



**RESOURCES**  
*for the* **FUTURE**

**Annual Report 2021**



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I believe in RFF's mission,  
which is to find the nexus  
and common ground  
between our economic  
and environmental interest.

**Sen. Mary Landrieu**  
RFF Board Member

RFF Annual Report 2021

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Reflecting on 2021

# Letter from the President



**Richard Newell** is the President and CEO of Resources for the Future.

In 2022, we will celebrate the 70th anniversary of Resources for the Future (RFF)—a milestone achievement for any organization. As we prepare to mark seven decades of research, engagement, and solution-making, I have been called to reflect upon 2021, a year that, for all its challenges, has brought out the very best of RFF. As I believe you will see in the pages that follow, the problems and uncertainties of the last year were met with creativity, collaboration, agility, and resilience from the team of experts that make RFF what it is.

As 2021 began, RFF greeted the year with proactive research and analysis. As a new administration took office, RFF released its eight-part Federal Climate Policy Toolkit, which details the suite of policy options that is available to drive decarbonization across a variety of sectors, from transportation to industry and fuels. This toolkit, which presents sector-by-sector and economy-wide approaches to curbing emissions across the United States, has proven to be one of our most popular publication series in 2021.

With an Inauguration Day executive order to re-establish the interagency working group responsible for calculating the social cost of greenhouse gases, RFF's ongoing work to drive an estimate based on the latest science became

even more relevant. Researchers with our Social Cost of Carbon Initiative have worked since 2017 to calculate an estimate of the cost of climate damages that is accurate, transparent, and based on the best available science. In this report, you'll find out more about the crucial work we're doing to inform the interagency working group's updated estimate of the social cost of greenhouse gases, slated for early 2022.

Throughout the year, we've worked to inform decisionmaking in the Biden administration, as well as across the aisles of the 117th Congress. Our experts have testified before Congress, engaged in numerous private briefings, and delivered more than 300 publications and commentaries. Drawing on our powerful economic modeling capabilities, RFF scholars have helped to inform critical decisions about infrastructure, clean energy provisions within the budget reconciliation package, and funding for advanced energy technologies authorized in the Energy Act of 2020.

RFF's body of research in 2021 has contributed new insights on historical environmental injustice and is helping chart a more equitable way forward. Our growing body of research on environmental justice and marginalized

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communities includes our ongoing Exposure event series with the Urban Institute that explored the current state of environmental justice research across disciplines. As this work continues in 2022 and beyond, we welcome your perspectives and ideas to hone this agenda and make it as inclusive and impactful as possible.

We are also building our body of work on adaptation and resilience strategies. Communities around the world are experiencing the impacts of climate change—from sea level rise and coastal flooding to extreme storms and heat waves—and our experts are evaluating strategies that can enhance resilience to extreme weather events and encourage effective community adaptation. For example, RFF scholars are analyzing microinsurance as a method to improve the financial resilience of low-income households.

RFF also supported state- and local-level decisionmakers in 2021 as we worked to advance economically and environmentally sound policies. Our Equity in the Energy Transition Initiative explores case studies of coal-mining towns in Ohio and Montana, aiming to learn lessons about employment effects and social welfare in resource-dependent communities. We worked



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From our early days assessing natural resource scarcity to our present-day focus on confronting climate change and its economic impacts, RFF has been guided by an unwavering commitment to rigorous and impartial analysis.

with major regional programs like the Regional Greenhouse Gas Initiative and the Transportation Climate Initiative to support states in their collective efforts to reduce emissions, provide public services, and promote economic growth. Recognizing the global nature of the climate crisis, RFF continues to research international policy options and engage with decisionmakers around the world. For instance, our experts have been examining how to utilize border carbon adjustments to ensure fair conditions for global trade while enabling national ambition to decrease carbon emissions. From international public opinion surveys of climate pricing in Sweden, to an in-depth review of German policies that assist coal communities in transition, research from RFF and our colleagues at the RFF-CMCC European Institute on Economics and the Environment has offered important lessons for policymakers.

Through it all, we have focused on our vision of a healthy environment and a thriving economy, which has defined RFF’s work for seven decades. From our early days assessing natural resource scarcity to our present-day focus on confronting climate change and its economic impacts, RFF has been guided by an unwavering commitment to rigorous and impartial analysis. RFF was founded on October 7, 1952, and on October 7, 2021 we

celebrated our first annual “Founders’ Day”—an opportunity to honor our legacy. As we prepare to mark RFF’s 70th anniversary, we are building out a suite of signature products to highlight RFF’s legacy and our vision for the decades to come, including special event programming, dedicated magazine editions, and more.

None of this impact would be possible without the passion and commitment of the individuals who make RFF what it is. This year, I want to give thanks in particular to our outgoing Vice President for Research and Policy Engagement, Ray Kopp. During his four decades with RFF, Ray’s research leadership has truly helped make RFF into the organization that it is today, and we are fortunate to continue working with him in his new capacity as director of our Comprehensive Climate Strategies Program.

I am also pleased to announce that Billy Pizer has stepped into the role of Vice President for Research and Policy Engagement. Billy, who spent a decade working as a researcher at RFF earlier in his career, joins us from the Sanford School of Public Policy at Duke University; he also previously served as Deputy Assistant Secretary for Environment and Energy at the US Department of the Treasury. We are so pleased

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Throughout the year, we have seized multiple opportunities with the Biden administration and the 117th Congress to deliver the timely research and actionable policy insights that have defined RFF over the past seven decades.

to welcome Billy back in this new capacity, and we already have seen great impact under his leadership in just a few short months.

Ray and Billy both have made substantial contributions to our updated research and policy engagement strategy, which we implemented in 2021. RFF is now home to seven programs and eight initiatives, each of which encompasses one of RFF’s distinctive research priorities in our overarching climate strategy to design smart emission reduction strategies, confront risk, and build resilience. In the “Impact” section of this report, you’ll find out more about these programs and initiatives, and the exceptional research and policy engagement that each is undertaking.

In 2021, RFF welcomed two new members to its Board of Directors. Janet F. Clark joins us with decades of experience in the investment banking, financial consulting, and energy sectors; she has been named as one of Forbes’s “One Hundred Most Powerful Women.” H. Russell Frisby joins our board with two decades of experience providing regulatory and corporate counsel to companies across the energy, communications, and technology spheres. We feel fortunate to be welcoming

both Janet and Russell, and we look forward to working with them.

We also recognized Ambassador C. Boyden Gray, who retired from the Board of Directors in October. Boyden has been an extraordinary supporter of RFF for more than two decades. We are grateful for his service on the board and look forward to continuing to engage with him in the years to come as a member of our President’s Council.

The country and world have made tremendous strides over the past twelve months. While we will continue to face challenges, from climate change to COVID-19, I am optimistic about our collective ability to take truly transformative action. The problems, threats, and uncertainties of the last year have been met with the very best that RFF could deliver—a combination of time-tested analysis and trusted engagement, together with new and dynamic approaches to finding solutions to the biggest challenges of the day.

Thank you for all that you do in support of RFF. Our work is made possible by each of you who believes that today’s environmental challenges require the best independent research and effective, efficient, and equitable solutions to protect the climate, enhance nature, and advance our well-being. •

## Conversations with RFF’s President Policy Leadership Series

RFF’s Policy Leadership Series brings together leading global environmental and energy decisionmakers to share their thoughts on pressing climate and natural resource topics, in conversation with RFF President and CEO Richard G. Newell. In 2021, this event series featured the following speakers.



### On Aviation

Scott Kirby became CEO of United Airlines just before the COVID-19 pandemic brought the airline industry to a grinding halt. In May, we spoke with Kirby about how the pandemic has affected his priorities as CEO, the steps he is taking to build an economically sustainable future for the company and its operations, and United’s decarbonization strategy.



### On Environmental Justice

Michael Regan sat down with us in August for a wide-ranging conversation on environmental justice and federal environmental regulations. He set out the Biden administration’s climate priorities, his own goals as the 16th Administrator of the US Environmental Protection Agency, and his insights on the importance of sound economic research in rulemaking.



### On Oil and Gas

Since becoming CEO of bp in 2020, Bernard Looney has set ambitious net-zero emissions goals for the company. At our event in March, Looney discussed how bp is developing clean energy innovations reimagining its corporate mission in response to climate change.



### On Public Lands

During our conversation with Sally Jewell in April, the former US Secretary of the Interior offered guidance on ongoing public lands issues and discussed how federal climate policy can drive meaningful change from corporate leaders.

Making It Count

# Our Year in Numbers



## \$16,000,000

We're a 501(c)(3) nonprofit organization with a \$16 million budget

## 1,300

We were cited in more than 1,300 news articles

## 1,500,000

Our website generated more than 1.5 million page views

## 330

We wrote 330 publications and commentaries

## 92,000

Our podcast episodes were played more than 90,000 times

## 250

250+ foundations, corporations, and individuals supported us

## 20,000

We surpassed 20,000 followers on Twitter

## 131

We're home to 131 staff and affiliated scholars

## 13,000

More than 13,000 people tuned in to watch 26 RFF webinars

## 1

RFF was ranked #1 for environmental economics globally\*





Programs and Impact

# Our Areas of Focus



**Focus Area 1**

## Designing Smart Emissions Reduction Strategies

We create climate solutions that are effective, efficient, equitable, beneficial to the economy, and able to achieve net-zero emissions goals—from economy-wide solutions that send consistent signals to the marketplace to sector-specific strategies for all major areas of the economy.

**Focus Area 2**

## Confronting Risks and Building Resilience

We evaluate the physical and economic impacts of climate change, using data to assess risks and uncertainties at global, national, sectoral, and local scales, and ensure that decisionmakers are equipped with the information they need to build resilience in their communities.

