

LIVE VIRTUAL BOARD MEETING



TO VIEW VIA WEB



TO PROVIDE PUBLIC COMMENT

You may submit a request to speak during Public Comment or provide a written comment by emailing PublicComment@lacera.com. If you are requesting to speak, please include your contact information, agenda item, and meeting date in your request.

Attention: Public comment requests must be submitted via email to PublicComment@lacera.com no later than 5:00 p.m. the day before the scheduled meeting.

LOS ANGELES COUNTY EMPLOYEES RETIREMENT ASSOCIATION
300 N. LAKE AVENUE, SUITE 650, PASADENA, CA

NOTICE OF A SPECIAL MEETING OF THE BOARD OF INVESTMENTS
LOS ANGELES COUNTY EMPLOYEES RETIREMENT ASSOCIATION

HYATT REGENCY LONG BEACH

200 SOUTH PINE AVENUE, LONG BEACH, CA 90802

TUESDAY, SEPTEMBER 13, 2022

8:30 A.M. – REGENCY ROOM A

This meeting will be conducted by teleconference under California Government Code Section 54953(e).

*Any person may view the meeting online at
<http://www.lacera.com/leadership/board-meetings>*

*The Board may take action on any item on the agenda,
and agenda items may be taken out of order.*

- I. CALL TO ORDER
- II. WELCOME AND OPENING REMARKS
- III. PUBLIC COMMENT

Written Public Comment - You may submit written public comments by email to PublicComment@lacera.com. Correspondence will be made part of the official record of the meeting. Please submit your written public comments or documentation as soon as possible and up to the close of the meeting.

Verbal Public Comment - You may also request to address the Board at PublicComment@lacera.com before and during the meeting at any time up to the end of the Public Comment item. We will contact you with information and instructions as to how to access the meeting as a speaker. If you would like to remain anonymous at the meeting without stating your name, please let us know.)

- IV. CONSENT ITEM
 - A. Recommendation as submitted by Steven P. Rice, Chief Counsel: That the Board approves that, under AB 361 and Government Code Section 54953(e)(3) of the Brown Act, the Board of Retirement and Board of Investments separately consider whether to find that the Governor's COVID-19 State of Emergency continues to directly impact the ability

IV. CONSENT ITEM (Continued)

of each Board and its Committees to meet safely in person and that the County of Los Angeles and other agencies still recommend social distancing such that each Board and its Committees shall hold teleconference meetings for the next 30 days, and if so, direct staff to comply with the agenda and public comment requirements of the statute. Action taken by each Board will only apply to that Board and its Committees. (Memo dated August 29, 2022)

V. THE MACRO ENVIRONMENT

Derek Kong, LACERA
Kevin Kajiwara, Teneo
Quoc Nguyen, LACERA
Jason Cummins, Brevan Howard

The macro session is divided into two sections and starts with a discussion of views on current geopolitical themes that could impact the current and longer-term macro environment. The following discussion presents challenges facing the US and global economy along with views on how to navigate an investment portfolio in a complicated macro environment.

VI. INVESTMENT OPPORTUNITIES RELATED TO ENERGY TRANSITION

Dale Johnson, LACERA
Scott Zdrazil, LACERA
Michael Cembalest, J.P. Morgan
Mark Carney, Brookfield: United Nations Special Envoy for Climate Action and Finance
Jim Rice, LACERA
Pierre Anctil, Axium Infrastructure
Sunniva Bjørnstad, Hitec-Vision

A focused discussion on the state of play of the global transition to a low carbon economy and how the transition is shaping investment opportunities in the near and longer term.

VII. GLOBALIZATION AND EMERGING MARKETS

Dr. Pushpam Jain, LACERA
Dr. Alison Adams, Meketa
Dr. Monica de Bolle, Peterson Institute for International Economics
Zoltan Poszar, Credit Suisse

Panel to discuss the evolving nature of globalization and its implications for LACERA's investments, and how this also impacts emerging markets.

VIII. EMBRACING TECHNOLOGY

Mel Tsao, LACERA
Didier Acevedo, LACERA
John Claisse, Albourne
Pascale Diaine, Storm Ventures
David Snyderman, Magnetar Capital
Noah Damsky, LACERA
Steve Bezner, Altus
Mike Curry, State Street Corporation
Stephen Scharf, BlackRock

This session discusses the implementation of technology across various investment departments along with the critical nature of operations and cyber security.

IX. CLOSING REMARKS

X. ADJOURNMENT

Documents subject to public disclosure that relate to an agenda item for an open session of the Board of Investments that are distributed to members of the Board of Investments less than 72 hours prior to the meeting will be available for public inspection at the time they are distributed to a majority of the Board of Investments Members at LACERA's offices at 300 N. Lake Avenue, Suite 820, Pasadena, CA 91101, during normal business hours of 9:00 a.m. to 5:00 p.m. Monday through Friday.

Persons requiring an alternative format of this agenda pursuant to Section 202 of the Americans with Disabilities Act of 1990 may request one by calling Cynthia Guider at (626) 564-6000, from 8:30 a.m. to 5:00 p.m. Monday through Friday, but no later than 48 hours prior to the time the meeting is to commence. Assistive Listening Devices are available upon request. American Sign Language (ASL) Interpreters are available with at least three (3) business days' notice before the meeting date.

Requests for reasonable modification or accommodation of the telephone public access and procedures stated in this agenda from individuals with disabilities, consistent with the Americans with Disabilities Act of 1990, may call the Board Offices at (626) 564-6000, Ext. 4401/4402 from 8:30 a.m. to 5:00 p.m. Monday through Friday or email PublicComment@lacera.com, but no later than 48 hours prior to the time the meeting is to commence.

August 29, 2022

TO: Each Trustee,
Board of Retirement
Board of Investments

FROM: Steven P. Rice, *SPR*
Chief Counsel

FOR: September 7, 2022 Board of Retirement Meeting
September 13-14, 2022 Board of Investments Meeting

SUBJECT: Approval of Teleconference Meetings Under AB 361 and Government Code Section 54953(e)

RECOMMENDATION

That, under AB 361 and Government Code Section 54953(e)(3) of the Brown Act, the Board of Retirement and Board of Investments separately consider whether to find that the Governor's COVID-19 State of Emergency continues to directly impact the ability of each Board and its Committees to meet safely in person and that the County of Los Angeles and other agencies still recommend social distancing such that each Board and its Committees shall hold teleconference meetings for the next 30 days, so long as the State of Emergency remains in effect, and direct staff to comply with the agenda and public comment requirements of the statute. Action taken by each Board will only apply to that Board and its Committees.

LEGAL AUTHORITY

Under Article XVI, Section 17 of the California Constitution, the Boards have plenary authority and exclusive fiduciary responsibility for the fund's administration and investments. This authority includes the ability of each Board to manage their own Board and Committee meetings and evaluate legal options for such meetings, such as whether to invoke teleconferencing of meetings under AB 361 and Government Code Section 54953(e) of the Brown Act to protect the health and safety of Trustees, staff, and the public. The Boards previously took this action at their meetings since October 2021. Findings made under this memo will be effective for meetings during the next 30 days, so long as the State of Emergency remains in effect.

DISCUSSION

A. Summary of Law.

On September 16, 2021, the Governor signed AB 361 which enacted new Government Code Section 54953(e) of the Brown Act to put in place, effective immediately and through

December 31, 2023, new teleconferencing rules that may be invoked by local legislative bodies, such as the LACERA Boards, upon making certain findings and following certain agenda and public comment requirements.

Specifically, Section 54953(e)(3) provides that the Boards may hold teleconference meetings without the need to comply with the more stringent procedural requirements of Section 54953(b)(3) if a state of emergency under Section 8625 of the California Emergency Services Act impacts the safety of in person meetings or state or local officials have imposed or recommended social distancing rules, provided that the Board makes the following findings by majority vote:

- (A) The Board has considered the circumstances of the state of emergency; and
- (B) Any of the following circumstances exist:
 - (i) The state of emergency continues to directly impact the ability of the Trustees to meet safely in person; or
 - (ii) State or local officials continue to impose or recommend measures to promote social distancing.

If each Board makes the required findings, that Board and its Committees may hold teleconference meetings for the next 30 days without the need to comply with the regular rules of Section 54953(b)(3) provided that: agendas are prepared and posted under the Brown Act; members of the public are allowed to access the meeting via a call-in option or an internet-based service option; and the agenda provides an opportunity for public comment in real time and provides notice of the means of accessing the meeting for public comment.

B. Information Supporting the Required Findings and Process if the Boards Determine to Invoke Section 54953(e).

The Governor's State of Emergency for the COVID-19 pandemic as declared in the Proclamation of a State of Emergency dated March 4, 2020 remains active. The Proclamation was issued under the authority of Section 8625 of the California Emergency Services Act. It is unclear when the State of Emergency will end, although over the past year the Governor actively terminated many emergency provisions. See, e.g., Order No. N-21-21, issued November 10, 2021, Order No. N-04-22, issued February 25, 2022. Very recently, the Governor terminated additional COVID provisions. See Order No. N-11-22, issued June 17, 2022. In the press release for the June 17 Order, the Governor's Office stated that, after June 30, 2022, "only 5 percent of the COVID-19 related executive order provisions issued throughout the pandemic will remain in place."

The Los Angeles County Department of Public Health maintains guidance to "Keep your distance. Use two arms lengths as your guide (about 6 feet) for social distancing with

people you don't live with.”
<http://publichealth.lacounty.gov/acd/ncorona2019/reducingrisk/>. The County Public Health Department also maintains guidance that employers should, “Whenever possible, take steps to reduce crowding indoors and encourage physical distancing: ... Limit indoor occupancy to increase the physical space between employees at the worksite, between employees and customers, and between customers.... Continue, where feasible to offer telework options for employees. Offer teleworking options during times of high community transmission (100 or more new cases per 100,000 persons in the past 7 days). In addition, at other times, consider offering teleworking arrangements that do not interfere with business operations to reduce crowding indoors.”
<http://publichealth.lacounty.gov/acd/ncorona2019/bestpractices/>.

As further indication of the County’s interpretation of the impact of the State of Emergency on public meetings, at its August 9, 2022 meeting, the Board of Supervisors voted to find that the State of Emergency remains active and “local officials continue to recommend measures to promote social distancing” and that the Board of Supervisors shall continue to hold teleconference meetings under the terms of Assembly Bill 361 and Government Code Section 54953(e)(3). On June 24, 2022, the Executive Office of the Board of Supervisors issued a press release announcing that “meetings will remain virtual until the transmission level drops to ‘low’ and remains at that level for 7 days.” The Board of Supervisors will resume meetings in the Board hearing room when this standard is met, although Public Comment will continue to be available telephonically.

The City of Pasadena (City), where LACERA’s offices are located and Board and Committee meetings are held, has substantially revised its guidance to give more flexibility. The City still offers guidance that businesses recognize that COVID-19 continues to pose a risk to communities, and it is important for employers to continue to take steps to reduce the risk of COVID-19 transmission among their workers and visitors.
<https://www.cityofpasadena.net/economicdevelopment/covid-19-business-resources/>. Earlier guidance promoting physical distancing by business in certain circumstances also remains posted on the City’s COVID web page as a reference. As of the date of this memo, the City Council continues to hold its meetings by videoconference/teleconference, although some council members attend in person in the council chambers. At its August 15, 2022 meeting, the City Council voted to extend the video and teleconference meeting process through September 14, 2022.

The Centers for Disease Control and Prevention (CDC) has updated its guidance, but the CDC still advises the public that “Small particles that people breathe out can contain virus particles. The closer you are to a greater number of people, the more likely you are to be exposed to the virus that causes COVID-19. To avoid this possible exposure, you may

want to avoid crowded areas, or keep distance between yourself and others. These actions also protect people who are at high risk for getting very sick from COVID-19 in settings where there are multiple risks for exposure.”
<https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/prevention.html#stay6ft%20>.

Under these circumstances, the Boards may reasonably conclude and find that teleconferencing under Section 54953(e) is appropriate for Board and Committee meetings during the next 30 days, so long as the State of Emergency remains in effect, because (1) the State of Emergency continues to impact the ability of the Trustees to meet safely in person, or (2) the County and other authorities continue to recommend measures to promote a safe workplace, including physical distancing, as required by the statute. Either finding is sufficient under Section 54953(e) to support continued teleconference meeting.

If each Board makes these findings and directs teleconferencing under Section 54953(e), procedures exist and will be implemented to ensure compliance with the agenda and public comment requirements of the statute, as stated above.

Finally, on August 12, 2022, due to a reduction in transmission levels, LACERA management returned to established hybrid in office/telework procedures. Management recommends masks and social distancing for in office staff. These restrictions followed LACERA staff's return to the office on May 2, 2022 under hybrid work schedules for most employees. The return to office for staff was made under COVID safety protocols, including vaccination and testing procedures and encouraging masks and social distancing. Staff are able to achieve the physical distancing recommendation of six feet, because of changes to physical office layout and because of the phasing of in office work. No decision has yet been made by Board leadership as to when the Boards will return to in person meetings. When the Boards decide to return, management will implement protocols for the boardroom, which will present separate safety challenges, including, for example, the small size of the room, ingress and egress, and public access and comment requirements.

CONCLUSION

Based on the above information, staff recommends that, under AB 361 and Government Code Section 54953(e)(3) of the Brown Act, the Board of Retirement and Board of Investments separately consider whether to find that the Governor's COVID-19 State of Emergency continues to directly impact the ability of each Board and its Committees to meet safely in person and that the County of Los Angeles and other agencies still recommend social distancing such that each Board and its Committees shall hold

Re: Approval of Teleconference Meetings

August 29, 2022

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teleconference meetings for the next 30 days, so long as the State of Emergency remains in effect, and if so, direct staff to comply with the agenda and public comment requirements of the statute. Action taken by each Board will only apply to that Board and its Committees.

c: Santos H. Kreimann Luis Lugo JJ Popowich
Jonathan Gabel Laura Guglielmo Carly Ntoya

The Macro Environment

**Board of Investments Offsite
September 13, 2022**



The Macro Environment

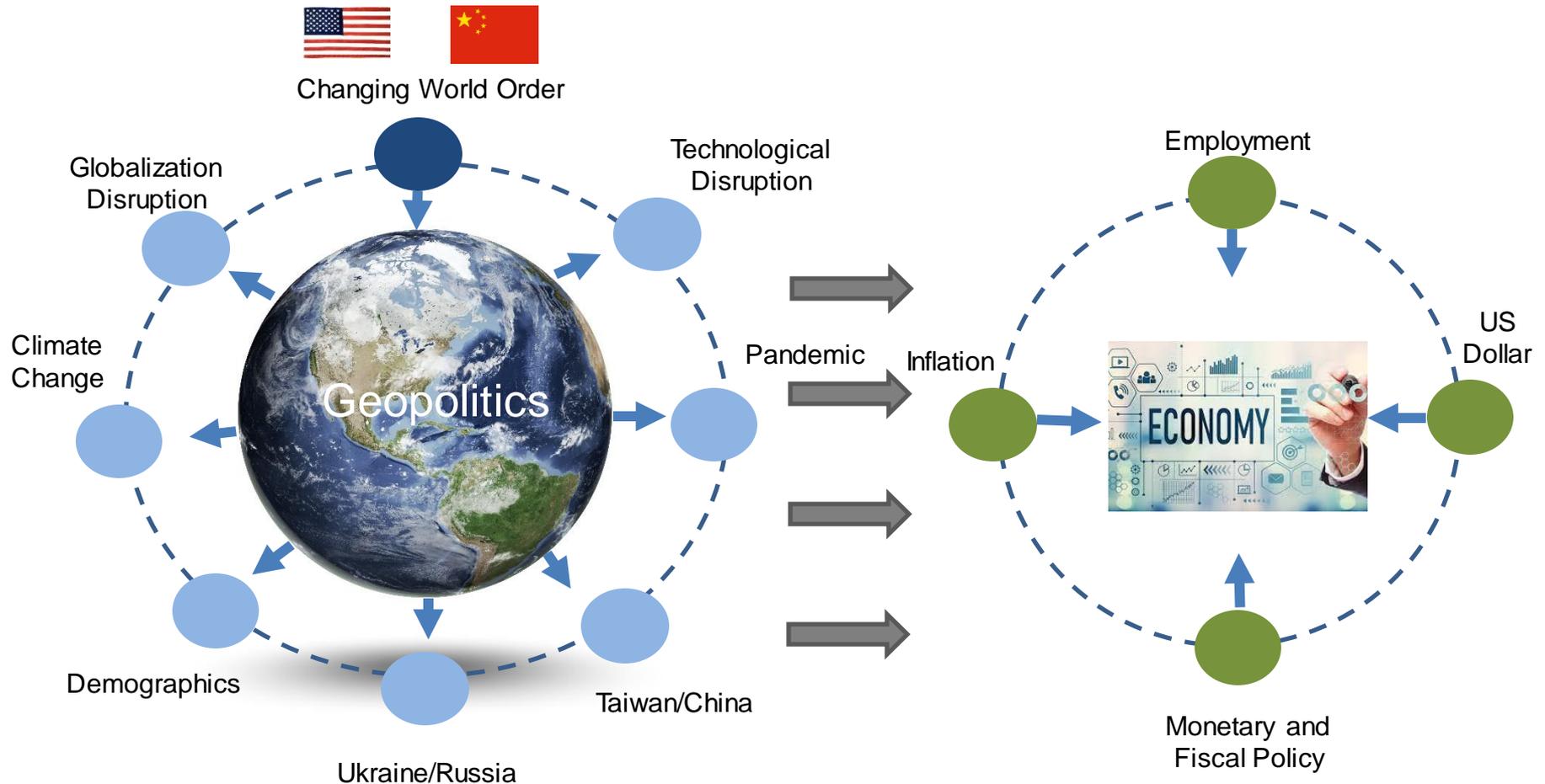
The macro session is divided into two sections and starts with a discussion of views on current geopolitical themes that could impact the current and longer-term macro environment. The following discussion presents challenges facing the US and global economy along with views on how to navigate an investment portfolio in a complicated macro environment.

