	Southern California Edison	Identifying climate vulnerabilities of the electric grid	6
	Intel	Implementing water conservation and water restoration programs	6
Develop products and services that enable resilience	Waze	Integrating real-time flood data to alert users of driving hazards	7
	Wells Fargo	Providing access to banking services post-disaster	7
Support resilience within the company's supply chain	Cargill	Building the resilience of farms in its supply chain	8
Support community stakeholders in planning for resilience	AT&T	Sharing a Climate Analysis Tool for community risk assessment and planning	8
	Bank of America	Integrating resilience assessment steps into community development lending guidance	8
Empower employees to volunteer to support community resilience	Entergy	Offering pro-bono legal advice post-disaster	9
	AT&T	Harnessing employee expertise for resilience technology applications	9
Fund community resilience through public-private partnerships	PG&E and Meta	Funding infrastructure projects to prepare for sea level rise	10
Fund community-led climate resilience initiatives	Salesforce	Funding ecosystem restoration and climate justice efforts	10
	Entergy	Providing disaster recovery grants to minority-owned businesses	11
	Shell	Funding a resilience position in local government	11
	GM	Supporting climate resilience workforce development	11
	PG&E	Funding community resilience hubs to provide post-disaster services	11
	Duke Energy	Supporting emergency preparedness planning	12
Electric Utilities: Critical Service Providers and Partners for Community Resilience	Duke Energy	Piloting battery storage at community disaster hubs	13
	Exelon	Building microgrids for energy efficiency and security	13

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The Center for Climate and Energy Solutions (C2ES) is an independent, nonpartisan, nonprofit organization working to forge practical solutions to climate change. We advance strong policy and action to reduce greenhouse gas emissions, promote clean energy, and strengthen resilience to climate impacts.