<p><b>Comprehensive Climate Strategies Program</b> More on page 14</p>	<p><b>Climate Finance and Financial Risk Initiative</b> More on page 28</p>	<p><b>Climate Risks and Impacts Program</b> More on page 56</p>
<p><b>Federal Climate Policy Initiative</b> More on page 21</p>	<p><b>Electric Power Program</b> More on page 30</p>	<p><b>Environmental Justice Initiative</b> More on page 60</p>
<p><b>Equity in the Energy Transition Initiative</b> More on page 22</p>	<p><b>Transportation Program</b> More on page 40</p>	<p><b>Earth Observation for Policy Initiative</b> More on page 61</p>
<p><b>Carbon Pricing Initiative</b> More on page 24</p>	<p><b>Industry and Fuels Program</b> More on page 46</p>	<p><b>Social Cost of Carbon Initiative</b> More on page 62</p>
<p><b>International Climate Policy Initiative</b> More on page 26</p>	<p><b>Land Use, Forestry, and Agriculture Program</b> More on page 50</p>	<p><b>Adaptation and Resilience Program</b> More on page 64</p>



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# Comprehensive Climate Strategies Program

RFF researchers objectively design and evaluate strategies for governments around the world to drive their economies toward net-zero emissions while addressing equity and cost.



## 1.1 Federal Climate Policy Initiative

# Informing Big Decisions in Federal Climate Policy

**The past year** saw major opportunities to inform climate, energy, and environmental policy with the entrance of a new administration and Congress. RFF consistently brought rigorous research and trusted policy engagement to decisionmakers—from an Inauguration Day executive order on the social cost of carbon, to official testimony provided by RFF scholars to Congress and federal agencies.

RFF's state-of-the-art modeling projected the impacts of climate policy proposals under active conversation by policymakers. As the White House announced a new Paris Agreement target at an Earth Day summit, RFF researchers examined the potential of three prominent policy proposals, both individually and in combination, to meet newly ambitious decarbonization goals. RFF's unique modeling also estimated the energy-related carbon dioxide emissions reductions under a variety of climate policy proposals, as well as projecting the effects of climate policy proposals on the electricity sector.

Over the summer and into the fall, RFF, through congressional briefings and staff engagement,

informed active legislative discussion on the historic trillion-dollar Infrastructure Investment and Jobs Act and the \$2.2-trillion Build Back Better Act. In a three-part targeted issue brief series on the Energy Infrastructure Act—an authorizing bill for the Infrastructure Investment and Jobs Act introduced by Senator Joe Manchin—we estimated the bill's effects on advanced clean energy technologies, abandoned oil and gas wells, and wildfire risk management. And RFF briefings on green procurement informed congressional and agency staff as they worked to draft provisions of the Build Back Better Act.

RFF experts have been deeply engaged in informing all stages of discussion on the clean energy provisions within the Build Back Better Act. Our scholars led major efforts in both policy design and analysis of the emissions projections and costs of various policy proposals. RFF researchers have briefed policymakers in Congress, government agencies, and the White House on our findings, and our expertise in these areas has been cited by numerous media outlets including the *New York Times*, *Axios*, and the *Financial Times*. •

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In a *Resources* blog post, RFF Fellow **Daniel Raimi** reflected on the initial markup of the Build Back Better Act to identify major points that may help advance energy equity, promote environmental justice, and support energy communities.



In the *Wall Street Journal*, RFF President and CEO **Richard Newell** provided analysis of the Biden administration's climate ambition following the president's pledge to cut emissions in half by 2030.



As committees in the House of Representatives released early drafts of the Build Back Better Act legislative text for markup, RFF scholars combed through hundreds of pages of text for opportunities to provide their insights and analysis for *Resources* magazine.

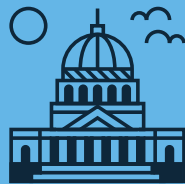


The *Washington Post* drew from RFF Fellow **Brian C. Prest's** research and public testimony in a November article about the Interior Department's plan for drilling on public lands.



### Resources Issue 206

Issue 206 of Resources magazine drew from a special series of Resources Radio podcast episodes hosted by RFF President and CEO Richard G. Newell and Chair of RFF's Board of Directors Susan Tierney. The episodes involved conversations with leading decisionmakers, analysts, researchers, and reporters, and focusing on the big decisions that will impact US environmental and energy policy in the years to come.



### Informing Congress on Key Climate Questions

In February 2021, RFF President and CEO Richard G. Newell testified before the US Senate Committee on Energy and Natural Resources at a hearing that set out to establish a baseline of global climate facts. In his testimony, Newell spoke to a variety of issues, including global climate, energy, and emissions trends; clean energy advancements; and the benefits of a technologically inclusive policy approach.

RFF Fellow Brian C. Prest testified at a hearing of the House Subcommittee on Energy and Mineral Resources regarding policy options for reforms to the federal oil and gas leasing program. Later that month, Prest shared his insights on the economics behind federal oil and gas leasing options during a public forum convened by the Department of the Interior on the future of the federal leasing program.





## 1.2 Federal Climate Policy Initiative

# Building a Federal Climate Policy Toolkit

As a new administration took office, RFF's Federal Climate Policy Toolkit, released in the spring of 2021, outlined the federal policy options to reduce emissions among the major economic sectors. The eight-part series culminated with digital and print versions that spanned sectors from power and buildings to industry, land use, and transportation.

In the series, RFF Senior Fellow Karen Palmer and Senior Research Associate Kathryn Cleary set out

options to decarbonize the buildings sector; Senior Fellow James Boyd and Nonresident Senior Fellow David Wear explored the options for expanding the land-based carbon sink and reducing agricultural emissions; and Fellow Brian C. Prest provided an overview of policies that could reduce emissions from the oil and gas industry. The series quickly garnered more than 20,000 pageviews, making it one of RFF's most popular research and analysis products in early 2021. •



### Resources Issue 207

Issue 207 of *Resources* magazine summarized thousands of collective hours of research and analysis by RFF experts, with the goal of setting out the key climate policy innovations available to federal decisionmakers. The issue was released during a period in which numerous potentially transformative climate policy ideas were being developed in Congress.

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The eight-part series culminated with digital and print versions that spanned sectors from power and buildings to industry, land use, and transportation.

### 1.3 Equity in the Energy Transition

# A Just Transition Away from Fossil Fuels

**Research in RFF's** Equity in the Energy Transition Initiative examines the potential effects of the shift away from fossil fuels on communities and identifies pathways toward a more equitable and sustainable energy system. In 2021, RFF partnered with Environmental Defense Fund to continue the *Fairness for Workers and Communities in Transition* series, which includes a synthesis report, case studies, and accompanying blog posts. Each product was designed to help policymakers assess strategies to address social

and economic challenges associated with the shift to a clean energy economy. The report series has garnered significant attention from Capitol Hill and media outlets like *Politico*, *E&E News*, and the *Hill*.

Other work in this space is extensive; for example, a multi-institutional report led by scholars at RFF proved to be an important tool for decisionmakers as they considered energy transition-related provisions of the infrastructure and budget reconciliation packages. •



To accompany the synthesis report of the *Fairness for Workers and Communities in Transition* series, RFF Fellow and report coauthor **Daniel Raimi** shared his insights in an op-ed for the *Boston Globe*.



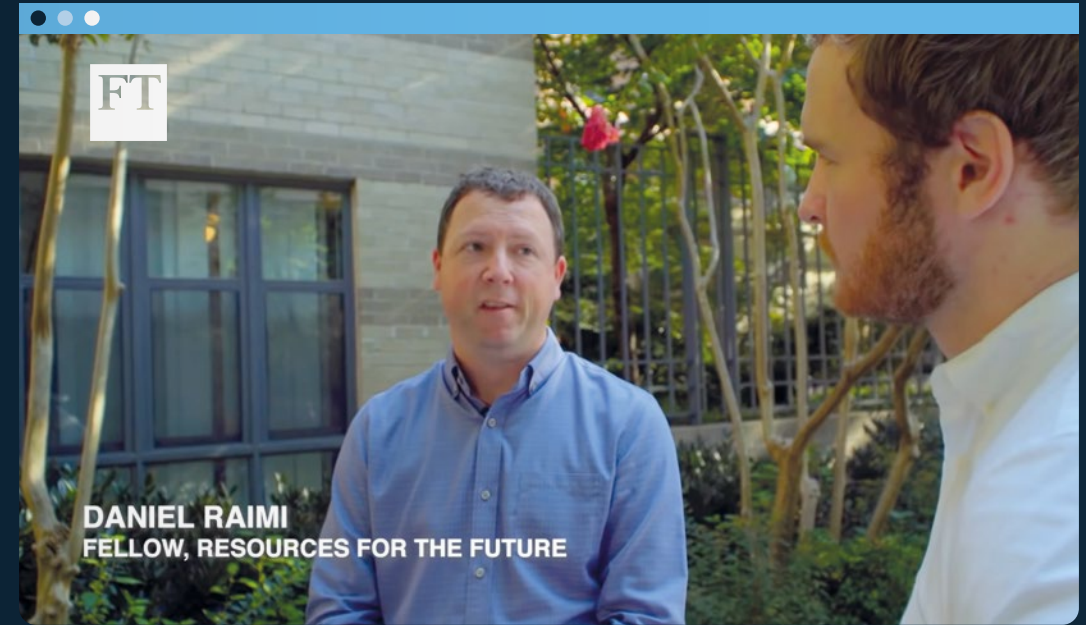
In a panel discussion published in the *Wall Street Journal*, RFF fellow **Marc Hafstead** discussed the employment potential of a “green” economy focused on renewable energy sources.



In a *Common Resources* blog post, RFF Senior Research Associate **Wesley Look** detailed insights from over 100 policies that could address both climate change and the needs of vulnerable communities.



In another blog post, RFF experts examined the American Jobs Plan, which included policy approaches to boost clean energy, protect the environment, and speed decarbonization efforts.



## 1.4 Carbon Pricing Initiative

# Informing the Design of Carbon Pricing Policies

**Economists and many others** around the world consider carbon pricing the most economically efficient climate policy option. Experts in RFF's Carbon Pricing Initiative, led by initiative director Marc Hafstead, are examining the impacts of carbon pricing policy proposals and informing policy design to help leaders better understand their fiscal and environmental costs and benefits.

