LACERA

January 2, 2024

TO: Trustees – Board of Investments

FROM: Real Assets Committee
James Rice, CFA
Principal Investment Officer

FOR: January 10, 2024 Board of Investments Meeting

SUBJECT: **REAL ASSETS STRUCTURE REVIEW**

RECOMMENDATION

Approve the Real Assets Structure Review **(Attachment A)** including initiatives, guidelines, and recommendations throughout the document as well as those summarized on slides 34-38.

BACKGROUND

In December 2023, the Real Assets Committee ("Committee") unanimously approved a recommendation (**Attachment A**) that the Board of Investments approve the Real Assets Structure Review. This structure review **(Attachment A)** recommends the continuation of the program to invest in private Infrastructure and Natural Resources assets through funds, co-investment vehicles, and secondary purchases. Over the next three to five years these private assets are expected to largely replace the existing public market equities and commodities portfolios in the Infrastructure and Natural Resources categories.

OPTIONS AVAILABLE TO THE BOARD

The Board may wish to approve, modify, or reject the recommendation.

DELIBERATIONS AND OPINIONS EXPRESSED BY THE COMMITTEE

The Committee suggested further discussing the market themes for Real Assets and the related investment opportunities for LACERA. Slides 7 & 8 added to **Attachment A** discuss the market and investment opportunities.

RISKS OF ACTION AND INACTION

LACERA's real assets category, created in 2018, has been on a transition from public markets investments to private markets investments. This structure review recommends the continuation of the program to invest in private Real Assets through funds, co-investment vehicles, and secondary purchase. A private markets structure will better meet LACERA's risk/return and diversification objectives.

The risk of inaction is that the real assets portfolio may continue to have uncompensated risks and may not achieve its objectives.

CONCLUSION

The Committee unanimously approved this recommendation that LACERA adopt the proposed Structure Review.

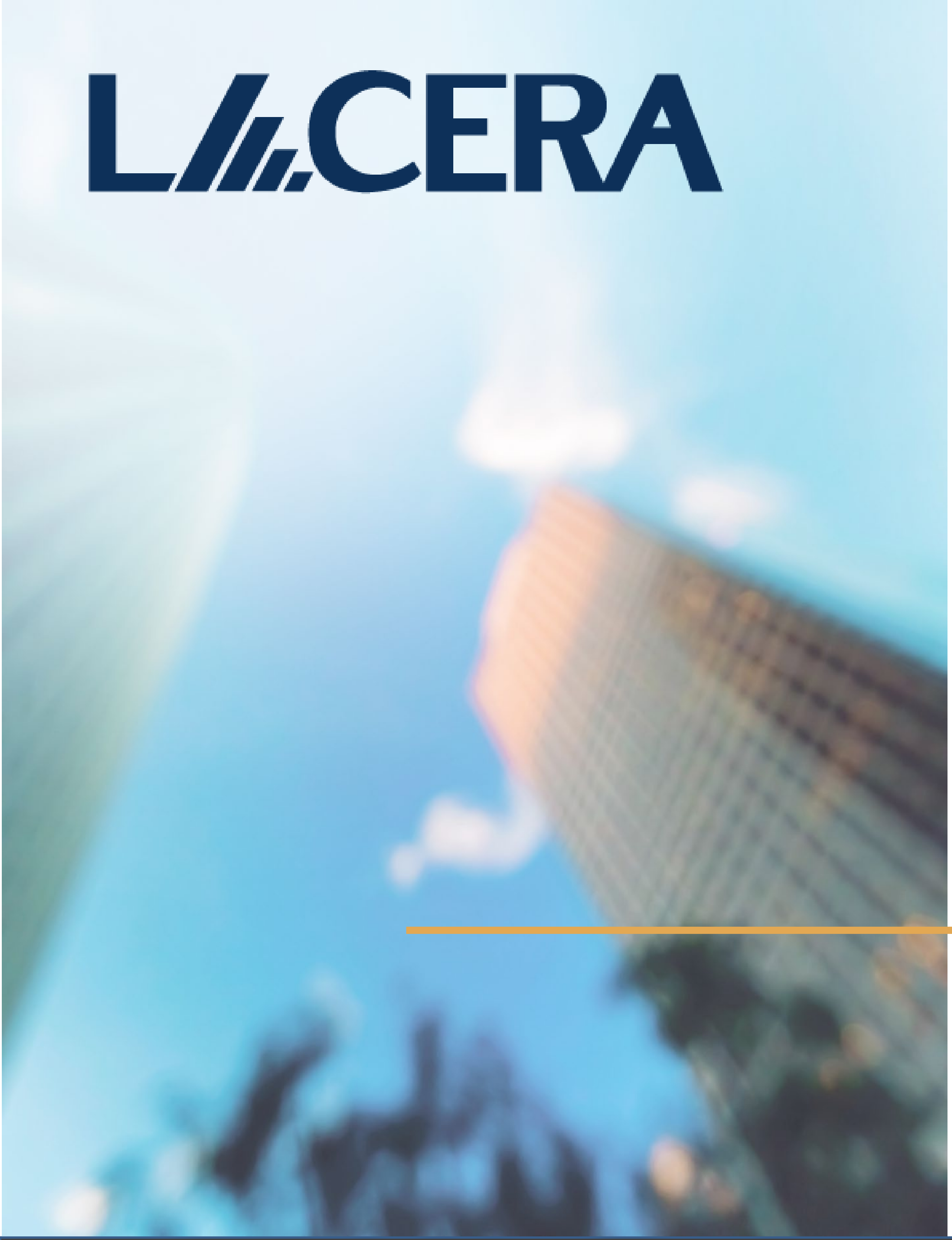
LACERA's consultants, Albourne and Meketa, reviewed the structure review and are in support of the recommendation. Albourne's concurrence memo is included as **Attachment B** and Meketa's concurrence memo is included as **Attachment C.**