Session Outline

- **Geopolitical themes impacting the macro environment**
Kevin Kajiwara (Teneo)
Moderated by Derek Kong (LACERA)
- **Global macro environment and implications for risk assets**
Jason Cummins (Brevan Howard)
Moderated by Quoc Nguyen (LACERA)

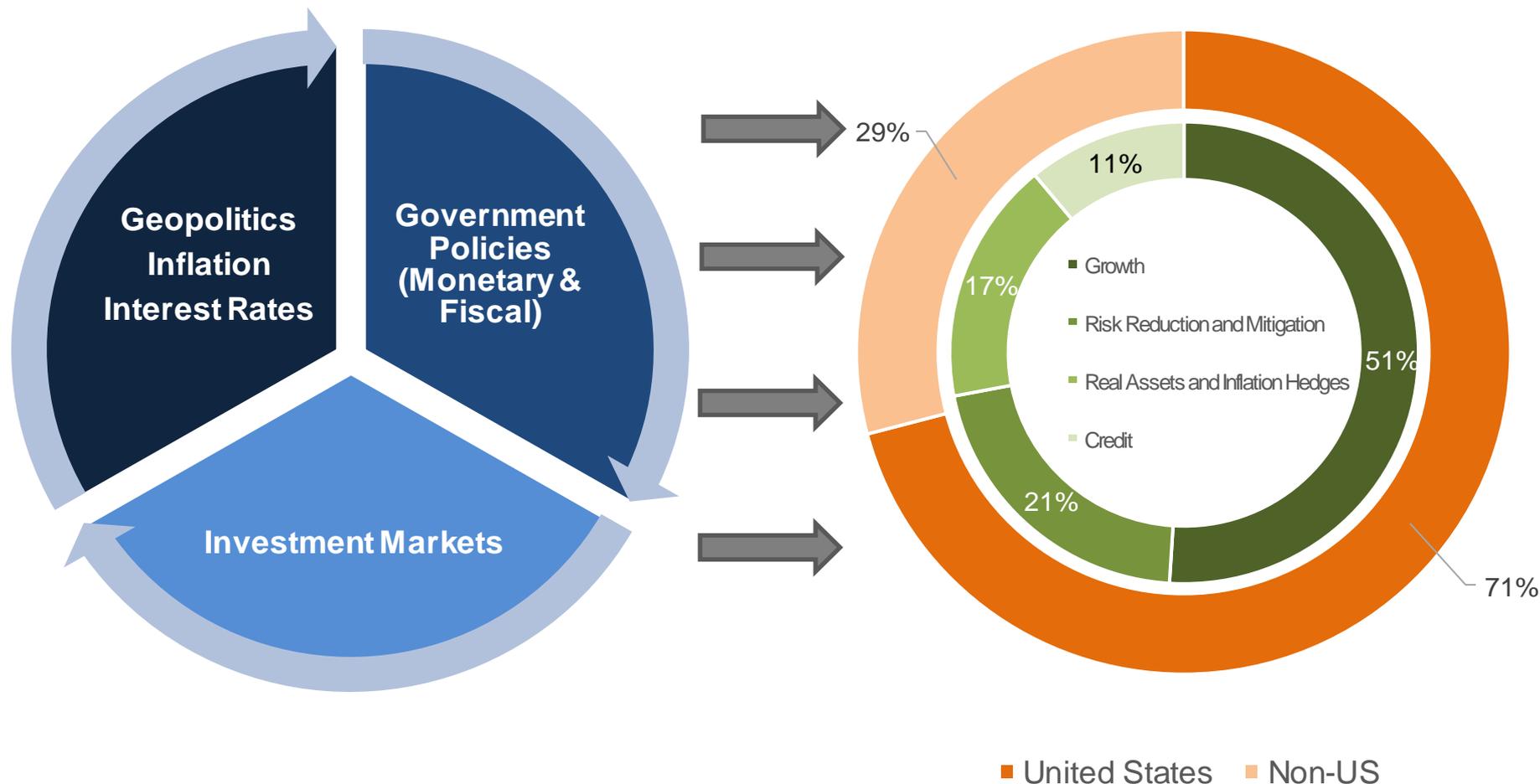
Macro: Session 1

Geopolitical Themes Impacting the Macro Environment



Macro: Session 2

Global Macro Environment and Implications for Risk Assets



¹ Includes LACERA's Total Fund U.S. and Non-U.S. geographic exposures of June 30, 2022 (ex-hedges) and the functional category target weights from the May 2021 Board-approved strategic asset allocation



Jason Cummins

Brevan Howard

Head of Research and Chief US Economist

Jason Cummins is the Head of Research and Chief US Economist for Brevan Howard. In his role, he develops the firm's outlook for the economy, politics and markets, advises the traders on portfolio management, and manages the global research team. Jason serves as a trustee on the boards of The Brookings Institution (executive committee) and The Peterson Institute for International Economics (executive committee), and is a member of the Investment Committee of Swarthmore College and life member of the Council on Foreign Relations. He was Chairman of the US Treasury Borrowing Advisory Committee, a government-appointed panel that advises on debt management, market structure, and financial developments. Formerly, Jason was a Senior Economist at the Federal Reserve Board, where he led the macro forecasting team. Jason began his career as an Assistant Professor of Economics at New York University and also taught at Harvard University. Jason earned a Ph.D. in Economics from Columbia University and graduated with high honors from Swarthmore College.



Kevin Kajiwara

Teneo

Co-President

Kevin is Co-President of Teneo's Political Risk Advisory practice where he plays an active role in promoting the firm's research agenda and developing its macro views, as well as integrating Teneo's geopolitical advisory services across the platform. Prior to joining Teneo, Kevin was the director of Strategic Clients at Eurasia Group and a member of the firm's Operating Committee. Previously, he was in international institutional equity sales with the Spanish bank BBVA, and earlier, with Bear, Stearns & Co. A sought-after public speaker, Kevin regularly presents to a wide range of audiences worldwide on geopolitical risks and trends. Kevin is a member of the Council on Foreign Relations and received a BA in Economics from Vassar College.

Investment Opportunities Related to Energy Transition

**Board of Investments Offsite
September 13, 2022**



LOS ANGELES COUNTY EMPLOYEES RETIREMENT ASSOCIATION

Investment Opportunities Related to Energy Transition

A focused discussion on the state of play of the global transition to a low carbon economy and how the transition is shaping investment opportunities in the near and longer term.

Session Outline

- **Introduction**
Dale Johnson (LACERA)
- **Energy transition market overview**
Michael Cembalest (J.P. Morgan) [remote]
Moderated by Scott Zdrazil (LACERA)
- **Policy and capital moves towards net-zero**
Mark Carney (Brookfield; United Nations Special Envoy for Climate Action and Finance) [remote]
Moderated by Scott Zdrazil (LACERA)
- **Insights from current LACERA asset managers**
Pierre Anctil (Axium Infrastructure)
Sunniva Bjornstad (Hitec-Vision) [remote]
Moderated by Jim Rice (LACERA)

LACERA Guiding Policy on Climate Change



LACERA recognizes that climate change may present **financial risks and opportunities to individual portfolio holdings** and **the broader economy** in which LACERA invests*

LACERA aims to:

- Identify, evaluate, and monitor both financial risks and opportunities
- To inform portfolio construction, investment decisions, and stewardship
- As part of integrated, holistic approach to fund management

Rooted in LACERA's mission to produce, protect, and provide the promised benefits

* See LACERA's *Corporate Governance & Stewardship Principles*, page 24: "Climate change may present financial, operational, and regulatory risks to a firm's ability to generate sustainable value, as well as to the broader economy."

Energy Transition Risks and Opportunities

LACERA has expanded research and analytical tools to assess financial risks and opportunities and inform investment decisions in recent years, including portfolio insights below:

Financial Risks

Financial Costs of Physical Impacts

Flooding, drought, extreme heat or cold, storms, etc.

Evolution of Business Strategies

Two-thirds of current holdings will need to adjust business strategies if Paris Agreement goals fully enacted in policy

Prospective Lower Returns Across Nearly All Asset Classes

Stranded Asset Risks

1 of 8 public holdings may lose 50-100% of value

Concentrated Risks

- 50% of carbon footprint driven by ~50 holdings
- 75% of carbon footprint driven by 3 industries (energy, utilities, materials)



Financial Opportunities

New Sources of Alpha in the Energy Transition

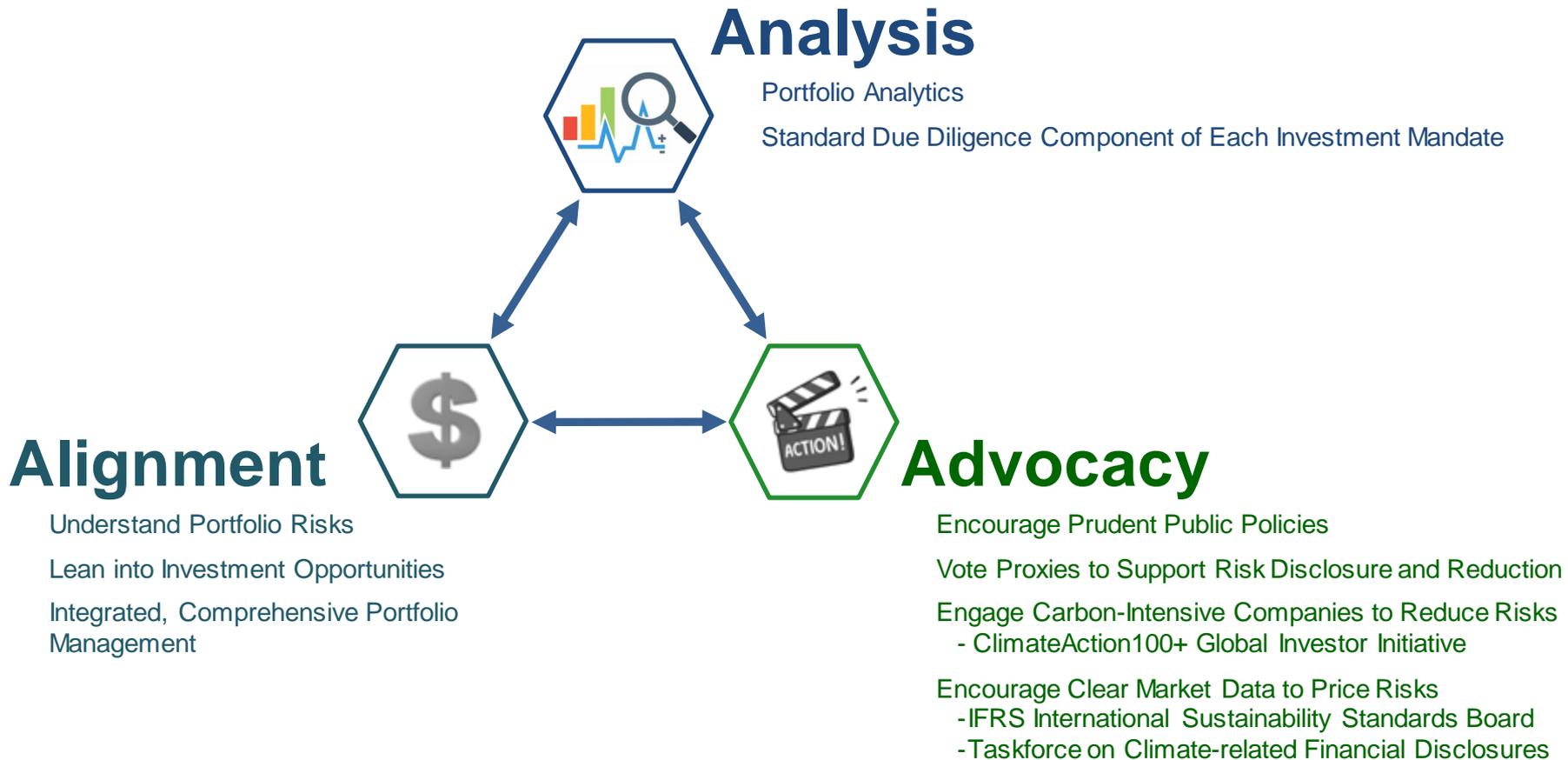
Lower Volatility in Some Asset Classes

Increasing Exposures to New Opportunities

- ~\$2.8 billion committed to diversified private funds targeting:
 - Renewables (hydro, biofuels, wind, solar)
 - Transmission and smart grid infrastructure
 - Energy transition mining inputs (lithium, copper, graphite)
- ~\$58 million exposure to renewable power at publicly listed utilities
- ~\$77 million exposure to green bonds

Comprehensive, Coordinated Strategies

LACERA pursues interconnected approaches to consider energy transition-related risks and opportunities in furtherance of LACERA's mission to produce, protect, and provide the promised benefits





AXIUM
INFRASTRUCTURE

Pierre Anctil

Axiom Infrastructure

President and Chief Executive Officer

Pierre Anctil has more than 35 years of experience in public and private sectors and as an executive in infrastructure investment and engineering.

As co-founder and CEO of Axiom Infrastructure, Pierre leads a team that has invested over a period of nearly 10 years near 3 billion Canadian dollars in a diversified portfolio of high-quality infrastructure assets.

Pierre previously served as executive vice president and member of the office of the president of SNC-Lavalin Group, holding corporate responsibility for investment activities of the firm's infrastructure division, including PPP projects.

Pierre is chairman of the board of the Montréal Heart Institute and member of the board of Fondation de Polytechnique. Throughout his career, he has served as a member of various boards of directors, most notably he was a member of the board of directors of Gaz Métro from 2004 to 2015. He was also a member of the board of directors of the Laurentian Bank of Canada, Altalink and 407 International where he served as Chairman of the Executive Committee until June 2008.

Pierre holds a Bachelor of Mechanical Engineering from Polytechnique Montréal, and an MBA from HEC Montréal.