RFF experts examined a variety of legislative proposals for carbon pricing in 2021 and tracked these in our Carbon Pricing Bill Tracker, which compares the varying design specifications of each proposal, as well as our Carbon Pricing Calculator, which models the future impacts of each proposal on emissions and the economy. Our new carbon pricing video explainer also examined the basics of how a carbon price works; different forms of carbon pricing; and the implications of carbon pricing for people, the economy, and the environment—helping to inform an increasingly expansive audience on the fundamentals of this research area.

RFF scholars also examined how a carbon price, if introduced, could supplement federal climate policies under consideration to achieve US emissions targets by 2030. A working

paper coauthored by RFF University Fellow Gilbert Metcalf considered the effects of a carbon price on business creation and clean technology adoption, finding that it would prompt a slight uptick in GDP. Another working paper coauthored by RFF Fellow Brian C. Prest and Senior Fellows Dallas Burtraw and Karen Palmer examined how a carbon price could spur investment and increase economic growth, and was featured by *Politico* and the *Financial Times*. In a series of issue briefs, RFF researchers examined how various climate policies, both in isolation and combined, could achieve US climate goals. These issue briefs examined how various carbon price scenarios, in tandem with proposed federal climate policy legislation, could reduce carbon emissions by 2030.

RFF experts also engaged with various members of congressional staff throughout the summer and fall of 2021 as they considered adding carbon pricing to a range of legislative proposals. Recently, initiative director Marc Hafstead participated on a panel discussion on climate policy modeling at Senator Sheldon Whitehouse's 12th Annual Rhode Island Energy, Environment, and Oceans Leaders Day to discuss RFF's work on this modeling. •

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Experts in RFF's Carbon Pricing Initiative ... are examining the impacts of carbon pricing policy proposals and informing policy design to help leaders better understand their fiscal and environmental costs and benefits.



In the *Energy Source* newsletter from the *Financial Times*, Senior Fellow **Karen Palmer** shared results from a recent RFF report on the possible effect of carbon pricing on investment decisions.



In an October interview with the *Washington Examiner*, Senator Sheldon Whitehouse talked about using RFF analysis when engaging the Biden administration on a proposed carbon tax.



RFF President and CEO **Richard G. Newell** provided a number of insights into the potential for federal carbon pricing in an article for the *New York Times*.



In a story for Quartz, RFF Vice President for Research and Policy Engagement **Billy Pizer** gave his insights on climate finance and the role of international aid for climate mitigation measures.

## 1.6 International Climate Policy Initiative

# Addressing the Climate Challenge through International Collaboration

**Originally scheduled** for November 2020, the 26th Conference of the Parties (COP26) was postponed by the COVID-19 pandemic. The international climate conference was hosted one year later in Glasgow, Scotland, as new ambition was brought to the table by major emitters including the United States, the European Union, and the United Kingdom.

RFF's new Vice President for Research and Policy Engagement, Billy Pizer, represented RFF at COP26, where he shared his expertise on the outcomes of the conference with Quartz. Pizer rounded out a three-part *Resources Radio* podcast series on COP26, which featured Union of Concerned Scientists Policy Director Rachel Cleetus and Environmental Defense Fund Chief Economist Suzi Kerr. RFF also hosted a two-part event series that explored the potential role of border carbon adjustments as countries pursue increasingly ambitious policies. The events, hosted during the first and second weeks of the COP, featured a panel of experts across three continents.

Border carbon adjustments, which seek to adjust the cost of carbon-intensive products when they are traded between countries with different carbon prices, are poised to be an important element of climate policy in the future. These mechanisms seized headlines over the summer and fall of 2021, as proposals to deploy them were explored by policymakers in both the United States and the European Union. RFF researchers released multiple publications during this period that explored the interaction of carbon border adjustments with carbon pricing and furthered a proposed framework to create and implement border adjustments that are compliant with US obligations to the World Trade Organization. RFF Visiting Fellow Brian Flannery's expertise in this area was quoted in a July article in the *New York Times*, and RFF's work on border adjustments was cited in multiple outlets in 2021, including Reuters and Bloomberg Opinion. •



Why is international collaboration and cooperation vitally important to address our climate, energy, and environmental challenges?

"Solving global environmental challenges is simply impossible without strong cooperation. Research has a long tradition of international collaborations, and we hope the RFF-CMCC partnership can facilitate the discussion of policy solutions towards a more sustainable planet."

**Massimo Tavoni**  
Director, RFF-CMCC European Institute on Economics and the Environment

## Examining Just Transition Efforts in Europe

In a recent article for *Resources* magazine, Elena Verdolini of the RFF-CMCC European Institute on Economics and the Environment and Wesley Look of RFF previewed an upcoming report series examining just transition efforts in the European Union.

"This report series illustrates the tools that Europe put into place since its

founding to promote cohesion and economic development across its member states. These existing tools can help us get part of the way to a just transition," says Verdolini.

"Having a clear idea of what the tools are is the first important step; our focus should then move on to using these tools to push even further toward our goals."



*National Geographic* quoted the RFF-CMCC European Institute on Economics and the Environment experts **Massimo Tavoni** and **Valentina Bosetti** on their work that investigates the impacts of COVID shutdowns on air pollution.



In an op-ed for *Barron's*, RFF's **Billy Pizer** outlined the potential climate benefits—and policy implications—of building effective border carbon adjustments.



RFF researchers **Erin Campbell**, **Daniel Raimi**, and **Seth Villanueva** explored how recent projections to limit global warming to 1.5°C provide vastly different estimates about our future energy consumption in commentary for *Common Resources*.



A *New York Times* article on border carbon taxes in the European Union quoted RFF Visiting Fellow **Brian Flannery**.



## 1.5 Climate Finance and Financial Risk Initiative

# Examining Climate Finance and Financial Risk

**Climate change** and the energy transition pose risks to certain financial assets and the broader financial system—and also provide opportunities. In 2021, RFF launched a new Climate Finance and Financial Risk Initiative to identify and improve the measurement of risks to support smart investment decisions, financial stability, a thriving economy, and a healthy environment. In 2022, RFF experts will work to bring business leaders and decisionmakers crucial insights to inform their financial decisions. •

“In 2022, RFF experts will work to bring business leaders and decisionmakers crucial insights to inform their financial decisions.”



What is RFF’s new Climate Finance and Financial Risk Initiative seeking to achieve?

“The primary goal of this initiative is to determine the information and tools necessary to ascertain the physical and transitional financial risks and opportunities in the economy. That includes firms, sectors, communities, and the broader financial system. Investors, regulators, and other decisionmakers need reliable and actionable data and analysis as the nation transitions away from fossil fuels and confronts the impacts of climate change.”

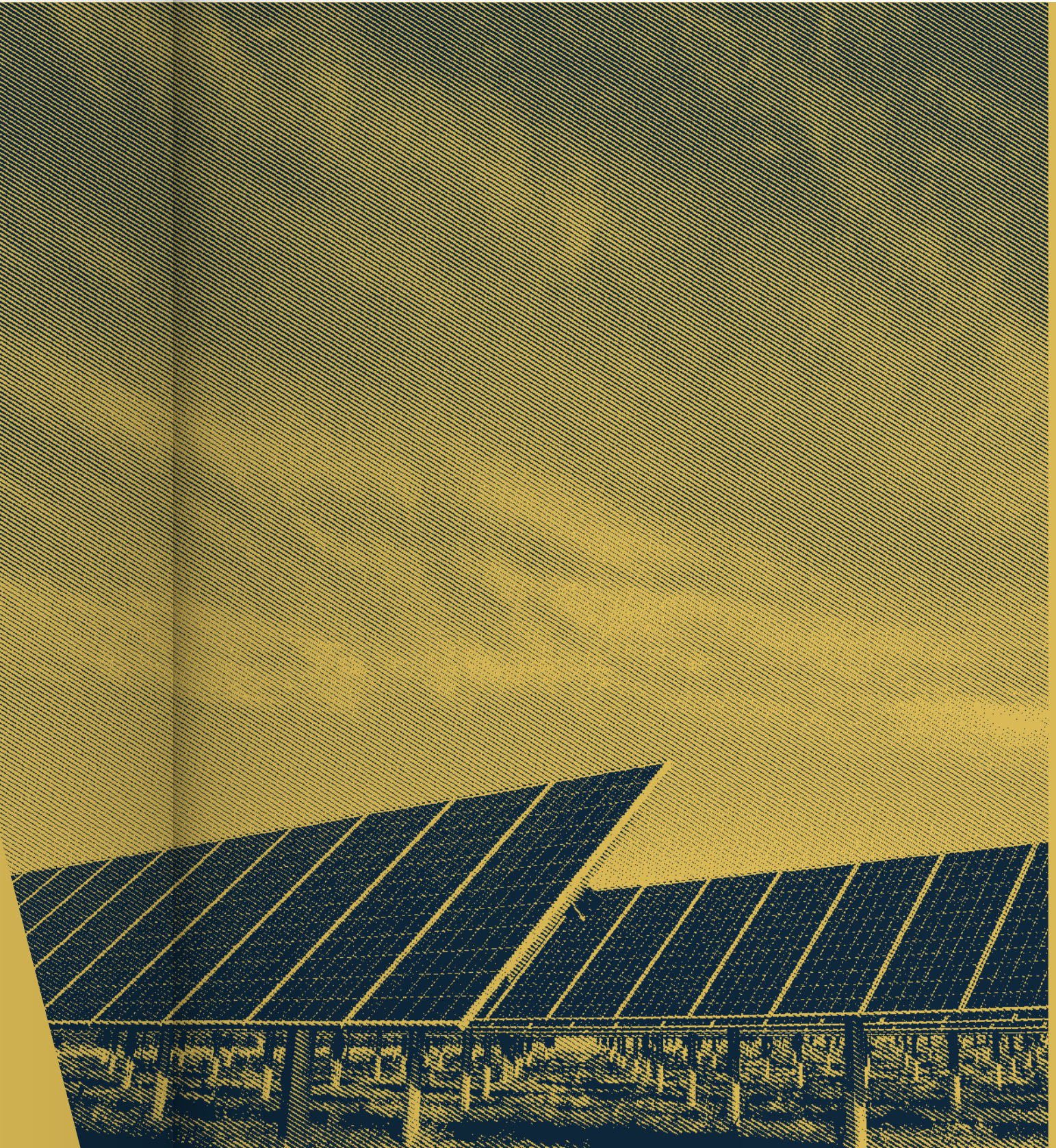
**Marc Hafstead**  
*Director, RFF Climate Finance and Financial Risk Initiative*



02

# Electric Power Program

Limiting global climate change will require widespread decarbonization of the power sector and electrification of the economy. RFF's research and policy engagement holistically evaluates market designs and federal, state, and local policies to facilitate a smooth transition to a decarbonized power sector that serves a broad range of sectors and energy needs.