Attachments

Noted and Reviewed:

Jonathan Grabel
Chief Investment Officer

JR:mm



ATTACHMENT A

Real Assets

Structure Review

Board of Investments

January 10, 2024

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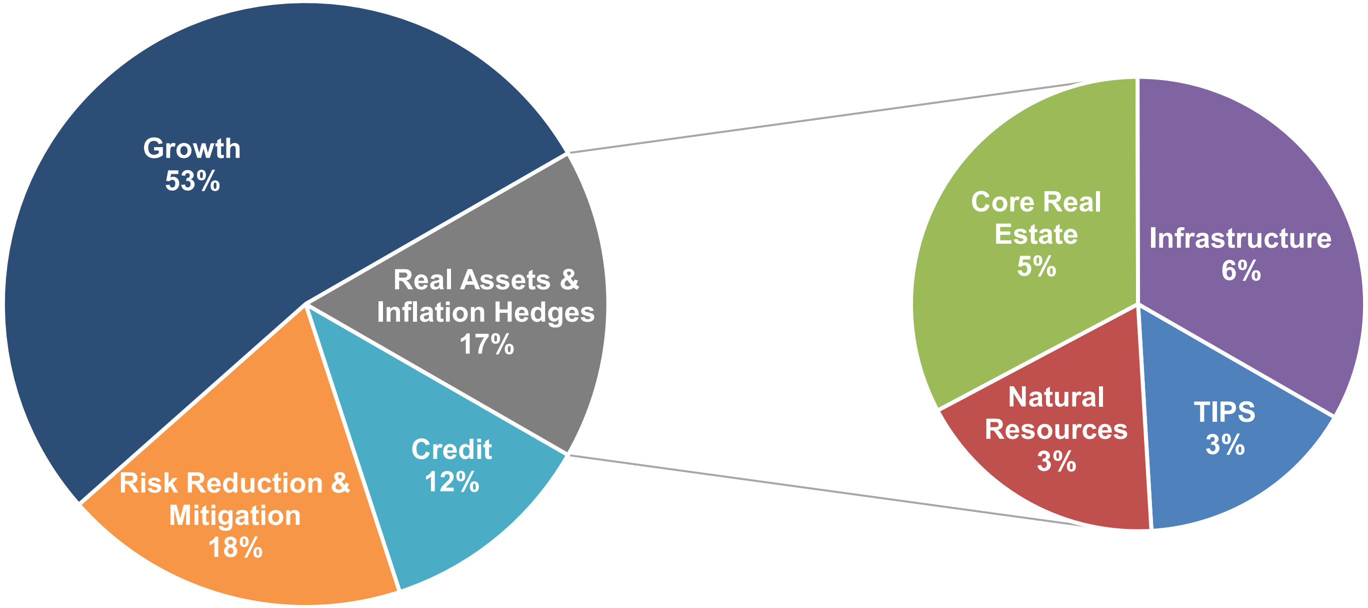
Real Assets: Portfolio Composition