HITECVISION

Sunniva Bjørnstad

HitecVision

Senior Partner

Sunniva Landmark Bjørnstad joined HitecVision in 2014 from DNB, where she worked as an analyst within the energy sector.

Sunniva currently focuses on energy transition and renewables investments, including fundraising activities within this space. She has been actively engaged in the development of Vårgrønn, and she was the project manager for the transaction whereby Vårgrønn expanded its scope from a Nordic company to a European company including the acquisition of a 20% ownership share in the world largest offshore wind farm, Dogger Bank. She also participated in Sval Energi's acquisition of the MLK onshore wind farm in Finland in 2019, and participated across oil service and asset services companies in her first years in HitecVision. She was also a dedicated member of the team developing Vår Energi, and its predecessor Point Resources, from 2015 to 2020.

Sunniva holds an MSc in Industrial Economics from the University of Stavanger, Norway, including an exchange semester at UC Berkeley, USA.



Brookfield

Mark Carney

Brookfield Asset Management

Vice Chair and Head of Transition Investing

United Nations Special Envoy for Climate Action and Finance

Co-Chair of Glasgow Finance Alliance for Net Zero

Mark Carney is a Vice Chair of Brookfield Asset Management and Head of Transition Investing. In this role, he is focused on the development of products for investors that will combine positive social and environmental outcomes with strong risk-adjusted returns.

Mr. Carney is an economist and banker who served as the Governor of the Bank of England from 2013 to 2020, and prior to that as Governor of the Bank of Canada from 2008 until 2013. He was Chairman of the Financial Stability Board from 2011 to 2018. Prior to his governorships, Mr. Carney worked at Goldman Sachs as well as the Canadian Department of Finance.

He is a long-time and well-known advocate for sustainability, specifically with regard to the management and reduction of climate risks, and is currently the United Nations Special Envoy for Climate Action and Finance and Co-Chair for the Glasgow Finance Alliance for Net Zero.

He is also an external member of the Board of Stripe, a member of the Global Advisory Board of PIMCO, the Group of Thirty, Harvard University, Rideau Hall Foundation, Bilderberg, the Foundation Board of the World Economic Forum, the boards of Bloomberg Philanthropies, the Peterson Institute for International Economics the Hoffman Institute for Global Business and Society at INSEAD, Cultivo, as well as Senior counsellor of the MacroAdvisory Partners, Advisor of the Watershed, and Chair of Chatham House.

Mr. Carney holds doctorate and master's degrees from Oxford University and a bachelor's degree in Economics from Harvard University.



J.P.Morgan
ASSET MANAGEMENT

Michael Cembalest

J.P. Morgan Asset Management

Chair of Market and Investment Strategy

Michael Cembalest is the Chairman of Market and Investment Strategy for J.P. Morgan Asset Management, a global leader in investment management and private banking with \$2.2 trillion of client assets under management worldwide. He is responsible for leading the strategic market and investment insights across the firm's Institutional, Funds and Private Banking businesses.

Mr. Cembalest is also a member of the J.P. Morgan Asset Management Investment Committee and a member of the Investment Committee for the J.P. Morgan Retirement Plan for the firm's more than 256,000 employees.

Mr. Cembalest was most recently Chief Investment Officer for the firm's Global Private Bank, a role he held for eight years. He was previously head of a fixed income division of Investment Management, with responsibility for high grade, high yield, emerging markets and municipal bonds.

Before joining Asset Management, Mr. Cembalest served as head strategist for Emerging Markets Fixed Income at J.P. Morgan Securities. Mr. Cembalest joined J.P. Morgan in 1987 as a member of the firm's Corporate Finance division.

Mr. Cembalest earned an M.A. from the Columbia School of International and Public Affairs in 1986 and a B.A. from Tufts University in 1984.

LACERA Board of Investments 2022 Offsite

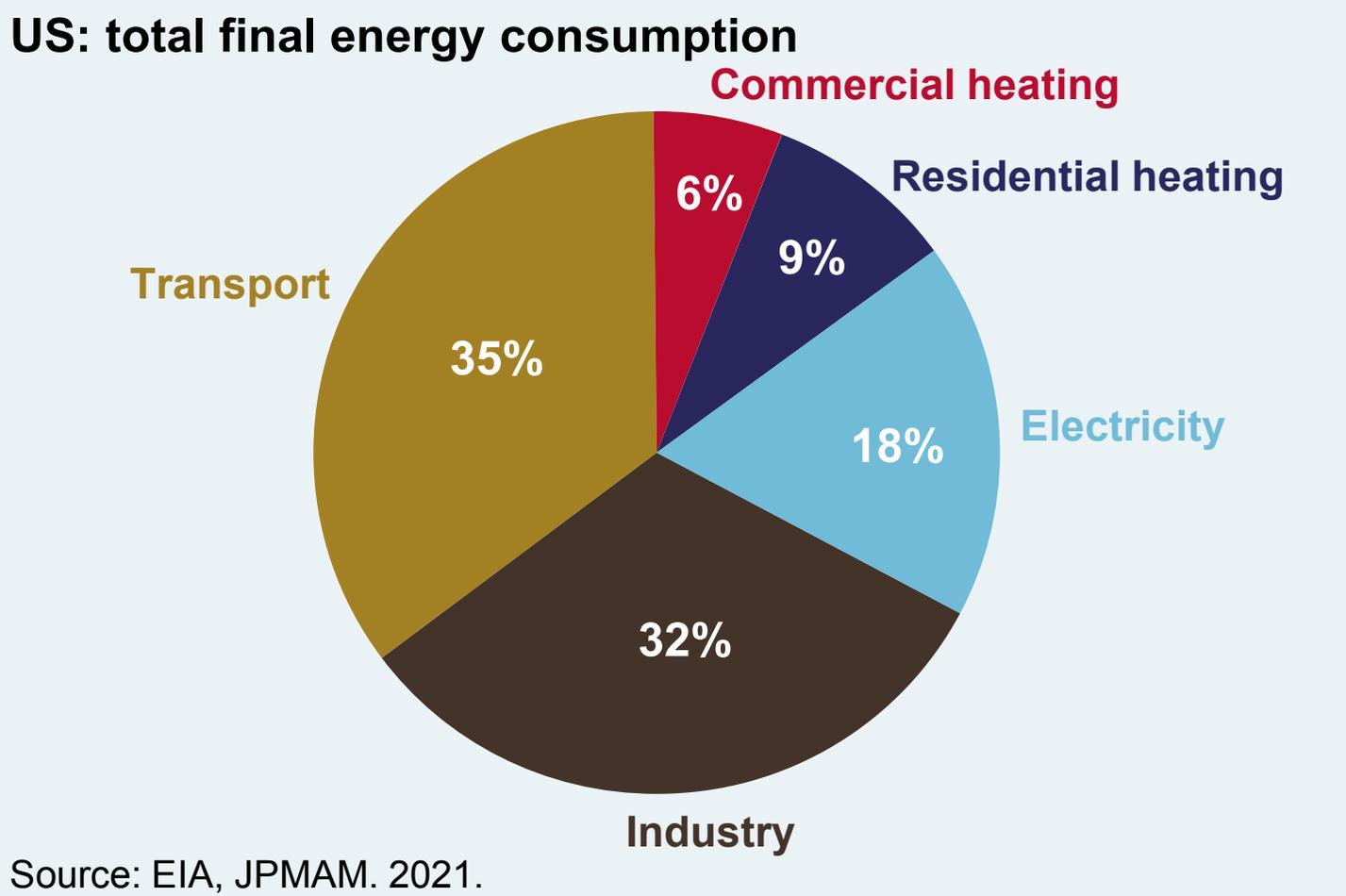
September 2022

Michael Cembalest, Chairman of Market and Investment Strategy, JP Morgan Asset Management

INVESTMENT AND INSURANCE PRODUCTS ARE:

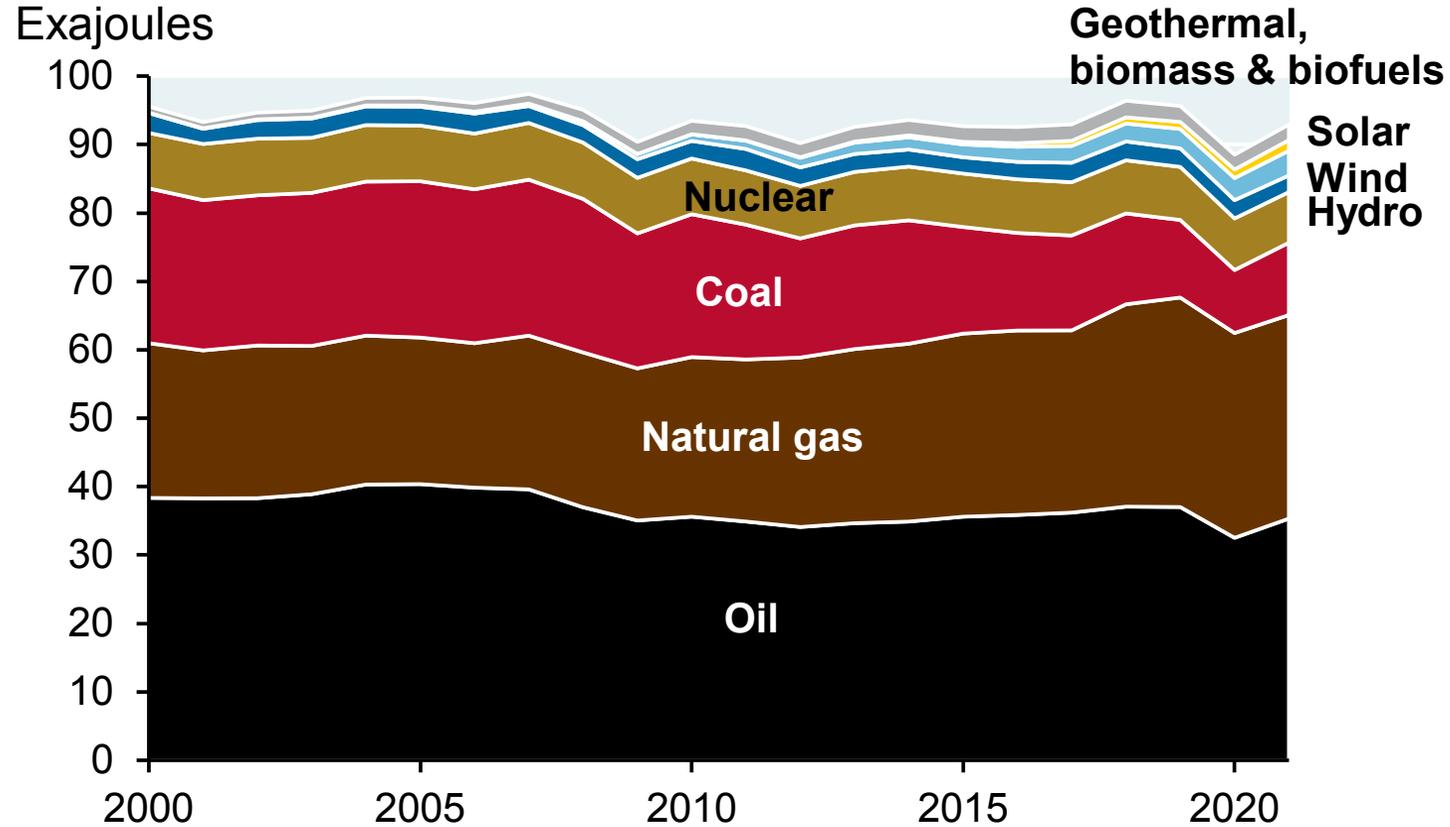
- NOT FDIC INSURED • NOT INSURED BY ANY FEDERAL GOVERNMENT AGENCY
- NOT A DEPOSIT OR OTHER OBLIGATION OF, OR GUARANTEED BY, JPMORGAN CHASE BANK, N.A. OR ANY OF ITS AFFILIATES
- SUBJECT TO INVESTMENT RISKS, INCLUDING POSSIBLE LOSS OF THE PRINCIPAL AMOUNT INVESTED

Challenge #1: Electricity is only one fifth of total energy consumption



Wind and solar are growing, but the single largest driver of falling US CO₂ emissions since 2005 has been coal-to-natural gas switching, a process that is almost complete

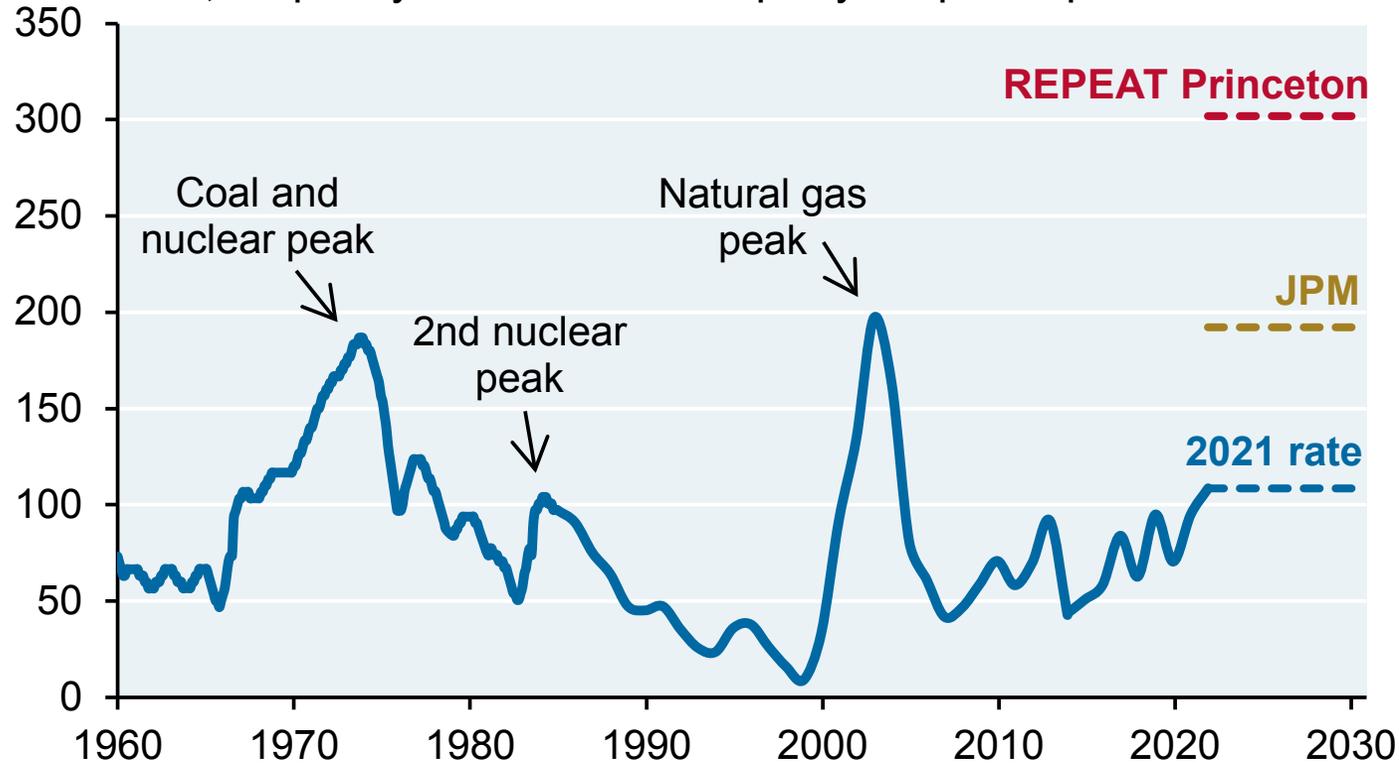
US primary energy consumption by fuel



Source: BP, EIA, JPMAM. 2022.

How fast can we build, particularly at a time of construction worker shortages and a sharp decline in the pace of immigration?