2.1

# Demonstrating the Benefits of Advancing Clean Energy Technologies

**Reducing greenhouse gas** emissions from the power sector will require a range of new and improved clean energy technologies—advanced nuclear fission power generation, carbon capture and sequestration, direct air capture of carbon dioxide, enhanced geothermal power generation, and grid-connected energy storage—and government investment is likely necessary for these technologies to be deployed widely and at relatively low cost. RFF’s Advanced Energy Technologies Project culminated in 2021 with a significant body of research examining the anticipated societal benefits of increased government funding for these technologies.

A final study, released as both a working paper and issue brief, combined a survey of more than two dozen technology experts with detailed simulation modeling. Looking at scenarios both with and without a national clean energy standard,

RFF researchers found that the benefits of this spending far outweighed the costs—potentially up to ten times as much. The additional investment could result in substantial consumer, health, and climate benefits—averaging \$30 billion to \$40 billion per technology—due to lower electricity bills and reduced emissions—in 2040–2060. RFF scholars Daniel Shawhan and Kathryn Cleary drew upon this modeling to examine the potential effects of Senator Joe Manchin’s Energy Infrastructure Act, which envisions appropriating funds for advanced clean energy technology, transmission construction and upgrades, and continued operation of existing nuclear power plants.

Following the release of this research, RFF hosted an online conversation in July to discuss federal policies to support clean energy innovation, as well as future considerations for policy and research. •



Why are you excited to be working on issues related to the power sector?

“I’ve been working on electricity policy since joining RFF in 1995. It has been an ongoing challenge to understand how to reconcile competition at some levels with regulation at others and division of control between state and federal governments—while ensuring that supply always matches demand, so the lights stay on and the wires do not burn up. With electricity the focus of decarbonization and climate change, these questions have become even more important and challenging. I am fortunate to work at RFF with the best and smartest people on these issues.”

**Tim Brennan**  
RFF Senior Fellow



2.2

# Matching Electricity Use with Availability

As the electricity grid becomes decarbonized, electricity demand will be met increasingly by wind and solar energy, but renewables aren't always readily available when demand is at its highest. One way to combat an imbalance between supply and demand is through customer-side energy management: technologies that can monitor use and match or adjust it to align with

generator availability. A study by RFF Senior Fellow Tim Brennan explored the role of regulated utilities in providing these services—and the potential implications for market competition and electricity prices. Brennan discussed this paper and its findings in an E&E News article assessing the feasibility of President Biden's 100 percent clean energy plan. •

2.3

# Examining the Benefits and Costs of a Clean Electricity Standard

On Earth Day, the Biden administration announced its goal to reach 100 percent clean electricity by 2035, which would dramatically reduce greenhouse gas emissions from a sector that is the second-largest source of emissions in the United States. A Clean Energy Futures report coauthored by RFF researchers examined the benefits and costs of a policy that would achieve this goal. The research—the first to map the air quality and related health benefits for a clean energy standard that would achieve 80 percent clean electricity by 2030—found that the present value of the estimated

climate benefits through 2050 would outweigh the estimated costs by nearly two to one: \$637 billion compared to \$342 billion. Additionally, such a policy would improve air quality in the Lower 48 states, saving an estimated 9,200 lives in the year 2030 and a cumulative 317,500 lives by 2050.

RFF hosted a timely Climate Week NYC event in September to discuss findings from this report, as well as policy provisions under budget reconciliation that would deploy significant amounts of new clean electricity generation. •



Why is this issue area so important to you?

“Studying electric power is important to me because the future is electric. The path toward a cleaner energy economy starts with decarbonizing electricity supply and then electrifying transport, buildings, and other sectors. Decarbonization policies, energy R&D programs, electricity market rules, pricing structures, and other incentives will need to evolve for this transition to happen in an efficient and effective way. And as electricity demand grows, smart end-use devices such as car chargers and thermostats can start to play a role in helping to achieve system reliability. Conducting research and policy engagement to enable and guide these changes is exciting work.”

**Karen Palmer**

RFF Senior Fellow and Director of the RFF Electric Power Program



RFF Senior Fellow **Tim Brennan** examined the pros and cons of involving utilities in customer-side electricity management in a blog post for *Common Resources*.



The Clean Energy Futures Project was cited extensively in the media, with mentions in notable news outlets like *Politico*, S&P Global, and National Public Radio.



Following the Texas blackouts in early March, RFF scholars **Karen Palmer** (pictured) and **Kathryne Cleary** shared their insights on the causes and lessons of the blackouts in a Q&A on the *Common Resources* blog.



RFF Fellow **Dan Shawhan** examined the real-world implications of investing in advanced energy technology in an op-ed for the *Hill*. Shawhan further shared his thoughts about energy innovation in a June *Resources Radio* episode.



## 2.4

# Building a Clean Buildings Sector

**The buildings sector** accounts for more than 30 percent of total US greenhouse gas emissions when emissions from electricity generation are factored in. And emissions from this sector are on the rise. In May, as part of a broad package of initiatives to improve America's buildings, the Biden administration announced that it would develop emissions targets and associated policies for federal buildings that could ultimately

serve as a blueprint for city-wide or regional standards across the country. RFF researchers have investigated what such a policy could look like: at an RFF Live event in June, we discussed strategies to reduce energy use and emissions from federal government buildings; and an RFF report published in August set out various design options—and their pros and cons—for a federal building performance standard. •



Issue briefs detailing the emissions and cost effects of reconciliation policy were featured in over two dozen news stories, including in the *New York Times*, Reuters, and Axios.



A story in E&E News recaps some of the key problems and solutions posed during December's two-day workshop on offshore wind energy, which featured voices from academia, industry, and government.



RFF Board of Directors Chair **Susan Tierney** (pictured) and Senior Fellow **Karen Palmer** served on a National Academies report committee to evaluate how the US grid might evolve in response to advances in new energy technologies, changes in demand, and future innovation.



In a timely blog post, Senior Research Associate **Kathryne Cleary** wrote that evidence from US states suggested that the proposed Clean Electricity Performance Program could be feasible and spur additional investment in renewables.

2.5

# Providing Timely Analysis of Climate Policies under Reconciliation

**Amid debates** over the proposed Build Back Better Act—and its \$555 billion in climate spending—a team of RFF researchers provided timely analysis that offered insights into key climate-related provisions under consideration during the negotiations: clean energy tax credits, the Clean Electricity Performance Program (CEPP), and an economy-wide carbon fee that starts at \$15 per metric ton in 2023 and increases 5 percent annually.

An RFF issue brief released in September found that combining the tax credits with the CEPP could reduce power sector emissions by 39 percent from 2005 levels by the end of the decade—which,

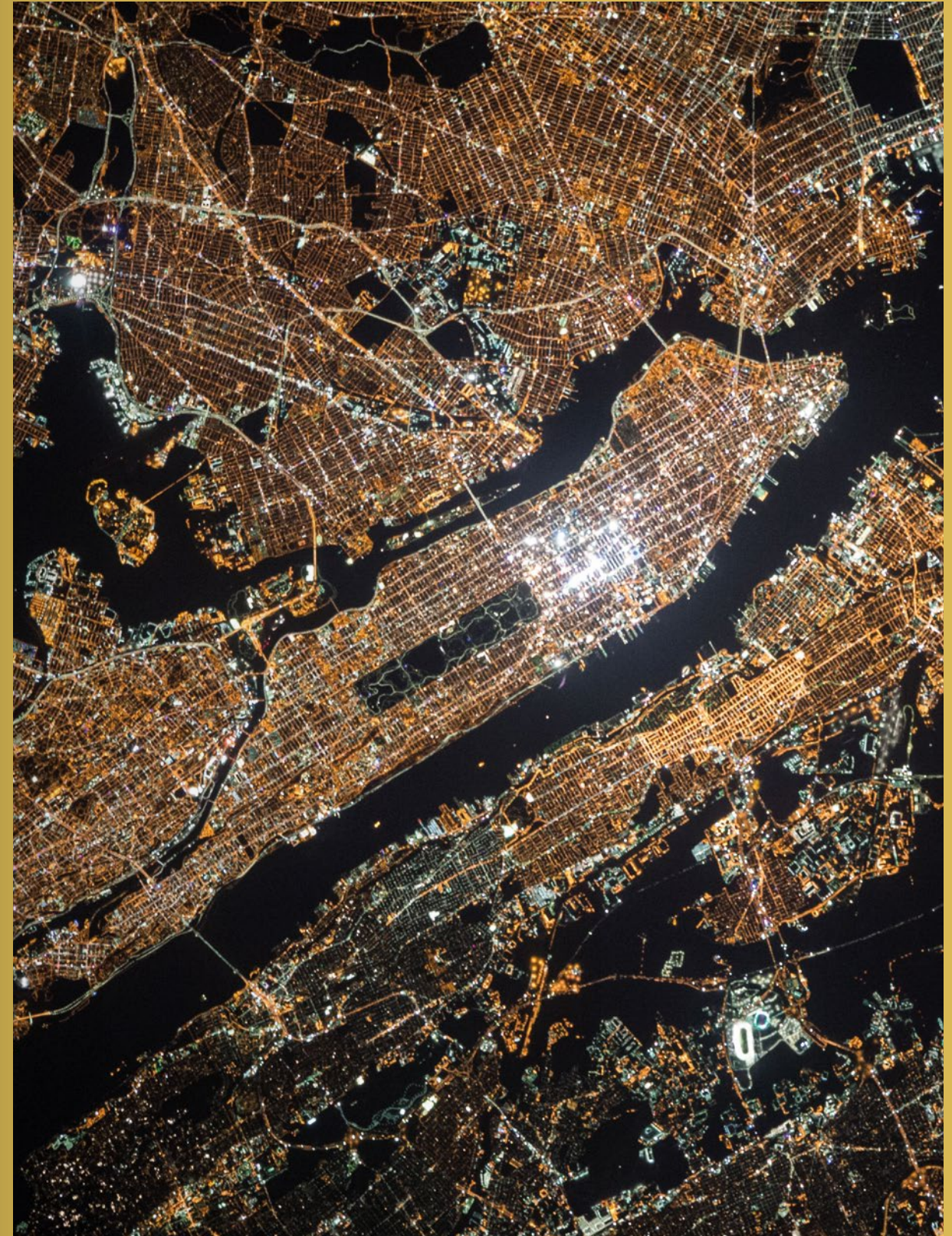
while significant, would still fall short of the Biden administration’s goals to halve US emissions. Adding a moderate carbon fee to the policy mix, however, could reduce emissions by 50–52 percent. A follow-up issue brief explored how various combinations of the three climate policy proposals could impact the power sector. This analysis found that the three policies combined would reduce nearly 8 billion metric tons of carbon emissions in the power sector by 2030—resulting in a grid that produces more than 80 percent clean energy—while saving money for electricity consumers. Combined, these issue briefs were cited in over two dozen news stories, including in the *New York Times*, Reuters, and Axios. •