Asset Class	Allocation	Policy Target	Over/ Under	Target Range +/-	Target Range %	Benchmark
Real Assets & Inflation Hedges	**16.5%**	**17%**	**(0.5)%**	**+/- 3%**	**14-20%**	**Custom Blend**
Core Real Estate	5.4%	6%	(0.6)%	+/- 3%	3-9%	NFI ODCE (three-month lag)
Infrastructure	5.5%	5%	0.5%	+1/- 3%	2-6%	Dow Jones Brookfield Global Infrastructure Composite
Natural Resources / Commodities	3.0%	3%	0.0%	+/- 2%	1-5%	33% Bloomberg Commodity / 66% S&P Global Natural Resources
TIPS	2.6%	3%	(0.4)%	+/- 3%	0-6%	Bloomberg Barclays U.S. TIPS

Note: Allocation weights are as of September 30, 2023; private assets based on latest asset valuation including any actual cash flows.

Real Assets: Portfolio Components

Core Real Estate

- Capital preservation and stable yields from rents
- Hard assets provide inflation protection
- Diversified sources of returns less correlated with growth assets
- Non-core also provides Growth returns

Natural Resources & Commodities

- Diversification, income generation, and inflation hedging
- Farmland and agriculture less correlated to broader markets, and income generators
- Energy Transition and mining are diversifiers with some inflation hedging

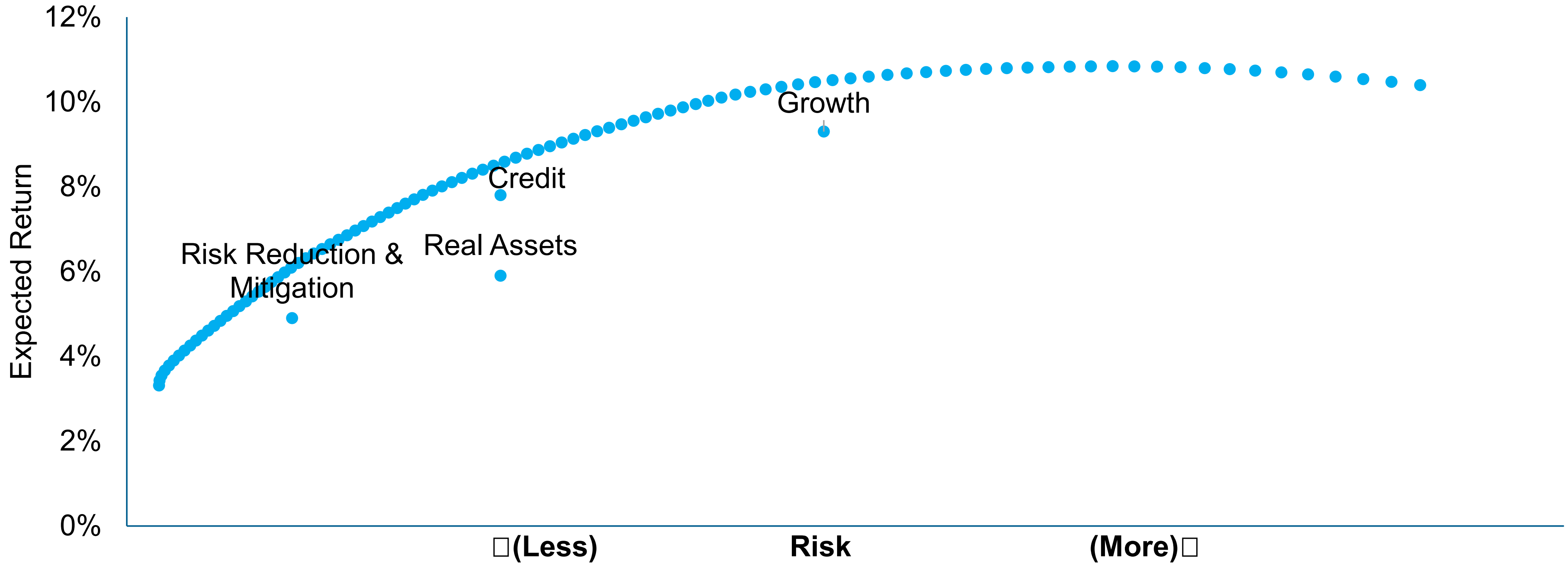
Infrastructure

- Core: generate yield with highly contracted revenues to limit downside across market environments
- Non-core: growth opportunities across energy/utilities, transportation, communications and social infrastructure