Historical electricity-generating capacity additions vs IRA forecast, Capacity additions, watts per year per capita



Source: EIA, Clack et al. (pre-1985 data), JPMAM. 2022.

China

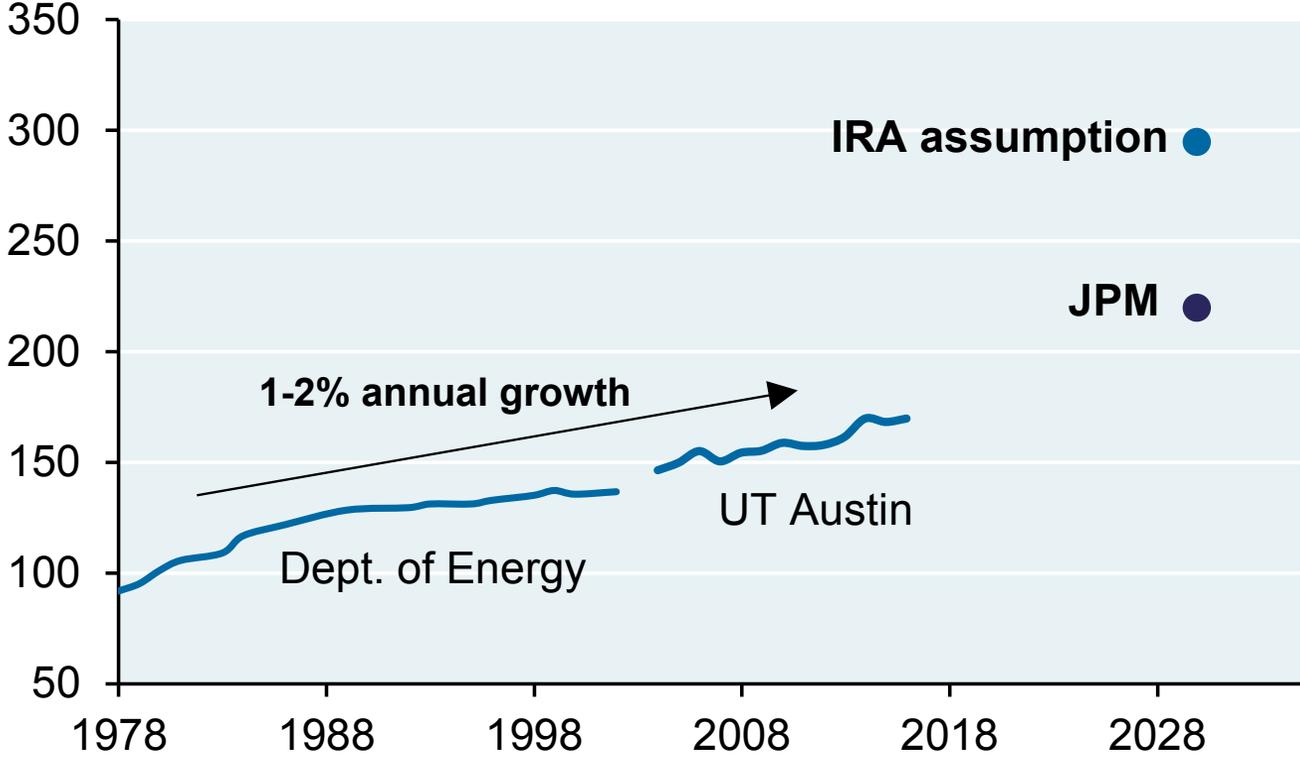
Renewable transition supply chains go through China, for now

	China	US	EU
Solar PV module shipments, 2019	63%	<5%	<5%
Wind capacity order book, 2019	46%	14%	40%
Lithium ion battery manuf. capacity, 2021	79%	6%	9%
EV mineral processing/refining (Nickel, Cobalt, Graphite, Lithium, Manganese avg)	79%	1%	6%
EV cathode/anode production	85%	1%	1%
Copper production	9%	6%	2%
Copper refining	38%	4%	5%
Rare earth production	60%	13%	NA
Graphite production	81%	<1%	1%
Lithium production	16%	1%	1%

Sources: IEA, BNEF, S&P, USGS, Benchmark Mineral Intelligence, 2021.

Perhaps the most challenging requirement of all: expanding the electricity grid

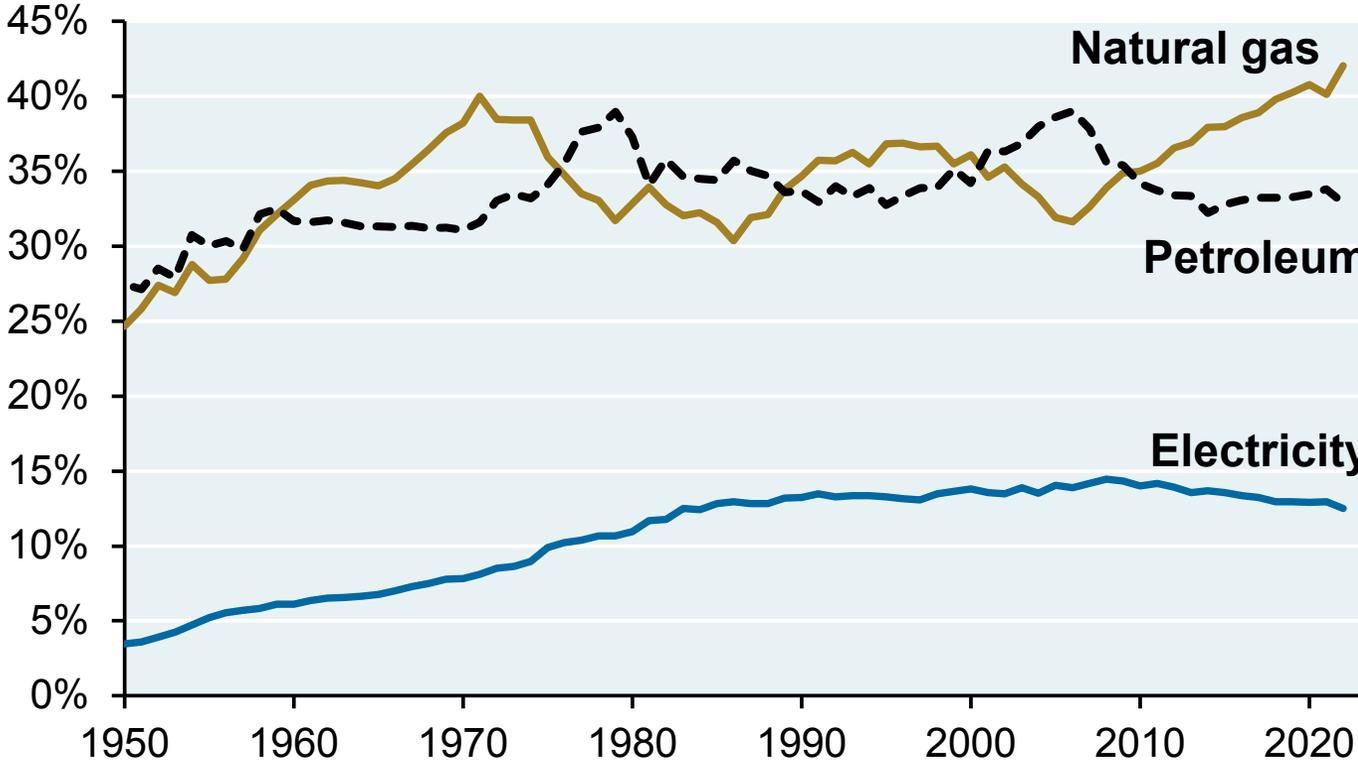
US transmission grid growing at just 1-2% per year since 1978, Thousands of gigawatt-miles



Source: DOE, UT Austin, REPEAT Princeton. 2022.

How is steel, cement, plastics, ammonia, concrete, glass, etc actually made? For the most part, with combustion of fossil fuels and not electricity, making it much harder to decarbonize

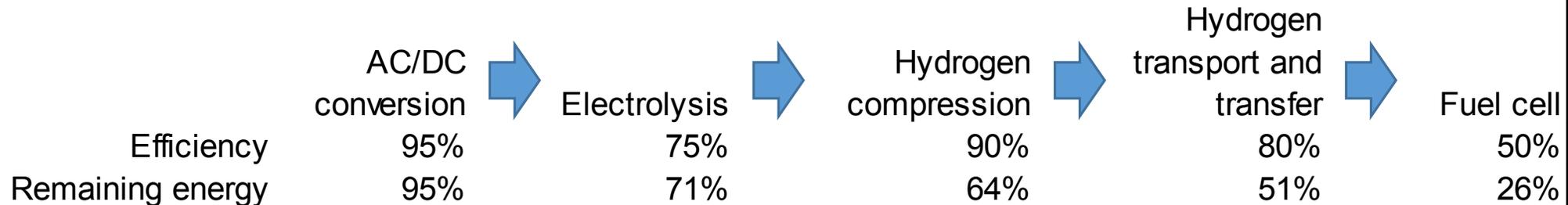
Electricity share of US industrial energy use unchanged for decades, Share of industrial energy use



Source: EIA. April 2022.

Hydrogen production and distribution costs will have to fall substantially in order to offset the organic inefficiencies when used for transport (shipping, long haul trucks, etc)

Round trip efficiency of hydrogen in vehicles: starting with 1 kWh of renewable electricity (AC)...



Source: Center for Sustainable Road Freight (UK). Note: as a comparison, EV battery final round trip efficiency = 69%

H₂ Transportation

- There is no hydrogen storage solution that combines high energy density, low energy input, easily available resources, is non-toxic and is easy to handle and store
- Ammonia has a large existing distribution network and can be stored at higher temperatures, but is less than 20% hydrogen
- Liquid organic hydrogen carriers: requires energy for storing and releasing the hydrogen; hydrogen density is low at 6.2% by weight; need to return the “carrier” molecules back to the point of production to transport hydrogen again

Important Information

IMPORTANT INFORMATION

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LACERA

The Net Zero Transition

MARK CARNEY
SEPTEMBER 2022

Net Zero is an enormous value-creation opportunity



A global imperative that has accelerated over the last two years



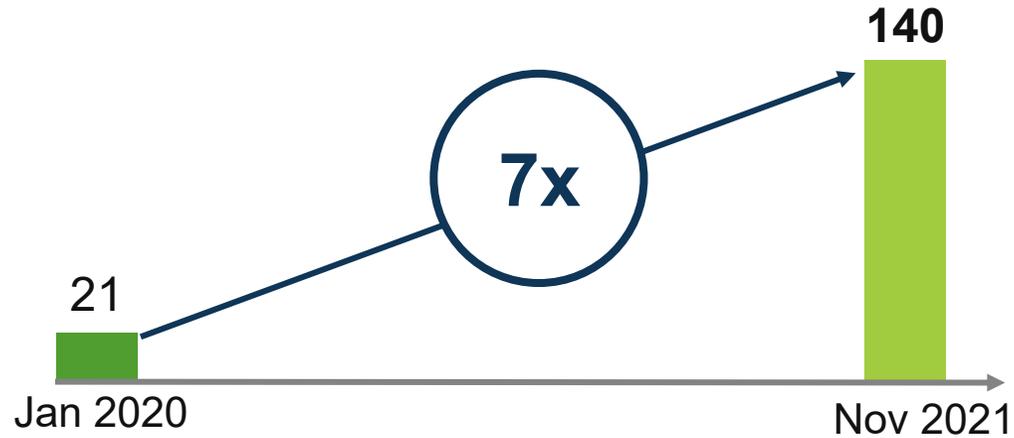
Requires a global, whole-economy transition



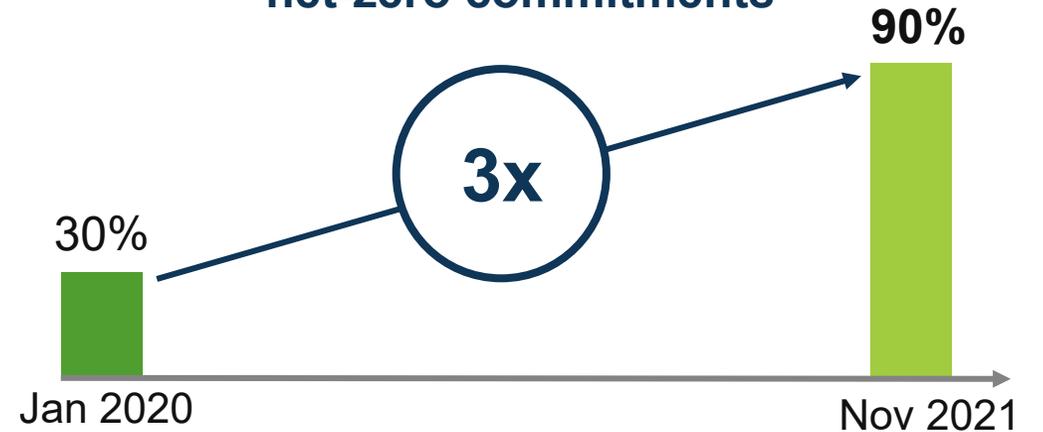
Creating a massive economic opportunity, that will drive investment, risks, and valuations

Net zero transition accelerating

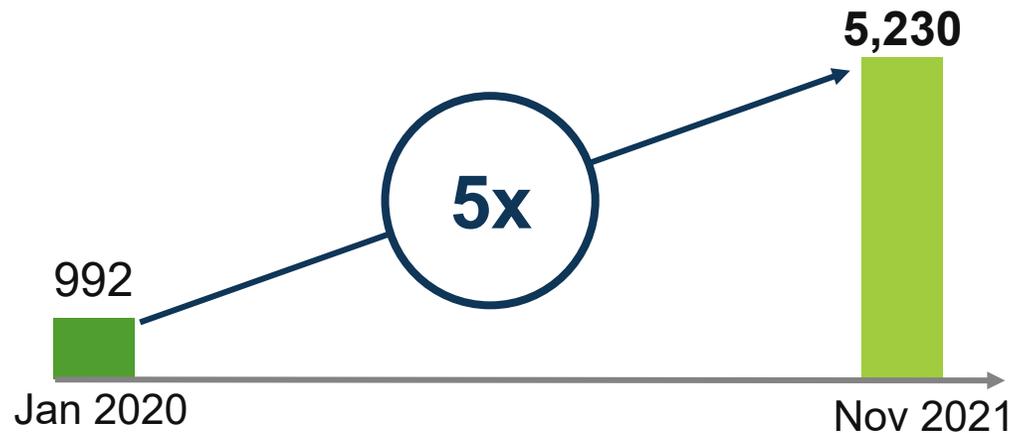
Countries with net-zero commitments



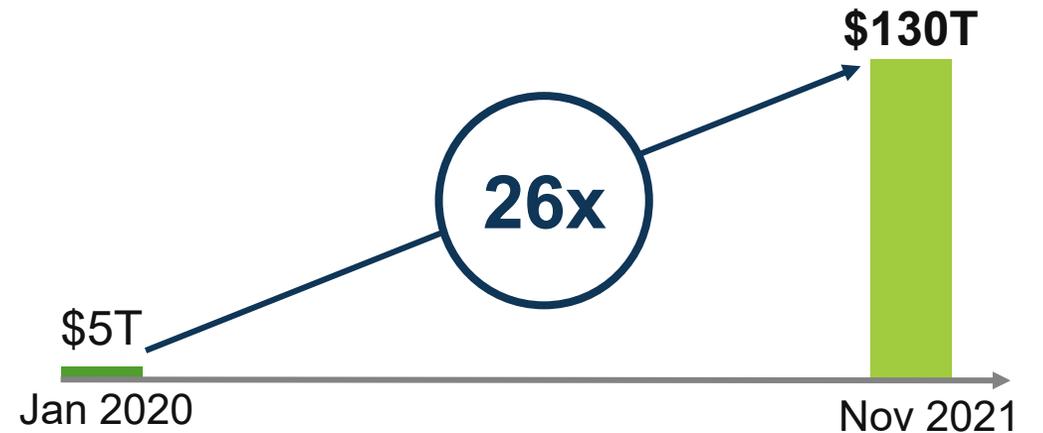
Emissions covered by country net-zero commitments