“What do you think is the most important issue in this topic area in 2022?”

“The expansion in natural gas supply was the biggest innovation in the electricity sector in the 2000s, and the advent of renewables was the biggest change in the last decade. The biggest innovation in this decade is likely to be electrification of transportation, and space and water heating in buildings. The fastest-growing source of power to meet this demand is renewable energy, which has mainly fixed costs and very low operating costs. Reform of electricity rates that aligns prices with the low marginal cost of renewables is essential to improving economic efficiency and accelerating electrification to address climate change.”

**Dallas Burtraw**  
RFF Senior Fellow



# 03 Transportation Program

A growing economy relies on an effective and efficient transportation system, yet climate change, pollution, congestion, and safety issues reduce that value. RFF experts are analyzing the effectiveness, benefits, costs, and distributional consequences of transportation policies that reduce emissions and positively influence consumer and producer behaviors.





3.1

# Driving Discussions on Transportation Policy

In 2021, transportation policy emerged as a key issue as Congress negotiated the Infrastructure Investment and Jobs Act and Build Back Better framework. These large spending packages committed billions of dollars to investments in US roadways, electric vehicle charging infrastructure, public transportation, and more. Policy researchers and the interested public alike could count on RFF for accessible information about evolving transportation policy through an assortment of publications, blog posts, and an explainer on federal transportation policy.

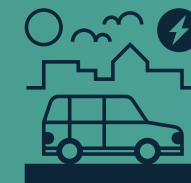
In late October, RFF scholars hosted an RFF Live event to discuss the Build Back Better framework and how it could shape emissions reductions across the transportation sector. This event also provided a forum for voices from industry and academia to discuss the role of transportation in US decarbonization measures, particularly in light of the Biden administration's goal to increase the nation's electric vehicle market share to 50 percent by 2030. Approximately 400 people from government agencies, media outlets, nonprofits, and the private sector tuned in to the event.



Senior Fellow **Joshua Linn** appeared on PBS NewsHour to discuss barriers preventing widespread electric vehicle adoption.



A segment in Axios's *Generate* newsletter discussed new RFF research, which finds that China's transportation emissions are rising faster than expected.



RFF scholars shared insights on how new fuel economy standards may affect the Biden administration's goals to increase the number of electric vehicles on the road and reduce greenhouse gas emissions.



A *New York Times* story on electric vehicle adoption in President Biden's \$2-trillion infrastructure plan quoted RFF Senior Fellow **Joshua Linn** on battery costs in electric cars.



## What do you see as the most important issue you'll study in 2022?

“There’s quite a bit of uncertainty about what Congress will do beyond the bipartisan infrastructure bill. Will our leaders work to increase electric vehicle subsidies as part of the Build Back Better package? Will the Environmental Protection Agency and Department of Transportation finalize greenhouse gas and fuel economy standards for light-duty vehicles through 2026—and will they begin working on standards for vehicles sold after 2026? Whatever comes, RFF is prepared to help answer the most pressing issues of the day.”

**Joshua Linn**  
RFF Senior Fellow

“The United States is in the very early stages of transitioning the vehicle fleet from high-carbon, oil-based fuels to power from clean electricity. 2022 promises to be a critical time for increasing and broadening sales of electric vehicles across different size classes and vehicle types. This transition will disrupt and change the auto industry in numerous ways, including through raw-material demand, charging availability, and the interaction between market forces and government policy. Understanding these forces will be critical as the industry evolves.”

**Virginia McConnell**  
RFF Senior Fellow

“Decarbonizing the US transportation sector remains a key objective for meeting climate goals. Ongoing research on this topic by RFF fellows aims to provide a better understanding of this transition; namely, to address the following questions: What policies are necessary for decarbonizing the US transportation sector? How will companies and different groups of people be affected by these policies? And how quickly can the vehicle fleet transition away from its dependence on fossil fuels?”

**Benjamin Leard**  
RFF University Fellow

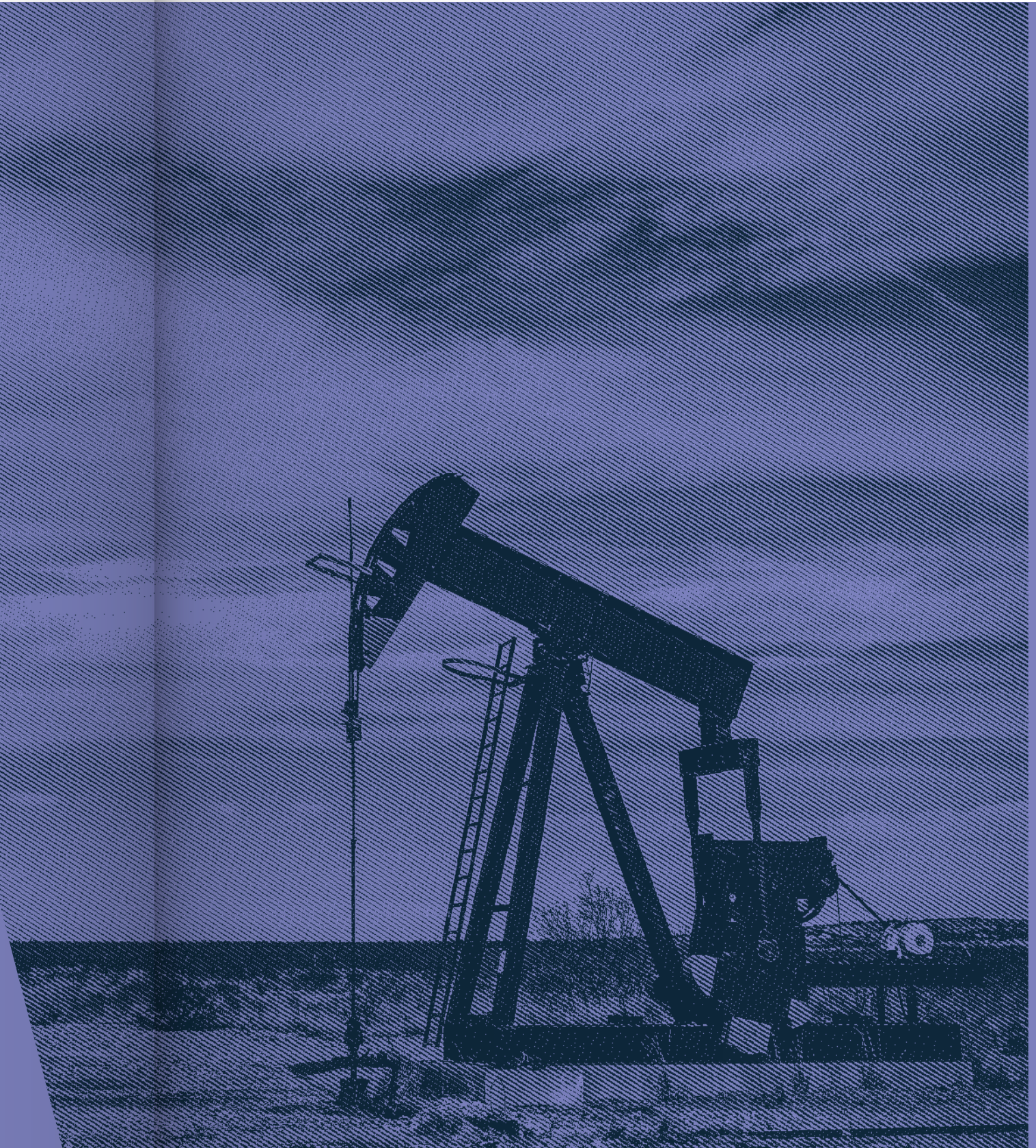




04

# Industry and Fuels Program

RFF researchers are exploring technological and policy solutions that can decarbonize the industrial sector, from performance standards and public procurement policy to incentives and funding for innovation—alongside the equity, financing, and economic issues that may accompany decarbonization.



4.1

# Exploring Pathways to Decarbonized Hydrogen

**Hydrogen has the potential** for extensive use as a source of clean fuel and as an industrial feedstock—but it is expensive to produce, and current methods of production are very carbon intensive. In early March, RFF hosted an event that showcased recent research by RFF’s Alan Krupnick and Jay Bartlett on cost-effective policies that can support decarbonization efforts through the low-carbon production of hydrogen power. The live webcast, which was attended by about 700 people, featured a panel of industry, government, and academic experts. Led by Krupnick, the panel discussed strategies

that can reduce barriers to decarbonized hydrogen deployment in the US industrial and power sectors.