TIPS

- Inflation hedge through public markets
- Diversification benefits with inflation-linked and interest rate exposure
- Generates income

Real Assets: Portfolio Role



- Diversify exposure to growth assets to mitigate portfolio downside risk
- Provide consistent yield for the broader portfolio
- Hedge the risk of inflation with investments in physical or inflation-linked assets

Source: Meketa, Data from the asset allocation study.

Real Assets: Portfolio Timeline

Real Assets functional category at LACERA

2018 | 2019 | 2020 | 2021 | 2022 | 2023

2018 Strategic Asset Allocation
- Functional framework adopted
- New category for Real Assets and 3 new subcategories
  - Natural Resources
  - Infrastructure
  - TIPS
- Legacy asset categories put into Real Assets category
  - Real estate
  - Commodities
- Improve sector and regional diversification

2019 Structure Review
- Approval of private program for Infrastructure and Natural Resources

2020 Mid-Cycle Structure Review
- Real Assets continued implementation of public to private transition

2021 Strategic Asset Allocation
- Changes to Real Estate structure
- Increase Infrastructure allocation to 5% of total fund
- Decrease Natural Resources and Commodities allocation to 3% of total Fund

2022 Structure Review
- Established target allocation ranges for Real Assets by:
  - Risk Category
  - Sector
  - Geography
- Initiate RFP process for Real Assets emerging manager program
- Actively source and evaluate co-investment opportunities

2023 Structure Review
- Refinement of target allocation ranges
- Emerging Manager Program characteristics
- Public Market Guidelines added

⟵ Ongoing implementation of initiatives consistent with the strategic asset allocation, strategic initiatives and structure reviews ⟶

Real Assets: Market Themes

Energy Security

Due to the ongoing conflict between Ukraine and Russia, commodity prices have increased. Reliance on Russian oil, gas, coal, minerals, and fertilizer throughout the globe has suddenly come under increased scrutiny and stress. However, the current link between Russian commodities and the rest of the world remains high. Reevaluating Energy sources and supply chains will remain an increased focus for the years to come, as regions will focus more on gaining long-term Energy independence.

Food Security

Elevated global tensions continue to stress agricultural supply chains. Consequently, food security is once again top of mind. Russia and the Ukraine are major suppliers of agricultural commodities to Asia. The rising input costs such as fertilizers and energy are expected to put further inflationary pressures on key consumer staples. The impact of this has been a greater focus on food sources and food processing.

Inflation & Interest Rates

Real Assets held up through the recent period of rising inflation; however, going forward, inflation continues to moderate while Central Banks remain committed to higher rates for longer. An environment with moderate inflation and higher rates could put downward pressure on returns, which could be further magnified by higher debt costs and tightening lending standards.

Source: Albourne.

Real Assets: Investment Opportunities

Opportunity	Target Returns (Net IRR)	Portfolio Objectives				Market Risks			
		Inflation Protection	GDP Capture	Income Generation	Diversification	GDP	Inflation	Commodity	Leverage
Infrastructure Adjacent Strategies	15% - 20%	✗	✓	✗	✓	H	L	L	H
Energy Transition Strategies	10% - 20%	--	✓	✗	✓	M	M	L	L
Mining Royalties & Streams	12% - 17%	✓	--	✓	✓	M	L	H	L
Digital Infrastructure Specialists	10% - 17%	--	--	✗	✓	L	M	L	H
Mid Market Infrastructure	10% - 15%	✓	✓	✗	✓	M	L	L	M