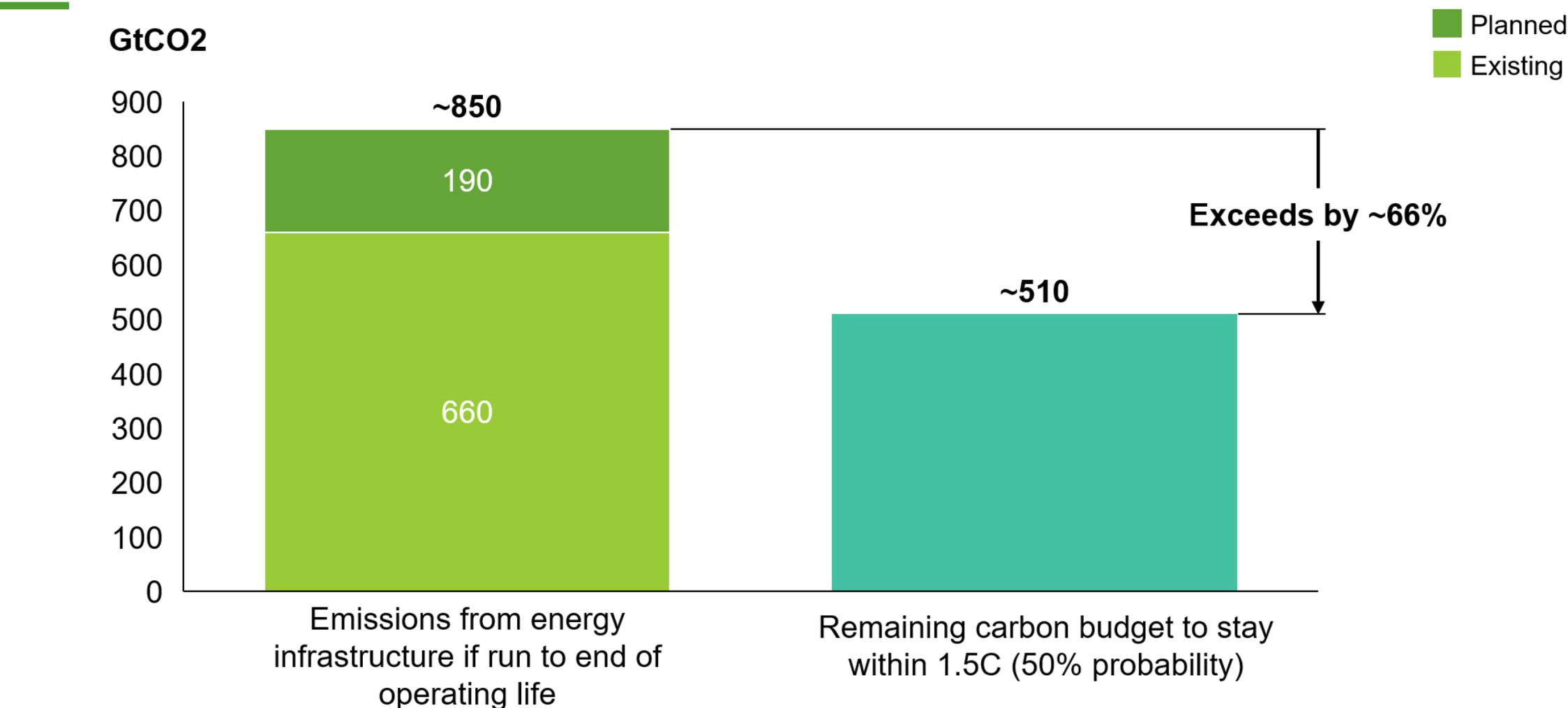
Companies with net-zero commitments



Financial commitments to net zero

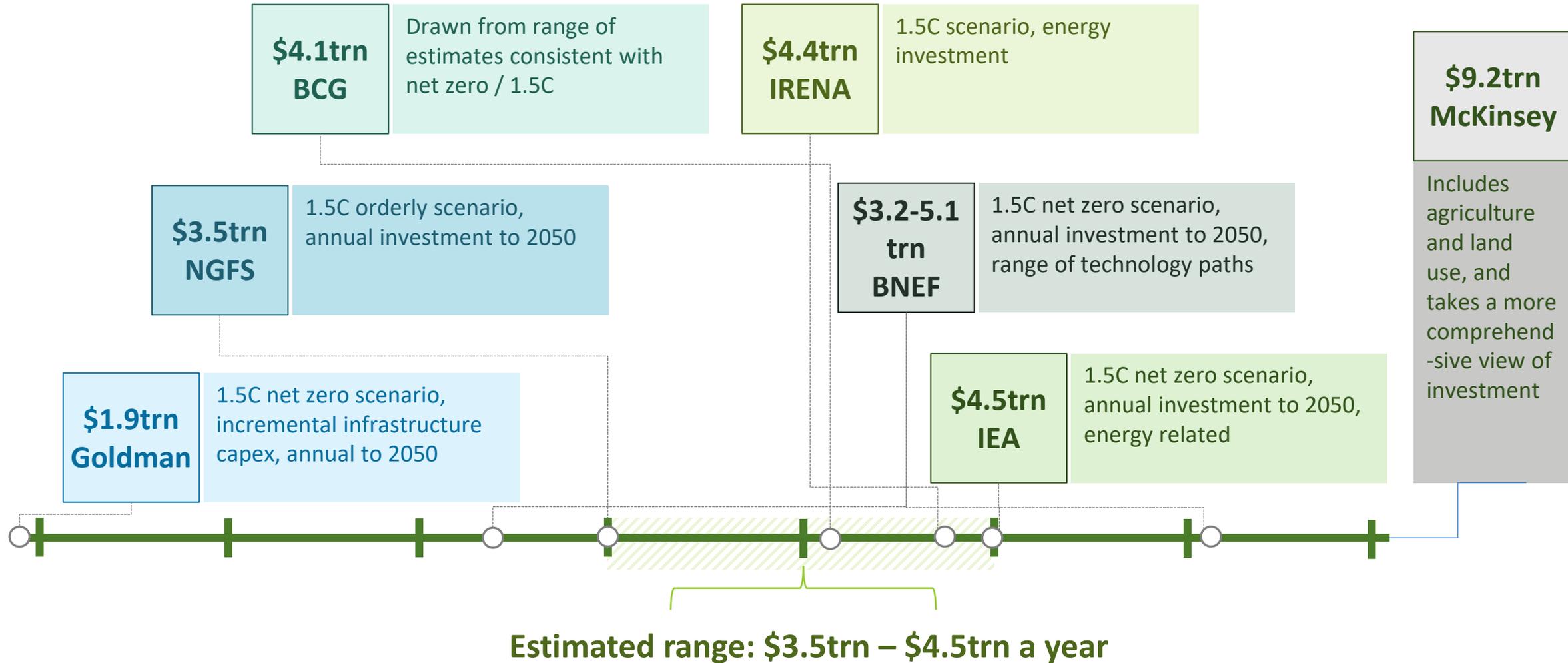


Creating Risks --- Stranded Assets

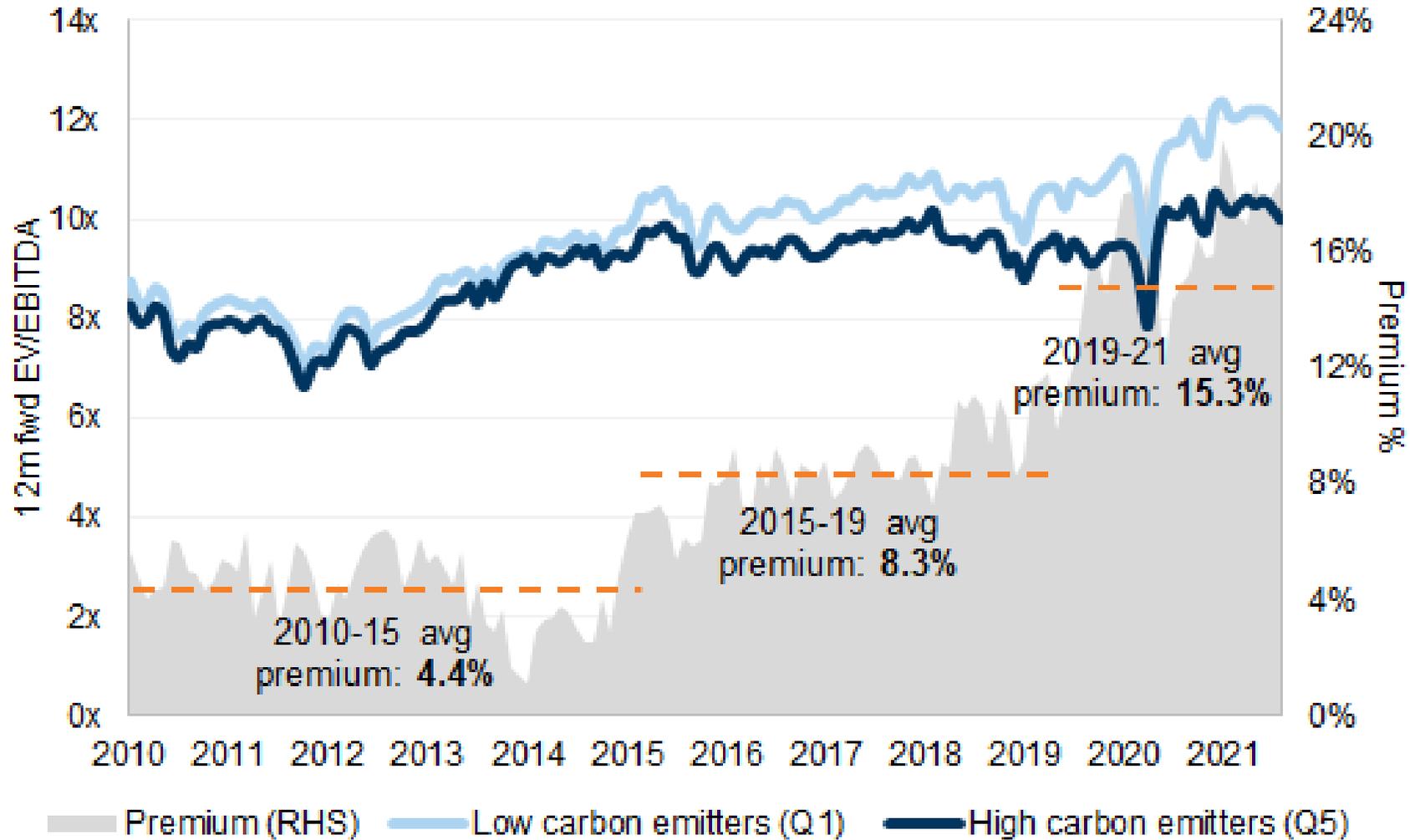


Source: IPCC. Climate Change 2022, Mitigation of Climate Change

And Opportunities: Annual investment must double to >\$4trn



Opportunities: low emitting companies trade at premiums



Climate Policy strengthening reinforced by energy security concerns

- ✓ **COP26** agreement (195 countries) targets 1.5 degrees, bolstered by side deals to cut methane, end deforestation and curb coal by 2030
- ✓ EU response to Energy crisis (**RePowerEU**) slashes permitting to 1 year, triples pace of renewable deployment and quadruples hydrogen build this decade
- ✓ **UK Energy Security Strategy** accelerates wind to largest generation source by this decade and doubles down on nuclear power and hydrogen
- ✓ **Inflation Reduction Act** materially improves incentives for EVs, wind, solar, and Carbon Capture and Storage momentum
- ✓ **Financial standards for Net Zero** now mainstreaming

Financial Standards for Net Zero transition

Mandatory climate disclosure

Widespread Climate stress testing

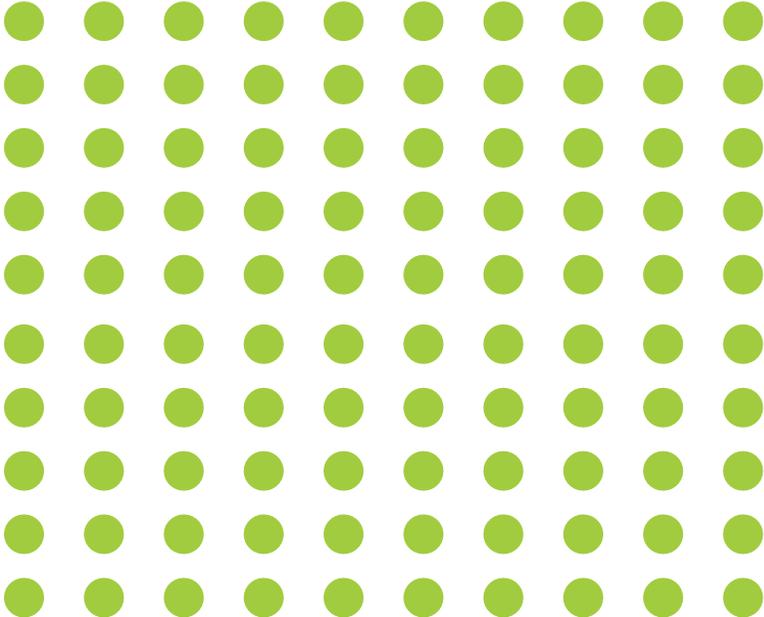
Net Zero transition plans

Portfolio alignment

Frameworks to phase out stranded assets

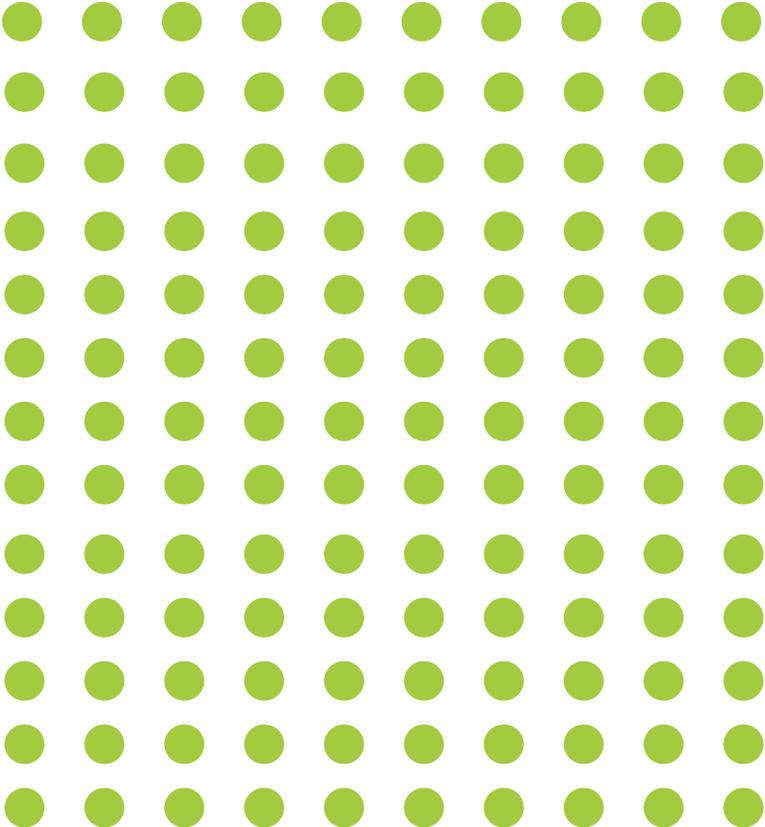
40% of the world's financial assets now pledged to net zero