Krupnick and Bartlett also released a series of blog posts on the potential of hydrogen to reduce emissions. “Establishing incentives that require life-cycle greenhouse gas emissions reductions, but do not constrain technology options ... is the most effective policy pathway,” they say. Their work has informed hydrogen tax credit provisions in the Build Back Better Act, a version of which was passed by the House of Representatives in November. •

“

Hydrogen has the potential for extensive use as a source of clean fuel and as an industrial feedstock—but it is expensive to produce, and current methods of production are very carbon intensive.

4.2

# Analyzing Trends in Emissions Reduction Targets

**RFF’s signature** *Global Energy Outlook*, which provides a unique “apples-to-apples” comparison of global energy projections from some of the world’s leading institutions, released its 2021 iteration in June. The report found a significant gap between global emissions trends and the emissions reduction targets as outlined in the Paris Agreement on climate change. The 2021 report also provided insights into the differences among pathways aligned with the 1.5°C and 2°C climate targets; the effects of COVID-19 on future population growth, GDP, and energy demand; and

the energy intensity of the global economy. The report was launched at a June 8 RFF Live event, which featured a presentation of key findings by RFF scholars Daniel Raimi and Seth Villanueva, as well as a panel discussion with a variety of stakeholders. The discussion, moderated by Bloomberg reporter Stephen Lee, featured participation from Atlantic Council Senior Fellow Jennifer Gordon; American technologist and science fiction writer Ramez Naam; and RFF President and CEO Richard G. Newell. •



In June, the *Financial Times* and *Axios* highlighted the implications of RFF’s new *Global Energy Outlook 2021* report, a unique comparison of global energy projections.



An Associated Press piece, syndicated by over 100 media outlets, quoted RFF Fellow **Brian C. Prest’s** work on the effects of long-term oil and gas leasing bans.



Fellow **Brian C. Prest’s** issue brief on the effects of methane fees on natural gas prices and emissions was cited over a dozen times, including in the *Wall Street Journal*.

05

# Land Use, Forestry, and Agriculture Program

Forest, agricultural, and other land uses are both a source of emissions and a way to remove carbon from the atmosphere. RFF scholars are identifying and measuring land management solutions that can sustain people, ecosystems, and the climate, through effective incentives, investments, and protections.





## 5.1

# Understanding Policy Proposals with the Climate and Land Use Model

**The United States'** soils and vegetation contain a pool of carbon that holds more than 50 times the nation's total 2019 annual greenhouse gas emissions. Using lands to store more atmospheric carbon is a key strategy to meet US climate goals.

In 2021, RFF scholars began developing the Climate and Land Use Model (CALM), a groundbreaking framework that will serve as a centerpiece for the Land Use, Forestry, and Agriculture Program. The goal of the national-scale analytical framework is to answer policymakers' questions about the benefits and costs of policies designed to expand the land carbon sink and reduce emissions from agriculture and wildfire. Once completed, CALM will allow

decisionmakers and RFF scholars to—among other things—map policies' carbon storage and emissions implications, land use conversion and management changes, and economic incentives for landowners and managers to take certain actions.

Because the framework is grounded in economic behavior and can differentiate impacts by location, the framework can model a rich suite of auxiliary effects, such as what the policy will do to tax revenue, property markets, equity initiatives, species protection, and more.

The model is poised to start delivering a range of policy analyses in 2022. •



What attracted you to RFF?  
What projects are you excited to work on, and what impact do you hope your work will have?

"I am excited to be working at RFF because the organization provides an unparalleled platform for translating environmental economics research into real-world impact. I hope to generate data-driven estimates of ecosystem values to inform environmental policy. For example, I am interested in tracing out the relationship between climate change and ecosystem services, so that decisionmakers can begin to incorporate damages to natural capital into the social cost of carbon."

**Hannah Druckenmiller**  
RFF Fellow

5.2

# Discussing Climate Solutions in Agriculture

In late May, RFF and the Cornell Atkinson Center for Sustainability hosted a conversation on carbon farming and accurately measuring greenhouse gases stored in agricultural soils. Carbon farming involves incentivizing landowners and operators to adopt greenhouse gas-mitigating land management practices to help achieve climate policy goals. US Senator and Chair of the Senate Committee on Agriculture, Nutrition, and Forestry, Debbie

Stabenow, provided the opening remarks. The panel of experts, which included voices from government, industry, and advocacy groups, discussed different approaches to incentivizing and building the framework for carbon farming. Panelists discussed the benefits and drawbacks of different structures and protocols, as well as concepts that policymakers and industry leaders could use to guide the development of effective incentive frameworks. •



In response to President Biden's executive order to conserve 30 percent of US lands and waters by 2030, RFF scholars **Margaret Walls** and **Alexandra Thompson** wrote about this goal for *Common Resources*.



Senior Fellow **James Boyd** shared insights with *Cosmos* magazine in a story that discussed harnessing ecosystems and biodiversity in order to help tackle the climate crisis.



In a July blog post, RFF Senior Advisor **Ann Bartuska** explored the Growing Climate Solutions Act, which aims to help facilitate sustainable practices among landowners through carbon credits.



Senior Fellow **Margaret Walls** drew from previous RFF research to share insights about the economic value of national monuments in a post for the *Common Resources* blog.



06

# Climate Risks and Impacts Program

Decisionmakers across the globe are grappling with how to measure climate risks as they seek to respond through mitigation and plan for the physical impacts and economic transition. Experts at RFF are quantifying the economic and social impacts of climate change, ensuring that decisionmakers are equipped with the data and policy tools they need to respond.





## 6.1

# Exploring Risk and Resilience amid Wildfires

**From California** to the Mediterranean to Siberia, communities around the world have dealt with the devastating impacts of wildfires this year. In the face of this growing problem, RFF scholars have worked to quantify the impacts of fire and identify opportunities to reduce risk and build resilience.

A pair of explainers coauthored by RFF Fellow Matthew Wibbenmeyer summarized the context and consequences of wildfires in the United States, and explored the primary policy tools that can help to mitigate the potentially devastating effects of wildfire. An op-ed for the *Hill* by

Wibbenmeyer and RFF Senior Fellow Margaret Walls presented their research about the impact of wildfire smoke on outdoor recreation against the backdrop of record-breaking fires in the American West. And a recent issue brief from RFF Nonresident Senior Fellow David Wear examined how forest fuel treatments to reduce wildfire risk could translate to reductions in greenhouse gas emissions from wildfires. RFF's wildfire research was crucial at a time when Congress was considering wildfire prevention strategies in the Infrastructure Investment and Jobs Act, which was signed into law by President Biden in November. •

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## 6.2 Environmental Justice Initiative

# Exposure: An RFF–Urban Institute Series on Environmental Justice

**Groundbreaking publications** like *Toxic Waste and Race in the United States* and *Dumping in Dixie* first brought environmental justice issues to the fore in the late 1980s. Now, as part of President Biden’s executive order on climate, environmental justice is a national policy priority.

RFF researchers are examining how socioeconomic mechanisms and policies have contributed to the legacy of environmental injustice for historically underserved and marginalized communities. In 2021, RFF partnered with the Urban Institute to launch Exposure, a webinar series on environmental justice research, policy, and activism. This series brought together environmental justice advocates and scholars

to explore how research can better inform policy design and public investments to remedy inequities—past and present.

The first event, “Environmental Justice: Lessons from History and a Look to the Future,” drew nearly 900 attendees. Panelists discussed the foundation of environmental justice activism and its grounding in research, focusing on when and how scholars have provided the evidence necessary for legal remedy, policy change, or citizen awareness campaigns. Subsequent webinars were also well-attended and covered issues related to energy equity and just transitions, climate impacts and hazard mitigation, and benefit-cost analysis and regulatory design. •



The Associated Press quoted Senior Fellow **Margaret Walls** and cited RFF research about the effect of wildfire smoke on outdoor recreation. The paper was also the subject of an op-ed by Walls and **Matthew Wibbenmeyer** for the *Hill*.



A journal article coauthored by Senior Fellow **Margaret Walls**, which detailed the effect of sea level rise and wetland loss on the Chesapeake Bay region, was covered by more than a dozen news outlets in Virginia and Maryland.



A host of *Resources Radio* episodes focused on environmental justice issues in 2021, covering topics such as tribal energy transitions, energy poverty, the power of grassroots movements, and more.

## 6.3 Earth Observations for Policy Initiative

# VALUABLES: Measuring How Satellite Information Benefits People and the Environment

**As NASA launched** the Landsat 9 satellite in September, continuing a decades-long tradition of observing Earth from space, experts behind RFF’s VALUABLES partnership with NASA prepared to introduce the next generation of satellite data users to economic concepts through an international hackathon called the NASA Space Apps Challenge. Through this challenge, the VALUABLES team shared RFF’s expertise with participants around the globe, breaking down complex economic terms and concepts through accessible communications products like the “Value of Science” explainer series. These web-based tutorials set out a step-by-step process that people who produce or use scientific information can employ to quantify the value of applying that

information in decisionmaking, in terms of lives or dollars saved. Measuring this value can help make the case for how investments in science and Earth-observing satellites benefit society.

The VALUABLES Consortium also continues to build new connections across a growing community of experts. For instance, VALUABLES supports interdisciplinary teams at 18 institutions across the United States through grants and collaborative projects, such as VALUABLES’ Grants for Assessing the Benefits of Satellites. In 2022, the VALUABLES community will be debuting new insights from these collaborations that can inform health and air quality, water quality, ecosystem conservation, and more. •



In an episode of *Resources Radio*, host **Daniel Raimi** and MIT professor Danielle Wood discussed a VALUABLES project that assesses how satellite data can protect Brazil’s fragile mangrove forests.



An op-ed in the *New York Times* cited RFF-led work on the social cost of carbon and interviewed President **Richard G. Newell** as an expert uniquely “plugged in” to the issue. The *Wall Street Journal* also cited this work and quoted Fellow **Kevin Rennert**.



A National Academies report led by **Richard G. Newell** and Senior Fellow **Maureen L. Cropper** was named by an Inauguration-Day executive order as the recommendations to follow for establishing a new estimate for the social cost of carbon.