Opportunity	Description
Infrastructure Adjacent Strategies	Also called 'Opportunistic Infrastructure', this is an emerging segment that could be defined as next generation infrastructure assets, companies providing infrastructure-like cash flows, or infrastructure services companies. These companies are likely to offer some but not all infrastructure characteristics that investors would typically seek and are not necessarily appropriate for traditional infrastructure funds. In exchange for higher growth potential, investments could be more exposed to development, technology, and commercial risks.
Mining Royalties & Streams	Mining royalties and streams are non-dilutive forms of financing where mining companies sell future production or revenue interests in return for an up-front cash payment, usually at a discounted value to expected future cash flows of the stream or royalty interest.
Digital Infrastructure Specialists	These sector specialists focus on the infrastructure assets supporting telecommunication networks, which can include towers, fiber, data centers, spectrum, etc. Accelerating mobile and fixed internet speeds combined with rising global demand for data storage, processing transmission, and connectivity underpin the requirement for upgrades to these infrastructure assets. The sector has proved to be broadly resilient and uncorrelated to broader economic cycles to date. Despite increased competition and upward pricing pressure within certain sub-sectors, global demand for digital infrastructure assets remains strong.
Mid Market Infrastructure	Infrastructure AUM is increasingly concentrated with fewer managers, with successful managers rapidly moving upmarket in recent years. There may be a significant opportunity for funds focusing on the middle market, as a result of a deeper pool of opportunities, more fragmented markets, fewer sponsor-held companies, and more liquid exit markets. With smaller companies, managers with active ownership approaches may be able to utilize a wider range of value creation techniques.
Energy Transition Strategies	These opportunities focus on investments across multiple subsectors that contribute to the global transition to a net-zero carbon emissions economy. Strategies in this category are expected to rely on existing and developing technologies that are poised for commercial viability/scalability.

Source: Albourne.

Real Assets: ESG Considerations

ESG in Real Assets

ESG evaluation to ensure a sustainable rate of return over the long-term life of private investments

Manager Assessment

Evaluated at entry and monitored on:

- Manager's investment process incorporate material ESG factors
- Manager resources for ESG monitoring
- Operating assets to high ESG standards
- Transparency of ESG related reporting

Monitoring & Future

- Evaluation tools include LACERA specific DDQ questionnaires, and ESG evaluation
- ESG results incorporated into manager scorecard
- ESG risk measures in new LACERA risk system
- Side letters related to ESG issues
- LPAC role to monitor ESG
- Responsible Contractor Policy
- Climate-related portfolio analytics to measure risk and opportunities related to energy transition and climate change

Real Assets (Ex Real Estate)

Real Assets Preferences

Role for Real Assets is Diversification, Income Generation, and Inflation Hedging

Objectives

- Investments sensitive to inflation
- Assets less dependent on GDP growth
- Return from yield and capital appreciation/multiple expansion
- Contracted revenues with reliable counterparties

Maintain market exposure

- For sub-asset categories, use public market Completion Portfolio and commodities in private transition implementation.

Diversify by Vintage year

- Steady private commitment deployment

Focus on Fees

- Seeking lower cost entries into private assets
- Open ended core structures
- Anchor investor terms
- Low or no cost co-invests
- Secondary purchase at discount to NAV

Energy Transition Aware

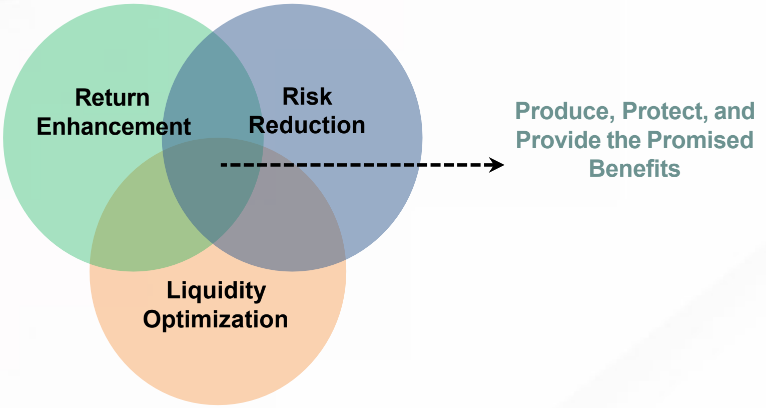
- Avoid stranded asset risk
- Seek attractive emerging investment opportunities

Intentional Portfolio Structure

- Incorporating a variety of investment types and vehicles
- Active management implementation in public markets portfolios in commodities, infrastructure, and natural resources
- Public markets exposure includes passive exposure to TIPS

Real Assets Strategic Considerations

Real Assets Structure is aligned with strategic initiatives focused on operations, investments, governance, terms, and diversity



Enhance Operational Effectiveness	Optimize Investment Model	Maximize Stewardship and Ownership Rights	Strengthen Influence on Fees and Cost of Capital	LACERA T.I.D.E.