\$100 TRILLION



FINANCE NEED FOR NET ZERO THROUGH 2050

\$130 TRILLION



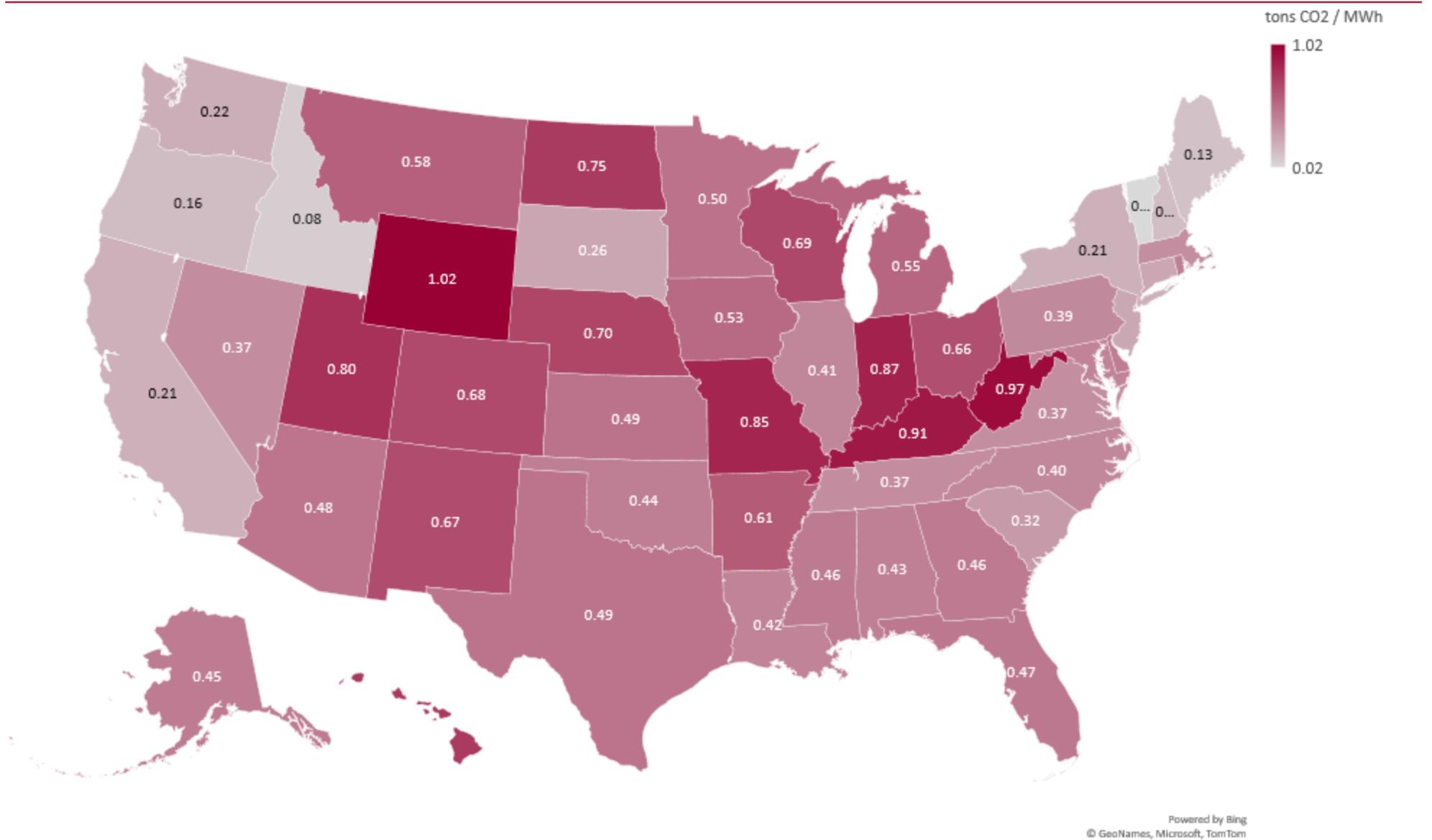
FINANCE COMMITTED TO NET ZERO THROUGH GFANZ

Note: Glasgow Financial Alliance for Net Zero (GFANZ).

Potential LACERA Considerations

- ✓ **Engagement** strategy for portfolio companies
- ✓ Measuring and managing **transition alignment** across portfolio
- ✓ Risk management including **terminal values** under multiple scenarios
- ✓ Strategies for '**Breakthrough**' technologies, Carbon **Offsets** and **Nature**
- ✓ Engagement with GFANZ, regulators and policymakers to help **complete the financial architecture of Net Zero**

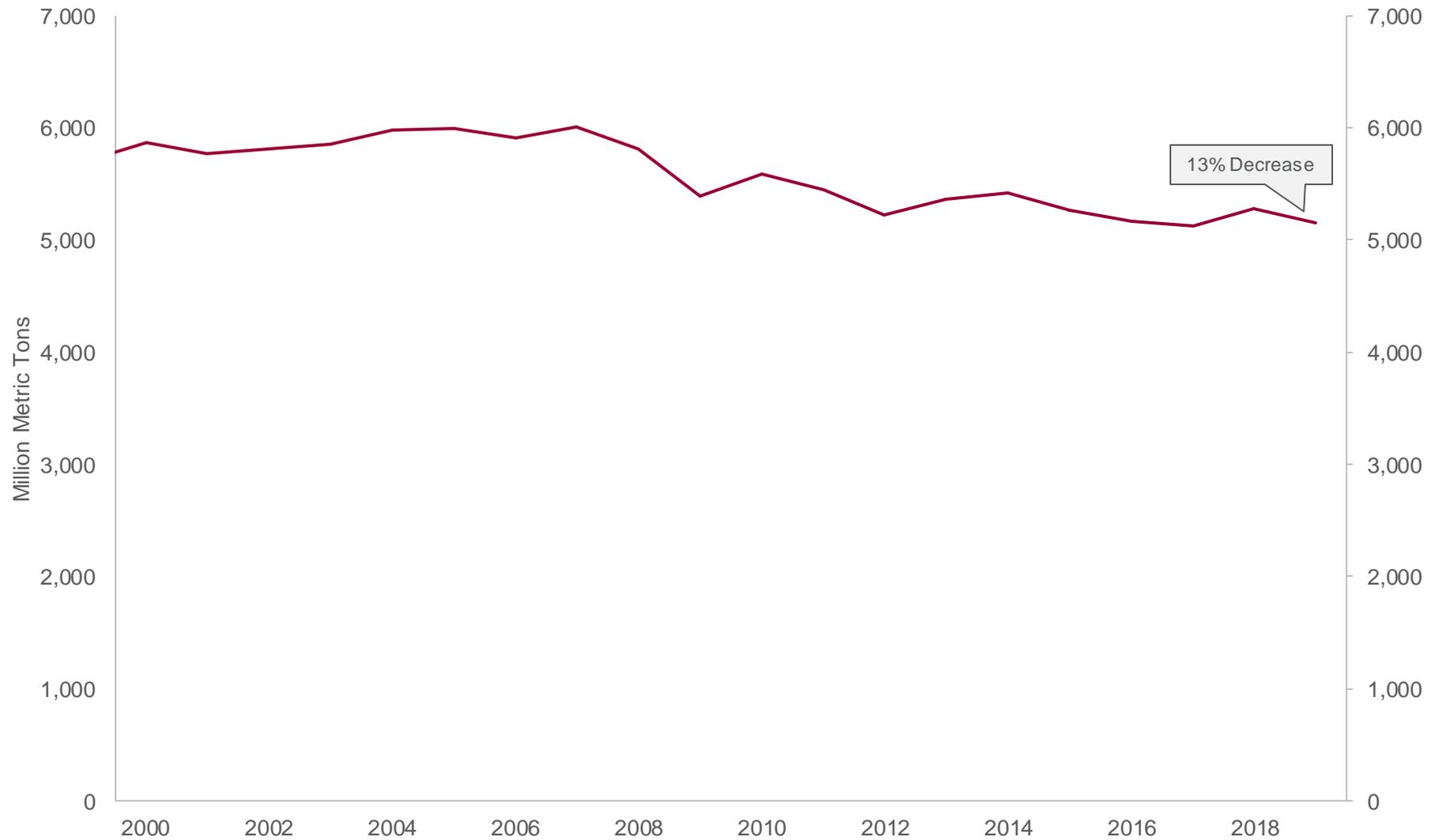
AVERAGE CARBON DIOXIDE EMISSIONS BY STATE¹



Three Rivers CO₂ Emissions Rate = 0.39 tons CO₂ / MWh

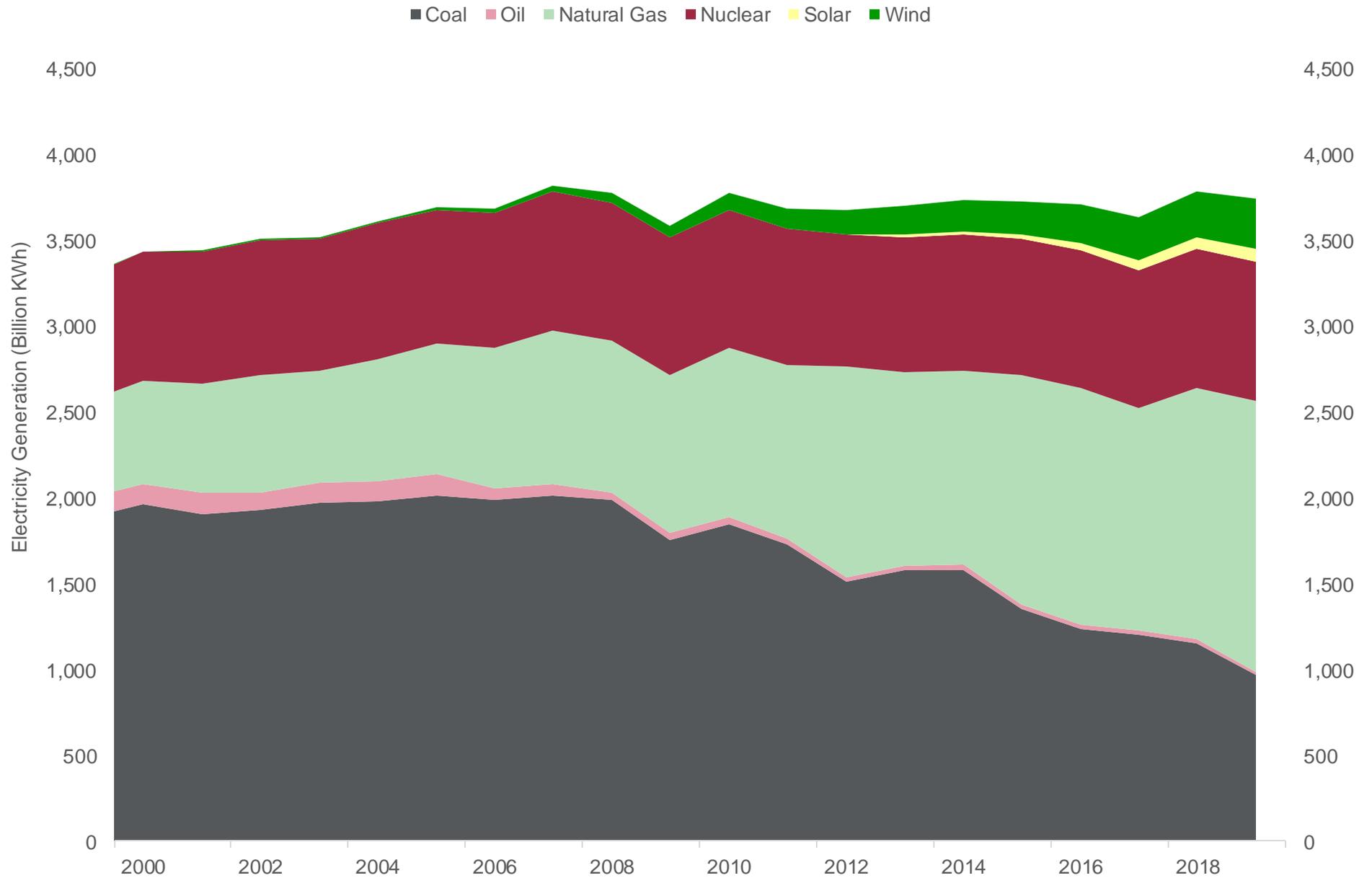
1. Source: US EPA eGRID database

US ANNUAL CO2 EMISSIONS – ALL SOURCES



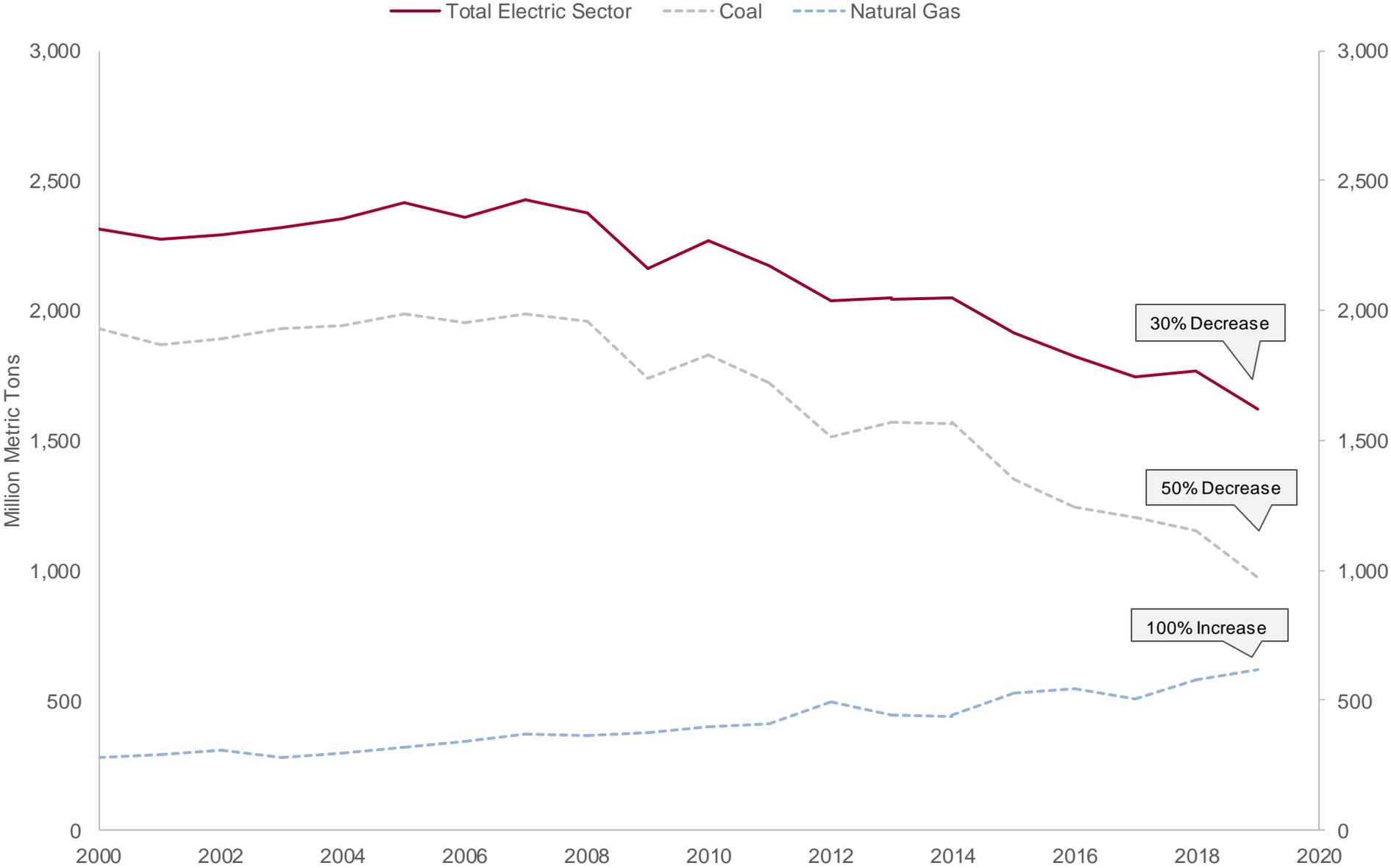
Source: US EIA (Energy Information Administration)