## 6.4 Social Cost of Carbon Initiative

# Updating Estimates of the Social Cost of Carbon

**Just hours** into his presidency, President Joe Biden issued an executive order to reestablish an interagency working group to update the value for the social cost of carbon (SCC)—a crucial metric used by decisionmakers around the world to quantify the benefits, in dollars, of mitigating climate change. The White House executive order called on the new working group to consider the recommendations laid out in a 2017 National Academies report, which was led by RFF President Richard G. Newell and Senior Fellow Maureen L. Cropper.

As US Environmental Protection Agency Administrator Michael Regan noted during a recent RFF Policy Leadership Series event, after the previous administration disbanded the first SCC interagency working group, “RFF’s research jumped in and filled that void.” Indeed, RFF’s Social Cost of Carbon Initiative has played a crucial role in driving forward transparent, scientifically based SCC research. The culmination of these efforts is a sophisticated, open-source SCC computing platform, as well as relevant and timely analyses that help to answer pressing scientific questions. RFF researchers presented their recent work at the

Brookings Papers in Economic Activity Fall 2021 conference, highlighting an updated approach to account for uncertainty in long-term projections of population, GDP, emissions, climate, and discount rate. Another paper, produced in June, offered an innovative discounting approach for calculating the SCC, in line with recommendations from the National Academies of Sciences, Engineering, and Medicine.

With the reestablishment of the interagency working group, this area of research is now coming full circle. RFF scholars—including Newell and Cropper, along with Social Cost of Carbon Initiative Director Brian C. Prest, Federal Climate Policy Initiative Director Kevin Rennert, and Vice President for Research and Policy Engagement Billy Pizer—are collaborating with other experts around the globe to develop updated estimates of the SCC based on the best available science for consideration by the interagency working group and other key decisionmakers. RFF’s recent research in this area has been crucial for the Biden administration’s ongoing update. As Administrator Regan noted, “we’re now taking [RFF’s work] and responding to the president’s charge for a revised social cost of greenhouse gas estimate.” •



### Resources Issue 208

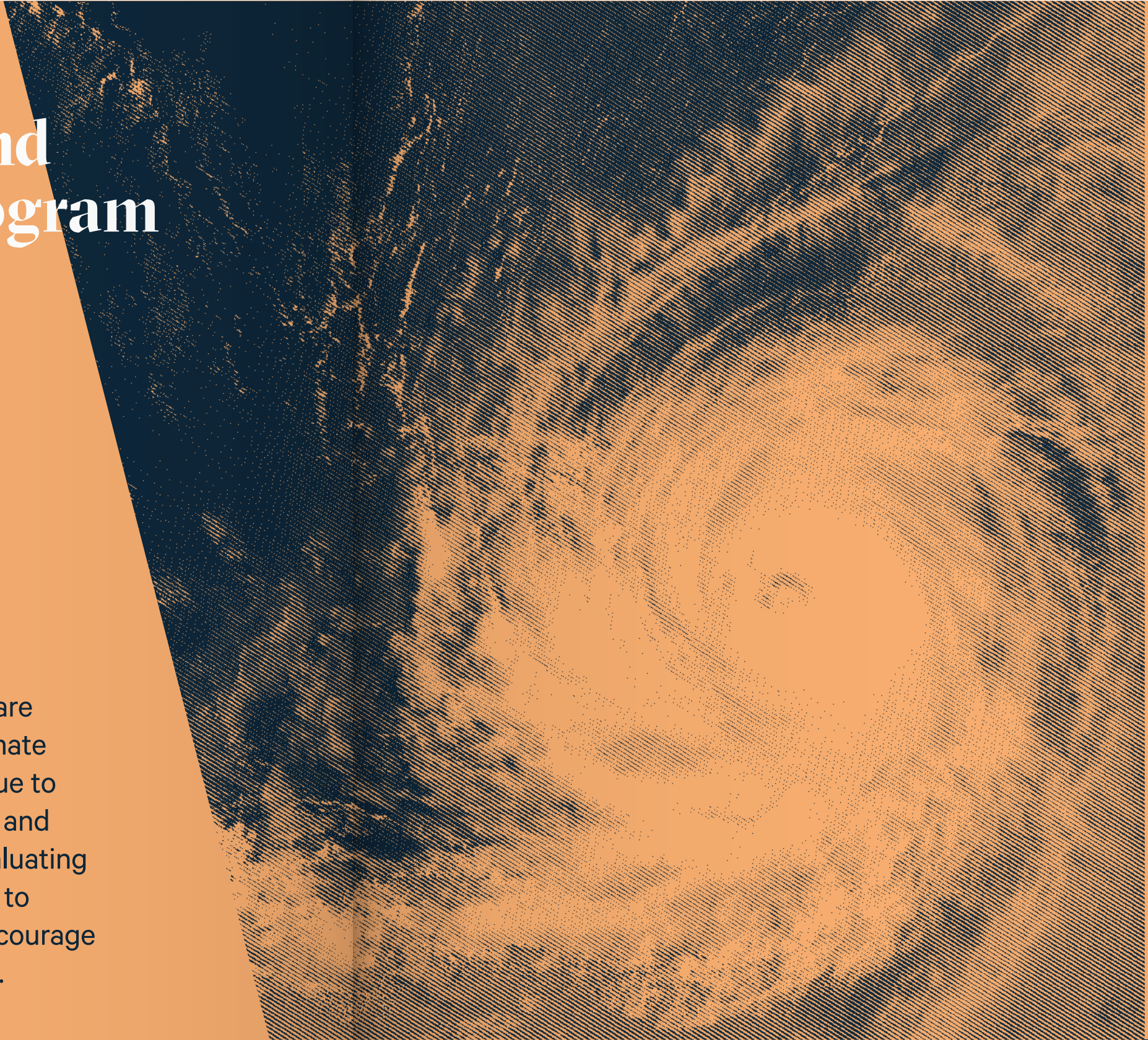
Highlights from this issue are its two cover stories. One article looks at the broad context of the SCC, focusing on several methodological improvements that RFF has played a large role in developing. Another article looks at a crucial component of the SCC: the framework for discounting future impacts to the present.



07

# Adaptation and Resilience Program

Communities around the world are experiencing the impacts of climate change, from coastal flooding due to sea level rise to extreme storms and heat waves. RFF experts are evaluating strategies to enhance resilience to extreme weather events and encourage effective community adaptation.





## 7.1

# Building More Resilient Communities in the Face of Flooding and Other Disasters

**As natural disasters** become increasingly common, RFF researchers have worked hard to understand the ways that communities can adapt to the changing realities of our climate. One area of focus this year was flooding, as RFF researchers explored how natural infrastructure and insurance policies help communities endure extreme disaster.

RFF Senior Fellow Margaret Walls coauthored a recent journal article that explores the effects of

sea level rise and wetland loss on flooding in the Chesapeake Bay region, finding that flooding, property damage, and the number of people affected by flooding is exacerbated by wetlands reduction and change. Additionally, a recent working paper from RFF Fellow Penny Liao found that, as home equity increases, so too does demand for flood insurance—a finding with major implications for understanding the efficacy of flood insurance programs in the United States along with the impact of climate change on housing. •



Why are you excited to be working on these issues at RFF?

“RFF has a large community of talented environmental economists that is hard to find anywhere else, so it’s great for getting feedback and new inspiration in research. Moreover, climate resilience and adaptation is a fast-evolving policy space where many important decisions will be made in the coming decades. As RFF has a long history of using rigorous research to inform environmental decision making, I believe it is the perfect place to work on policy-relevant research in this area.”

**Penny Liao**  
RFF Fellow



RFF's *Florida Climate Outlook*, released in 2020, continued to inform stories in a variety of media outlets, including the *Financial Times*, Huffington Post, and VICE.



University Fellow **Carolyn Kousky** sketched out how policymakers, economists, developers, and others could reimagine their approach to coastal adaptation in times of climate change in a *Common Resources* blog post.



*Popular Science* highlighted a journal article coauthored by Senior Fellow **Rebecca Epanchin-Niell** about the public's role in preventing the spread of invasive species.



E&E News extensively covered a new RFF working paper by Fellow **Penny Liao** on the relationship between home equity and flood insurance adoption.



# Sustaining Our Impact

# Our Leadership and Supporters

RFF draws on expertise from a world-class Board of Directors while receiving financial support from a passionate and engaged group of individuals, foundations, corporations, and other institutions. In the pages that follow, we set out more information about our leadership and supporters.



RFF's Leadership

# Board of Directors



In 2021, we were delighted to welcome two new RFF board members.



“I’m delighted to be joining RFF’s esteemed Board of Directors. I’ve become acquainted with RFF, its mission, and its scholars over the years, and I am continually impressed by the organization’s work.

I’m looking forward to being more involved with RFF’s vision of a healthy environment and thriving economy. Energy is an essential part of our lives. We need to have thoughtful, fact-based analyses to best fashion the policies we need to achieve net-zero emissions while protecting economic livelihoods—especially those of the world’s most vulnerable. I’m glad that RFF is leading the charge.

**Janet Clark**  
EOG Resources



“I’m looking forward to joining the RFF Board of Directors. I have experienced how the legal system can be an important avenue for change and have seen firsthand how RFF’s research informs the processes that create that change.

The organization does essential work, and I am so pleased to now be a part of it. Improving the electricity grid, updating regulations, and meeting clean energy goals will require actions underpinned by the best legal, economic, and technical thinking we can provide. We’re at a climate crossroads. Ensuring we protect the environment and advance our well-being will require all sectors—and all of us.”

**H. Russell Frisby Jr.**  
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\*RFF thanks departing board members C. Boyden Gray and Catherine Kling for their service.

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We are honored by the members of RFF’s Legacy Society who have included RFF in their estate plans. These gifts are legacies that make a transformational difference in our work.