Recommendation advances strategic initiatives

Enhance Operational Effectiveness	Optimize Investment Model	Maximize Stewardship and Ownership Rights	Strengthen Influence on Fees and Cost of Capital	LACERA T.I.D.E.
Internal committee process for approval of all investments	Combination of fund investments, co-investments, and secondaries	Participation in LPACs and co-investments, with greater voice in fund investments	Investment structures impact fees paid	Evaluation of fund DEI initiatives and Emerging Manager program aligned with TIDE

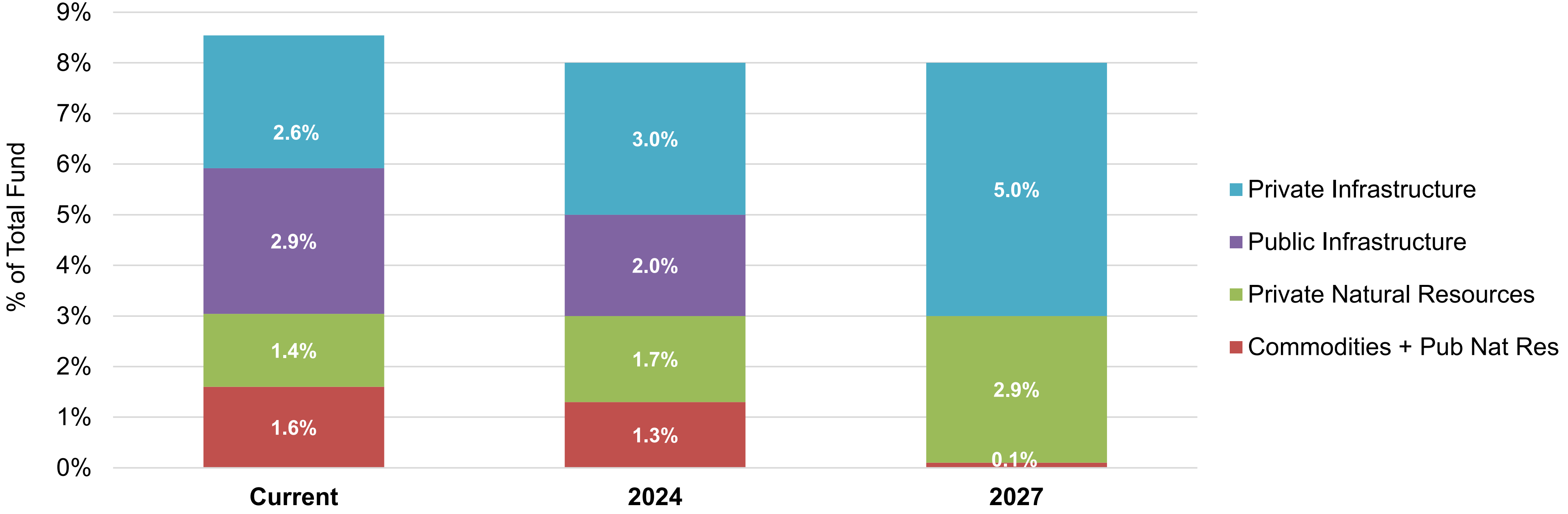
Real Assets ex Real Estate: Structural Plan Steps

Closed or Open Ended Funds	Generates future co-investment flow	$3.9B in Commitments in 22 funds
Co-Investments and Secondaries	Committee Process, existing GP relationships	~$240MM total co-invested $125MM in pre-structured co-invest vehicles
Club/Syndicated Deals	With like-minded peers, strategy control	Farmland investments of ~$600MM in club structure
Separately Managed Accounts	Use select managers for complementary investments	

- Real Assets program has evolved with increased structural complexity and risk-adjusted return expectations
  - 22 commingled funds with $3.9B in committed capital
  - Co-investments in select deals and innovative pre-structured co-invest vehicles
  - Executed four separate secondary investments in developed farmland

Increased complexity and risk-adjusted return expectations over time

Real Assets ex Real Estate: Transition to Private



- Public markets Completion Portfolio role initiated in 2019, in maintaining exposures in transition towards private assets
- Public markets exposure will slowly decline as private assets increase, and expected to sunset by 2027