US ELECTRIC SECTOR ANNUAL GENERATION BY SOURCE



Source: US EIA (Energy Information Administration)

US ELECTRIC SECTOR ANNUAL CO2 EMISSIONS



Source: US EIA (Energy Information Administration)

HitecVision

Lacera 13.09.2022



Renewable energy production



Offshore wind



Onshore wind



Hydropower

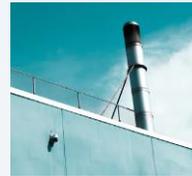
Green energy assets and infrastructure



“Green Host Norway”



Datacenter



Bio energy and district heating

Decarbonisation

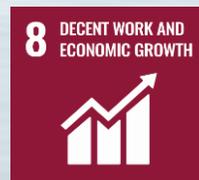


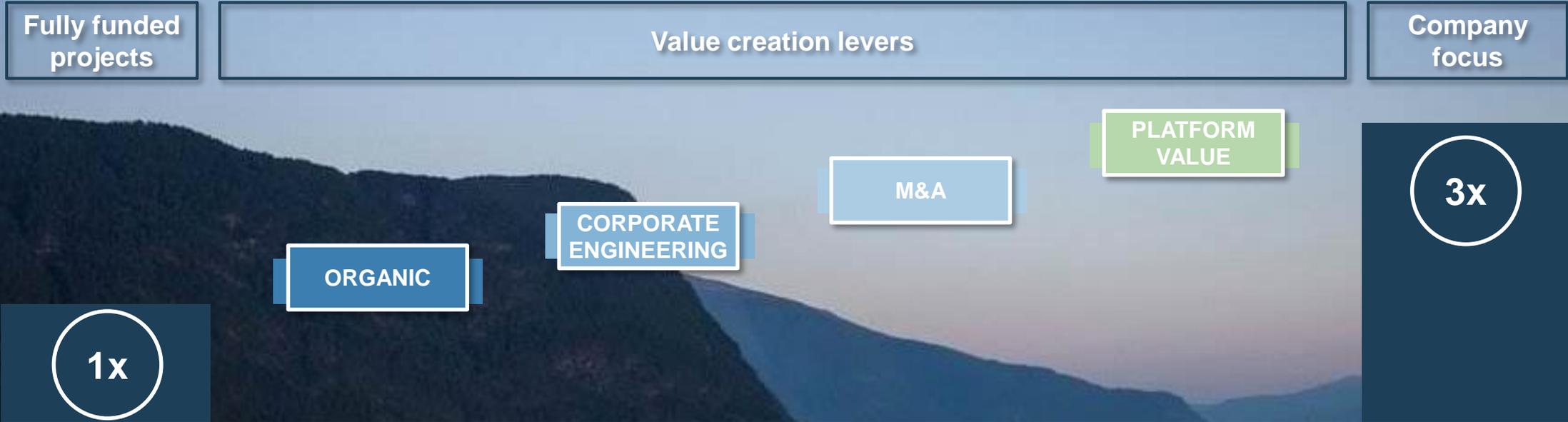
Clean Fuel Company



Carbon capture and storage

Key target SDG's¹





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KNOWLEDGE AND
CAPABILITIES**



**ACCESS TO ASSETS
/ BALANCE SHEET**

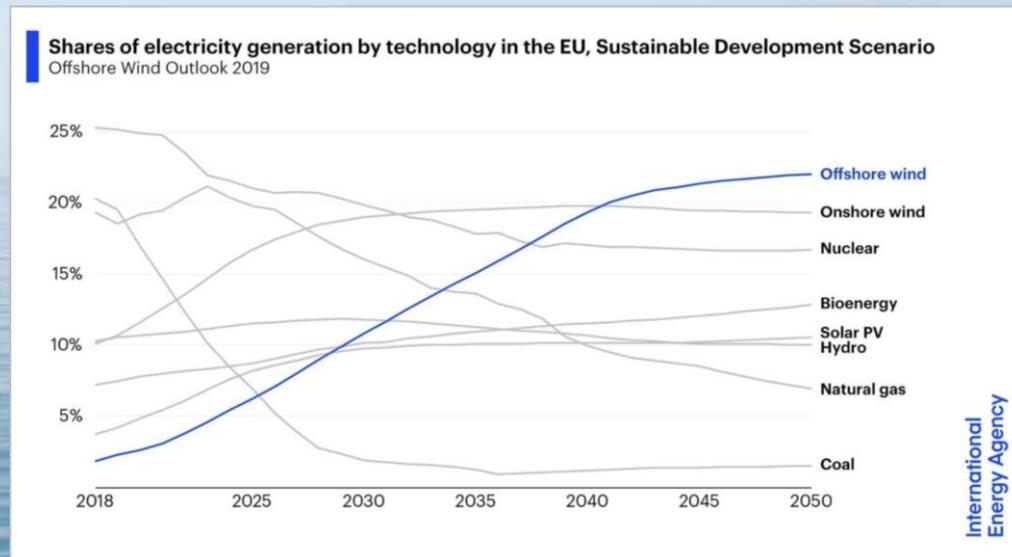


**INVESTMENT
OPPORTUNITIES
AND DEAL FLOW**



**JOINT VENTURE
COMPANIES
AND PROJECT
PARTNERSHIPS**

Significant investments going into renewable power generation..



..and the renewable energy mix will change dramatically towards 2050

New intercompany market design is necessary..



..including balancing mechanisms to adjust for increasing intermittency

Globalization and Emerging Markets

**Board of Investments Offsite
September 13, 2022**



LOS ANGELES COUNTY EMPLOYEES RETIREMENT ASSOCIATION

Globalization and Emerging Markets

Panel to discuss the evolving nature of globalization and its implications for LACERA's investments, and how this also impacts emerging markets.

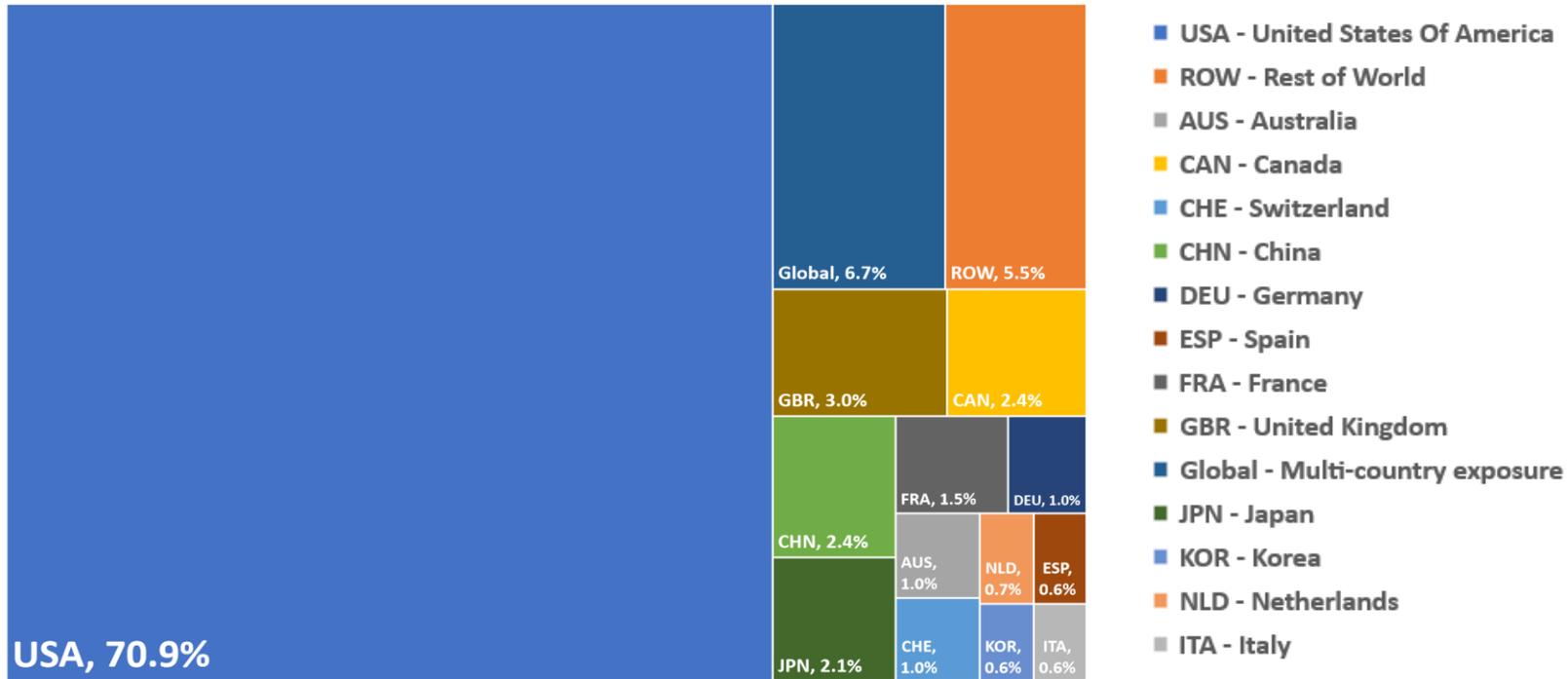
Session Outline

- **Introduction**
Dr. Pushpam Jain (LACERA)
- **Globalization and its implications for LACERA's investments and emerging markets**
Dr. Monica de Bolle (Peterson Institute for International Economics)
Zoltan Poszar (Credit Suisse)
Moderated by Dr. Alison Adams (Meketa)



Geographic Exposures by AUM* - Total Fund

as of June 2022 ex-overlays and hedges



2

- LACERA's global exposure results from Board directed strategic asset allocation, which specifies the relevant benchmarks for the different asset categories
- LACERA's exposure to markets outside of US, including Emerging Markets, has increased over the last 10 years

*AUM = assets under management

¹ *Implementation of the MSCI Risk Platform is ongoing; reconciliation and refinement of the data is progressing and subject to change. Real estate and private equity data used is as of 3/31/2022

² "ROW - Rest of World" is sum of countries with weight below 0.5%

³ Geographic exposure is based on the domicile country of a given security/asset



Alison Adams, PhD

Meketa

Executive Vice President/Research Consultant, Meketa

Ms. Adams joined Meketa Investment Group in 2021 and has been in the financial services industry for 17 years. An Executive Vice President of the firm, Ms. Adams serves as a research consultant where her responsibilities include global macroeconomic research and writing thought leadership materials. She is also a member of the firm's Global Macroeconomic Investment, Asset-Liability Risk Management, Strategic Asset Allocation/Risk Management, and Defined Contribution Committees.

Ms. Adams earned her Ph.D. from Harvard University Faculty of Arts and Sciences in History. Prior to joining the firm, she was an Associate Consultant at RVK, Inc. Previously, Ms. Adams was employed as an analyst at Fidelity Management & Research and as a case researcher at Harvard Business School.



Monica de Bolle, PhD

Peterson Institute

Senior Fellow

Monica de Bolle, senior fellow at the Peterson Institute for International Economics since January 2017, is former director for Latin American studies and emerging markets at the School of Advanced International Studies at Johns Hopkins University. De Bolle was nonresident senior fellow at the Institute between March 2015 and January 2017.

Named as "Honored Economist" in 2014 by the Order of Brazilian Economists for her contributions to the Brazilian policy debate, de Bolle focuses on macroeconomics, foreign exchange policy, monetary and fiscal policy, trade and inequality, financial regulation, and capital markets. During the COVID-19 pandemic, she has also expanded into public health research and has specialized in immunology, genetics, and biochemistry at Harvard Medical School. De Bolle is currently pursuing an advanced graduate degree in infectious diseases and human immunology at Georgetown University.

Prior to joining the Institute, de Bolle was professor of macroeconomics at the Pontifical Catholic University of Rio de Janeiro, as well as managing partner of Galanto | MBB Consultants, a macroeconomics advisory firm. She was also a director of the Institute for Economic Policy Research (IEPE/Casa das Garças), a prestigious think tank based in Rio de Janeiro, Brazil, and an economist at the International Monetary Fund.

De Bolle has authored and coauthored a number of books on the global economy and Brazil's policy challenges, including *How to Kill the Blue Butterfly: A Chronicle of the Dilma Era* (2016), *The State of the World Economy, Challenges and Responses: Essays in Honor of Pedro S. Malan* (2014), *The Future of Brazilian Manufacturing: The Deindustrialization Debate* (2013), *New Dilemmas in Economic Policy* (2011), *Financial Regulation Reform in the US: New Global Architecture and the Brazilian Regulatory Context* (2009), and *How to Respond to the Global Financial Crisis? Economic Policies for Brazil* (2009). Her views on Brazil's economy and economic policy have been published widely by the international and Brazilian media. She contributes regularly to major Brazilian newspapers *Exame*, *O Globo* and *O Estado de São Paulo*.

De Bolle obtained her BA in economics from the Pontifical Catholic University of Rio de Janeiro and holds a PhD in economics from the London School of Economics and Political Science.



Zoltan Pozsar

Credit Suisse

Global Head of Short-Term Interest Rate Strategy; Managing Director

Zoltan Pozsar is a Managing Director, the Global Head of Short-Term Interest Rate Strategy, and a standing Expert Member of the Credit Suisse Investment Committee based in New York. Prior to joining Credit Suisse in February 2015, Zoltan was a senior adviser to the US Department of the Treasury. Zoltan was deeply involved in the response to the global financial crisis of 2007-2008 and the ensuing policy debate. He joined the Federal Reserve Bank of New York in August 2008 in charge of market intelligence for securitized credit markets and served as point person on market developments for senior Federal Reserve, US Treasury and White House officials throughout the crisis; played an instrumental role in building the TALF to backstop the ABS market; and pioneered the mapping of the shadow banking system which inspired the FSB's effort to monitor and regulate shadow banking globally. Later at the IMF he was involved in framing the Fund's official position on shadow banking and consulted G-20 working groups. He consulted G-7 policymakers, central banks and finance ministries.

Embracing Technology

Board of Investments Offsite

September 13, 2022



LOS ANGELES COUNTY EMPLOYEES RETIREMENT ASSOCIATION

Embracing Technology

This session discusses the implementation of technology across various investment departments along with the critical nature of operations and cyber security

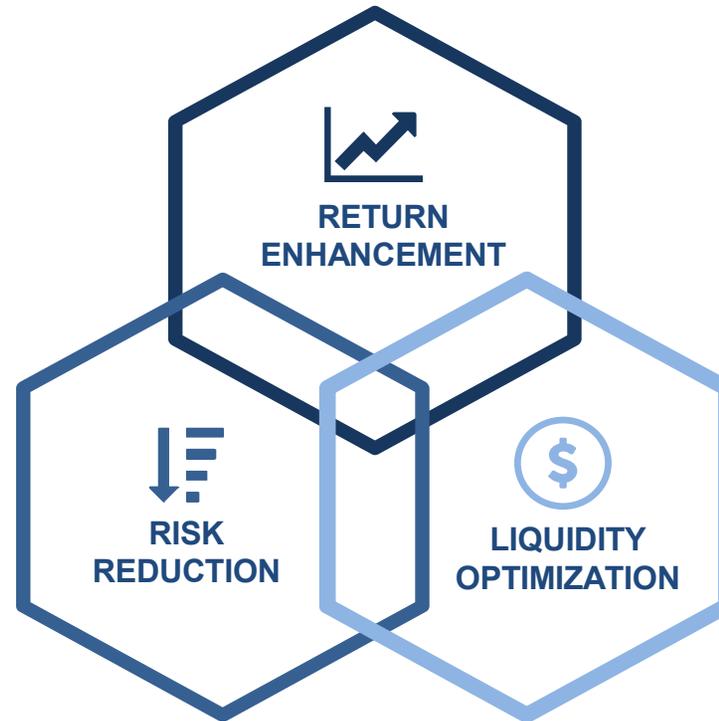
Session Outline

- **Introduction**
Mel Tsao (LACERA)
- **Utilizing technology to drive edge in sourcing, due diligence, and portfolio management**
John Claisse (Albourne)
Diaine Pascale (Storm Ventures)
David Snyderman (Magnetar Capital)
Moderated by Didier Acevedo (LACERA)
- **Utilizing technology for operations and the importance of cybersecurity**
Steve Bezner (Altus) [remote]
Mike Curry (State Street) [remote]
Stephen Scharf (BlackRock) [remote]
Moderated by Noah Damsky (LACERA)

Allocator to Investor

Execute Strategic Asset Allocation

While balancing...