**Shannon Wulf Tregar**  
RFF Vice President for Development and Institutional Strategy

### RFF Legacy Society

- ✦ Ernest and Catherine Abbott
- ✦ John Ahearne\*
- ✦ Paul Balsler
- ✦ Maynard and Katherine Buehler\*
- ✦ Emery Castle\*
- ✦ Thomas Crocker
- ✦ J. Clarence Davies
- ✦ Maybelle Frashure\*
- ✦ Darius Gaskins
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- ✦ Debbie Groberg
- ✦ Winston Harrington
- ✦ Thomas J. Klutznick\*
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- ✦ Steven W. Percy
- ✦ Chris and Paul Portney
- ✦ William D. Ruckelshaus\*
- ✦ Clifford S. Russell
- ✦ Helen Marie Streich
- ✦ Edward L. Strohbehn and Heather Ross
- ✦ Victoria J. Tschinkel

\*In memoriam

### Foundations

- ✦ Alfred P. Sloan Foundation
- ✦ Bernard and Anne Spitzer Charitable Trust
- ✦ The Energy Foundation
- ✦ The G. Unger Vetlesen Foundation
- ✦ Generation Foundation
- ✦ Heising-Simons Foundation
- ✦ John D. & Catherine T. MacArthur Foundation
- ✦ The JPB Foundation
- ✦ Linden Trust for Conservation
- ✦ Merck Family Fund
- ✦ Peter G. Peterson Foundation
- ✦ Sall Family Foundation
- ✦ Samuel Freeman Charitable Trust
- ✦ Schmidt Futures
- ✦ Smith Richardson Foundation
- ✦ The William and Flora Hewlett Foundation

### Governments and Other Organizations

- ✦ Back to Work
- ✦ Breakthrough Energy
- ✦ Center for Applied Environmental Law and Policy
- ✦ Climate Change Commission
- ✦ Climate Leadership Council
- ✦ Environmental Defense Fund
- ✦ Georgetown Climate Center
- ✦ International Energy Forum
- ✦ National Aeronautics and Space Administration
- ✦ National Institute of Food and Agriculture
- ✦ National Science Foundation
- ✦ New York State Energy Research and Development Authority
- ✦ Potsdam Institute for Climate Impact Research
- ✦ Research Institute of Innovative Technology for the Earth
- ✦ United States Department of Agriculture
- ✦ United States Department of Energy
- ✦ United States Environmental Protection Agency
- ✦ United States Forest Service
- ✦ The Wilderness Society
- ✦ World Resources Institute



## Corporations and Associations

- ◆ Alliance for Automotive Innovation\*
- ◆ Aramco Americas\*
- ◆ BASF\*
- ◆ bp PLC\*
- ◆ Bracewell
- ◆ Clean Energy Buyers Association
- ◆ CF Industries, Inc.\*
- ◆ Chevron Corporation\*
- ◆ Cheniere Energy, Inc.\*
- ◆ ConocoPhillips\*
- ◆ Enviva\*
- ◆ EOG Resources, Inc.
- ◆ Equitrans
- ◆ Exelon\*
- ◆ ExxonMobil Corporation\*
- ◆ General Motors\*
- ◆ International Business Machines Corp\*
- ◆ International Paper Corporation\*
- ◆ Mitsubishi International Corporation\*
- ◆ National Alliance of Forest Owners
- ◆ NRG Energy\*
- ◆ Nuclear Energy Institute\*
- ◆ Pioneer Natural Resources\*
- ◆ Portland Cement Association\*
- ◆ Schlumberger Limited\*
- ◆ Southern Company\*
- ◆ Stout & Teague Management Corporation
- ◆ Tellurian Inc.\*
- ◆ Toyota Motor North America, Inc.\*
- ◆ United Airlines\*
- ◆ Warburg Pincus LLC
- ◆ Weyerhaeuser Company\*

Italics indicates matching gift donors

\*We truly appreciate the commitment of RFF's Business Leadership Council members

## Ensuring Maximum Value

# Financial Summary

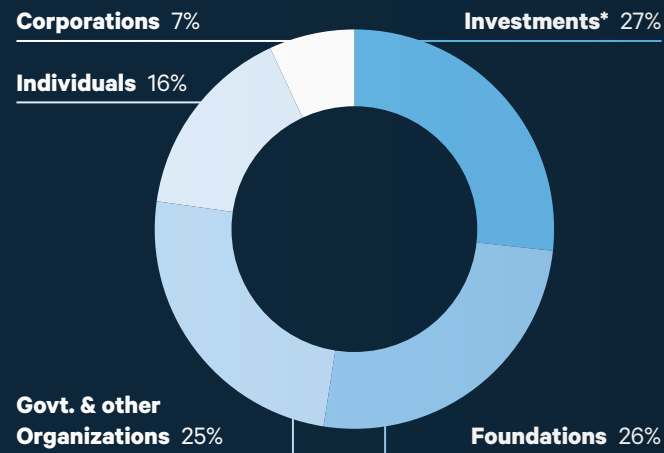
In fiscal year 2021, RFF's operating budget was **\$15 million**, over two-thirds of which came from grants from foundations, governments and other organizations, and individual and corporate contributions. RFF's operating budget in fiscal year 2022 is **\$16 million**. RFF augments its operating revenue with net income from its building and earnings from its reserve fund. At the end of fiscal year 2021, RFF's reserve fund was valued at **\$66 million**.

RFF research and policy engagement represented **79** percent of total expenses in 2021. Management, administration, and development expenses combined were **21** percent of the total. RFF's audited financial statements, as well as detailed breakdowns of revenues and expenses, are posted on our website annually. These can be accessed at:

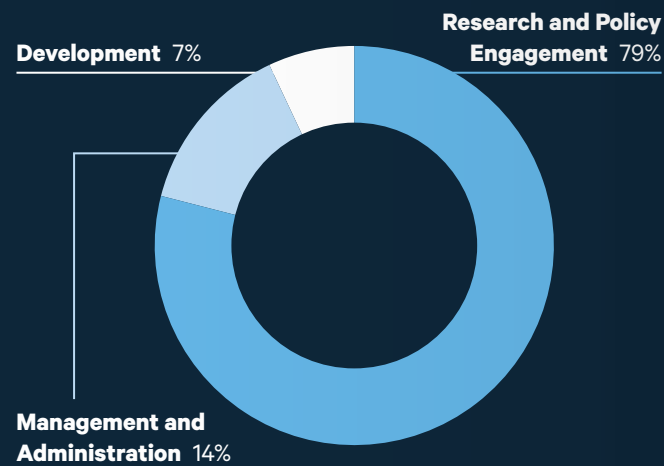
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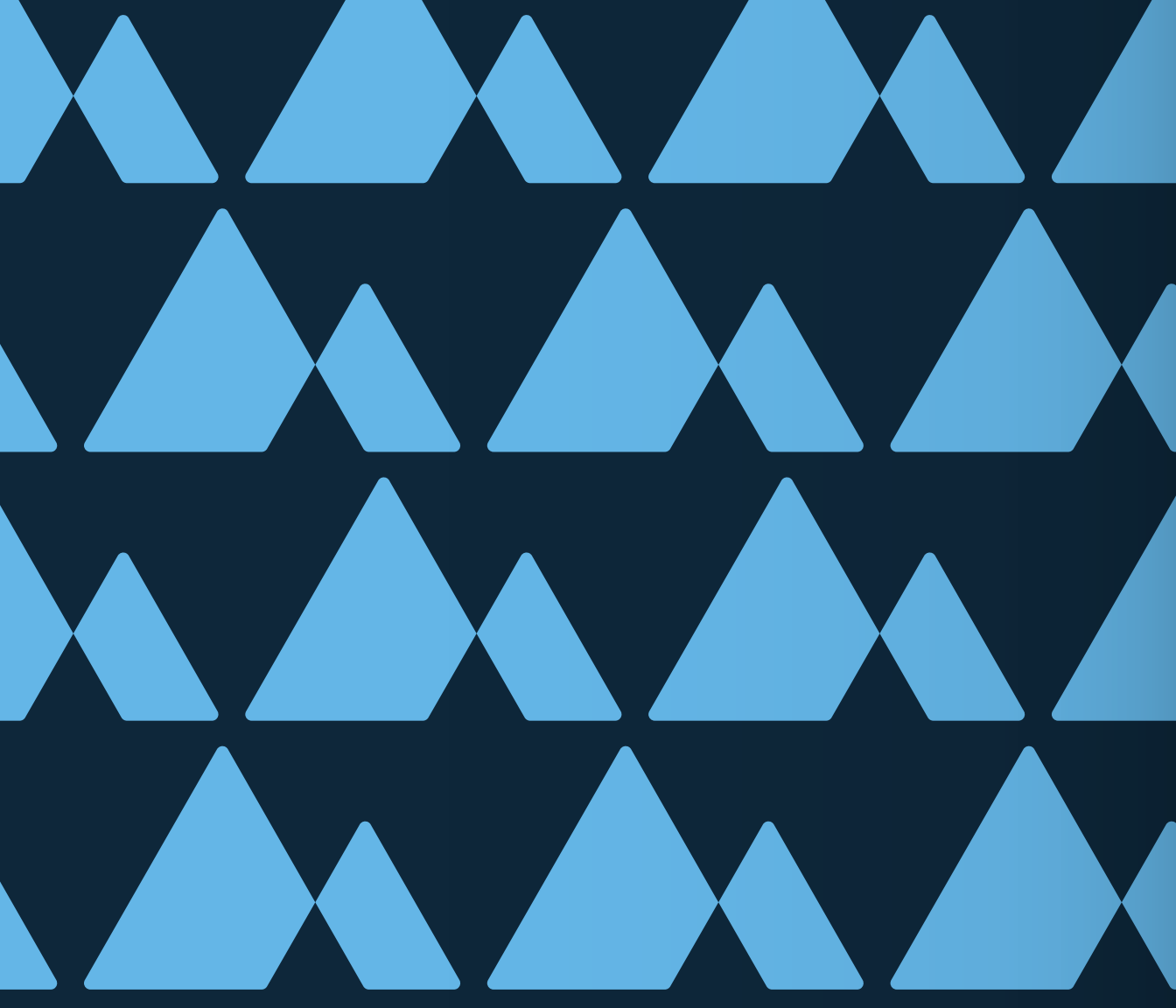
*\*The investments category includes investment earnings designated for operations.*




### Revenue Breakdown



### Expense Breakdown





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