STRATEGIC INITIATIVES



Produce, Protect and Provide the Promised Benefits

Embracing Technology Through All Initiatives

OPTIMIZE INVESTMENT MODEL

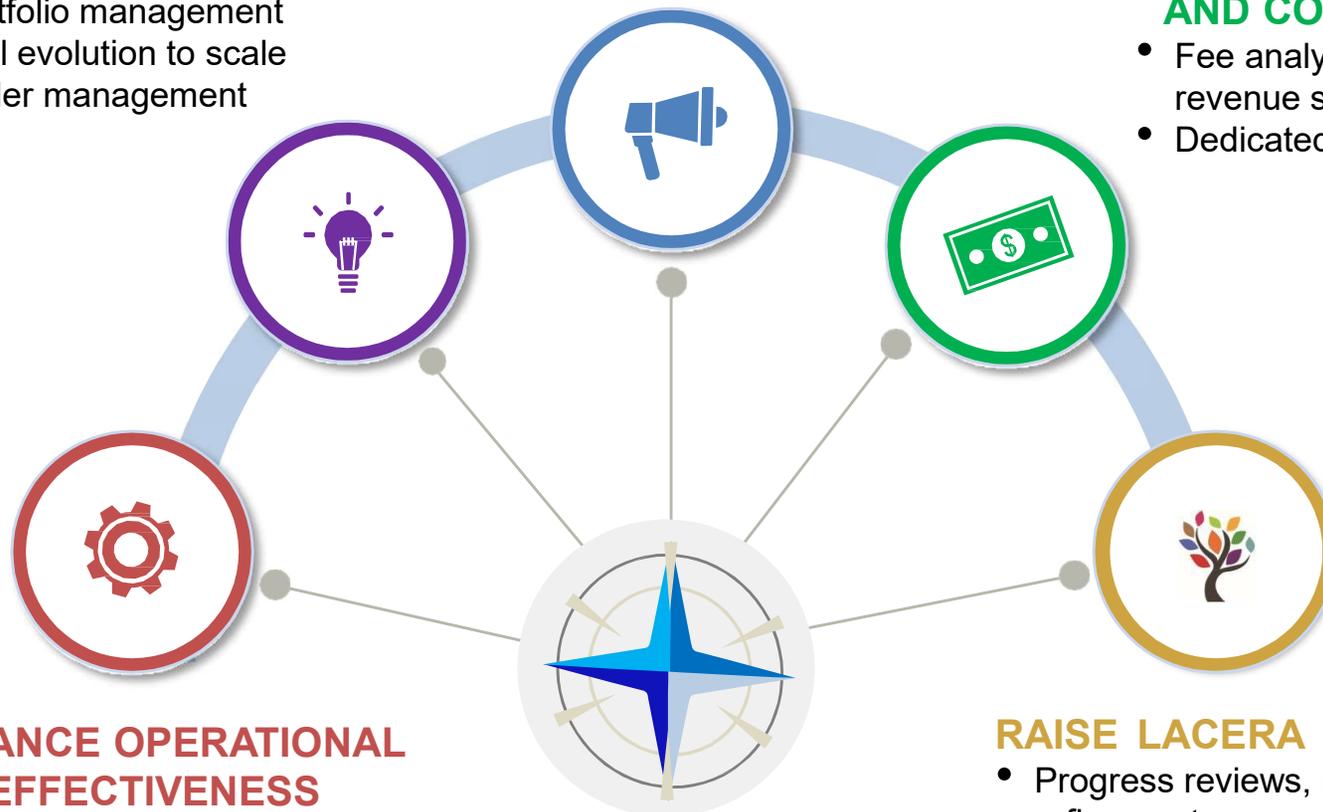
- Risk-aware portfolio management
- Business model evolution to scale with assets under management

MAXIMIZE STEWARDSHIP AND OWNERSHIP RIGHTS

- ESG analytics integration
- Climate risk positioning

STRENGTHEN INFLUENCE ON FEES AND COST OF CAPITAL

- Fee analytics that help drive revenue share relationships
- Dedicated managed accounts



ENHANCE OPERATIONAL EFFECTIVENESS

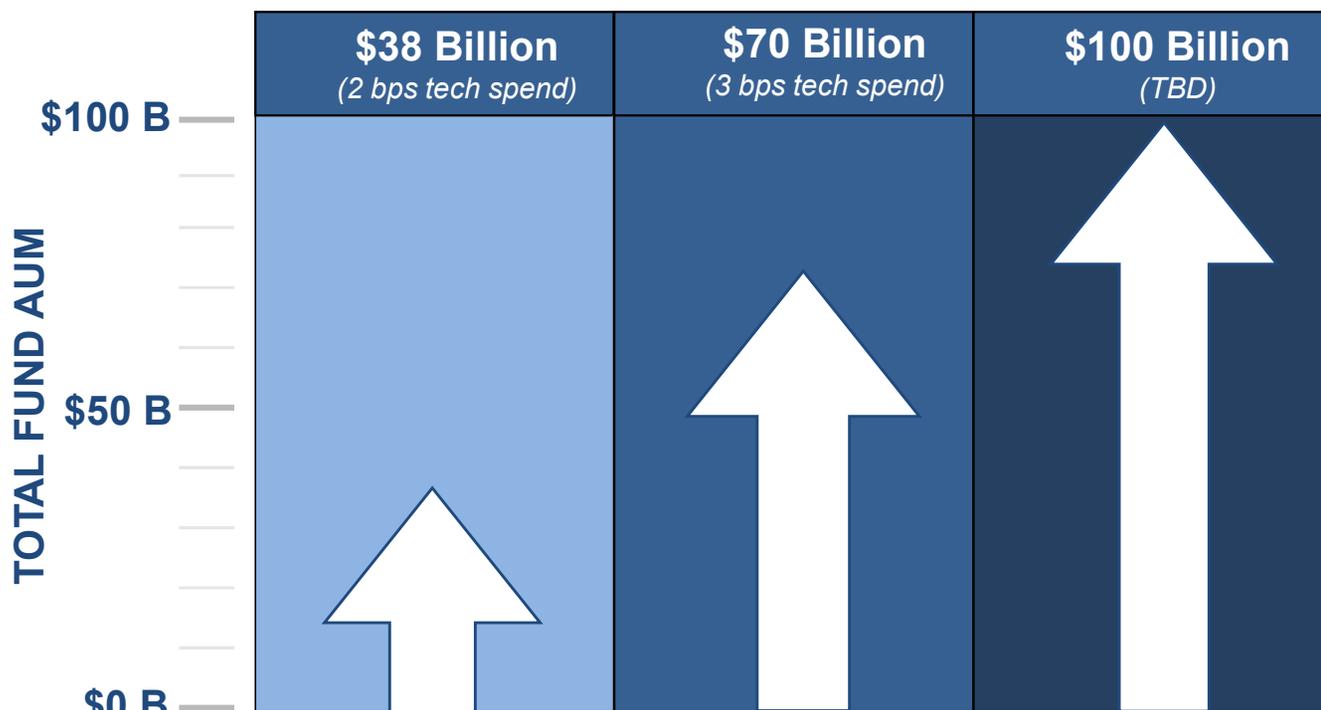
- Daily pricing and positions
- Business continuity

RAISE LACERA T.I.D.E.

- Progress reviews, reporting, and refinement
- Ownership attributes and demographics

Investments' Technological Evolution

LACERA's asset allocation, strategies, and breadth have grown commensurately with AUM, while the adoption of technology has improved efficiency and broadened capabilities over time



- | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • \$11.8 billion liability • Classical Framework <ul style="list-style-type: none"> ◆ 6 categories | <ul style="list-style-type: none"> • \$18.5 billion liability • Functional Framework <ul style="list-style-type: none"> ◆ 15 subcategories • Portfolio Analytics • Enhanced implementation | <ul style="list-style-type: none"> • Future liability TBD • Investment implementation • Risk budgeting • Stewardship |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|

Investments' Technological Adoption



10 YEARS AGO

- Bloomberg
- FactSet



TODAY

(in addition to above)

- Argus
- Burgiss
- MSCI BarraOne
- Solovis
- Sustainalytics
- TruCost



FUTURE

- Aspirational technology considerations
- Fill technology gaps as complexity grows
- Simplify unintended fund complexity

Investments' Technological Integration

The adoption of technology has helped LACERA create a real-time feedback loop that helps inform structure reviews and better implement the Plan's strategic asset allocation



DILIGENCE

- Remote capabilities
- Third-party research
- ESG/DEI/IDD/ODD*
- Style/factor analysis



INVEST

- Alternative and illiquid structures
- Fee reducing initiatives
- Greater control and transparency
- Increase custodied assets



MONITOR

- Liquidity
- Benefit payments
- Cash overlay
- Rebalancing
- Compliance



ANALYZE

- Structure reviews
- Risk management
- ESG portfolio monitoring
- Climate risk
- Fee comparisons



* Environmental, Social, and Governance; Diversity, Equity and Inclusion; Investment Due Diligence; Operational Due Diligence

Speaker Biography



Steve Bezner

Altus Group

Chief Software Development Officer

An expert leading technology company focused on Commercial Real Estate. In this capacity, Steve oversees the architecture, design, engineering, and operation groups to support the company's internal and client facing technology. With over 25 years' experience in technology and Commercial Real Estate, Steve began his career as one of the original developers of ARGUS Software in the mid 1990's.

During his tenure Steve has held many senior level positions, overseeing functional areas from concept to ongoing operations within Altus. At the local level, Steve has also been involved in politics, recently retiring as an elected official in a small city just outside of Houston.



Speaker Biography



ALBOURNE

John Claisse

Albourne Group

Chief Investment Officer

Dr. John Claisse joined Albourne in July 1996, relocated from London to San Francisco in July 2003 and became Albourne Group CEO in August 2015. John is an equity partner and member of Albourne's Executive Committee and also chairs the firm's Corporate Planning Council, which comprises Albourne's function and region heads.

John helped develop the firm's proprietary risk analytics and was formerly the Senior Analyst for quantitative equity strategies and multi-strategy hedge funds. John remains a Portfolio Analyst working with several public and corporate plans, large endowments and foundations. John also serves on the Advisory Board of the Sussex University School of Business, on the Board of Trustees of Standards Board of Alternative Investments (SBAI), and on the Governing Board of The Robert Toigo Foundation. John holds a first-class Mathematics Degree and a PhD from Sussex University.

Albourne is an independent advisory firm focused on hedge funds, private equity, private credit, real assets, real estate and dynamic beta. Founded in 1994, Albourne has over 300 clients with over \$650bn invested directly in alternative investments.

Speaker Biography



Mike Curry

State Street Corporation

Managing Director and Deputy Chief Information Security Officer

Mike Curry is Managing Director and Deputy Chief Information Security Officer at State Street. As a member of the Global Cybersecurity (GCS) leadership team, he works with the CISO and senior management across the enterprise to develop and drive the overall cybersecurity strategy.

Additionally, Mike manages a team of talented security professionals responsible for client engagement within the cyber security risk management program. In this role, he is responsible for all client interactions including the oversight of RFP and due diligence responses, supporting client due diligence visits, addressing ad-hoc inquiries and speaking with client boards.

During his 20+ years in the cybersecurity field, Mike's areas of responsibility have included program governance, cyber threat and vulnerability management, security event monitoring analysis and incident response, education and awareness and secure application development.

Mike spends much of his time with State Street clients and boards discussing State Street's commitment to protecting client data. He has spoken as a subject matter expert on information security at several industry conferences.

Before joining State Street in 2000, Mike was the Director of Mainframe Services at Fleet Bank of Boston. Mike holds a BS in Business Administration from Eastern Nazarene College and is a Certified Information Security Manager (CISM).

Speaker Biography



Pascale Diaine

Storm Ventures

Partner

Pascale Diaine is a Partner at Storm Ventures. She focuses on sales and marketing automation, artificial intelligence, retail technology, augmented reality, Internet of Things computer vision, and robotics applied to the enterprise space.

Before joining Storm Ventures, Pascale founded Orange Fab, the corporate accelerator of the European Telco Orange and managed cohorts including Talkdesk (today worth \$10B), Wonolo, Rallyteam (acquired by Workday), Verdigris, Pixlee, and many more.

Diaine also started an alliance of corporations piggybacking on Orange Fab's deal-flow and helping cohorts land their first Fortune 500 customers.

She holds a Master of Science in Computer Engineering from the University of Technology at Compiègne (UTC).

Speaker Biography



BlackRock

Stephen Scharf

BlackRock

Global Chief Information Security Officer (CISO), Managing Director

Stephen Scharf is accountable for the overall strategy, leadership and execution of BlackRock's Cyber Security & Information Security programs.

Prior to his position with BlackRock, Mr. Scharf was employed for seven years as the Global Chief Security Officer for the Depository Trust and Clearing Corporation (DTCC), seven years as the Global Chief Information Security Officer for Experian, and four years as the Chief Security Officer for Bloomberg, LP. Prior to his security leadership positions, Mr. Scharf was a Managing Security Architect with the security consulting firm @stake. At @stake, Mr. Scharf was responsible for executing penetration tests, vulnerability assessments, and security architecture reviews for global financial services clients. Before @stake, Mr. Scharf held multiple roles in systems administration and network management.

As part of his industry activities, Mr. Scharf is currently a member of the Board of the Cloud Security Alliance (CSA). Mr. Scharf is also a past member of the Board of Directors for the American Society of Industrial Security (ASIS), the Information Systems Security Association (ISSA), Sheltered Harbor (SH), and the Analysis and Resilience Center for Systemic Risk (ARC).

Mr. Scharf has 30 years of experience in Information Technology with a 25-year concentration in information security. He is a regular speaker at security events and has authored multiple articles on security topics, including forensics, security administration, third party risk, and business continuity planning. In 2012 Mr. Scharf was honored as the CSO of the Year by SC Magazine.

Mr. Scharf received a Bachelor of Arts degree from Ithaca College with a major in History and a minor in English.

Speaker Biography



David Snyderman

Magnetar Capital

Global Head of Alternative Credit and Fixed Income

David Snyderman is the Global Head of Magnetar Capital's Alternative Credit and Fixed Income business which includes overseeing the sourcing of differentiated investment opportunities across multiple asset classes, such as corporate credit, mortgages and real estate, consumer and specialty finance, and energy and transportation related assets. He also serves as Chairman of the Investment Committee and is a member of Magnetar's Management Committee. He has nearly 25 years of experience in fixed income markets and joined Magnetar in 2005 shortly after its launch.



Previously, David was the head of global credit and a senior managing director at Citadel Investment Group. During his nearly seven years with Citadel, he worked on the convertible bond desk, helped establish the credit trading desk and ultimately presided over the merger of these two groups. In addition, he served in a senior management role as a member of the Management, Portfolio Management and Investment/Risk committees. Prior to joining Citadel, David focused on convertible securities, merger arbitrage and special situations portfolios at Koch Industries, Inc. During his five years with Koch, he worked in the firm's Houston, Wichita and Switzerland offices. He started his career at PricewaterhouseCoopers.

David is a founding board member of the Magnetar Capital Foundation, which has partnered with UChicago STEM Education to create the Magnetar UChicago Financial Education Initiative – an innovative high school-based financial education program. To date, the initiative has taught more than 1,200 classes, educating nearly 27,500 students.

David earned a Bachelor of Arts in economics from Washington University and completed the certified public accountant exam.