Completion Portfolio and Commodities: Role and Construction

Structural Role

- In 2018, Asset category for Real Assets created, including legacy Commodities portfolio
- In 2019, Completion Portfolio created to provide for investment in Infrastructure and Natural Resources Allocation while Private Asset Commitments are being made.
- Provide for a liquid source of investment to be brought down while private investments are funded

Construction

<u>Completion Portfolio</u>

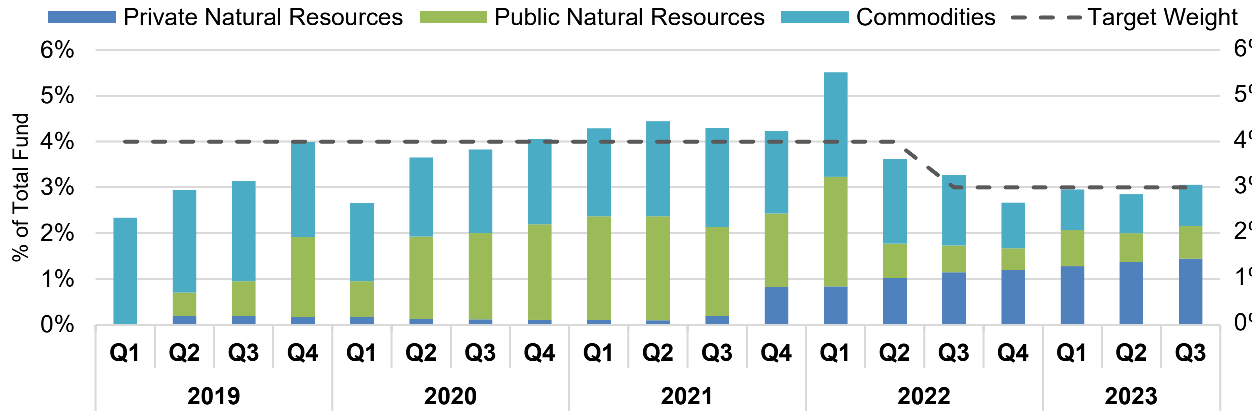
Public Infrastructure Equities in energy/utility, transportation/transmission, and telecom sectors

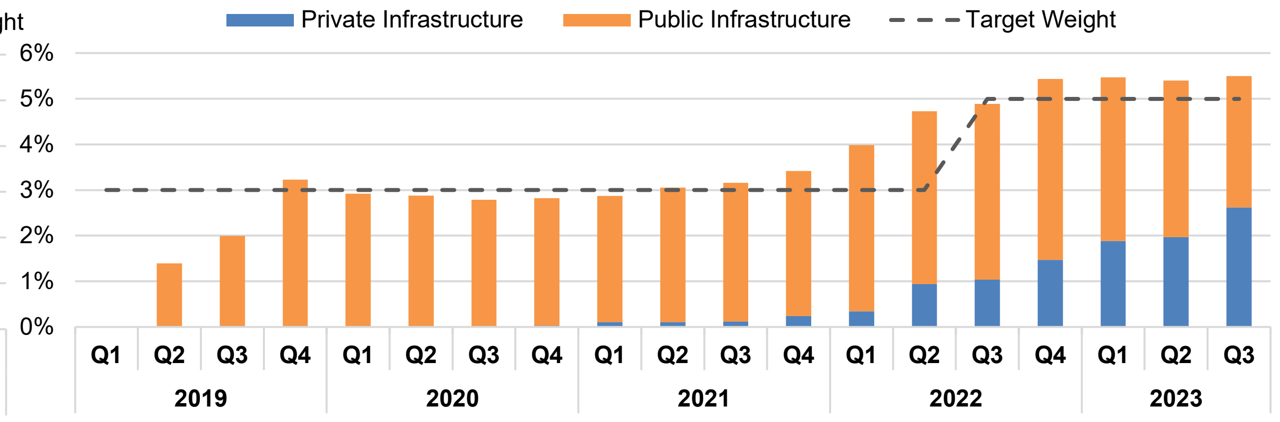
Public Natural Resource Equities in agricultural, metals/mining and energy/oil and gas sectors

<u>Commodities portfolio in Natural Resources Sub-Asset Category</u>
Public market futures portfolio in commodity sectors of energy, livestock, agricultural products, industrial and precious metals

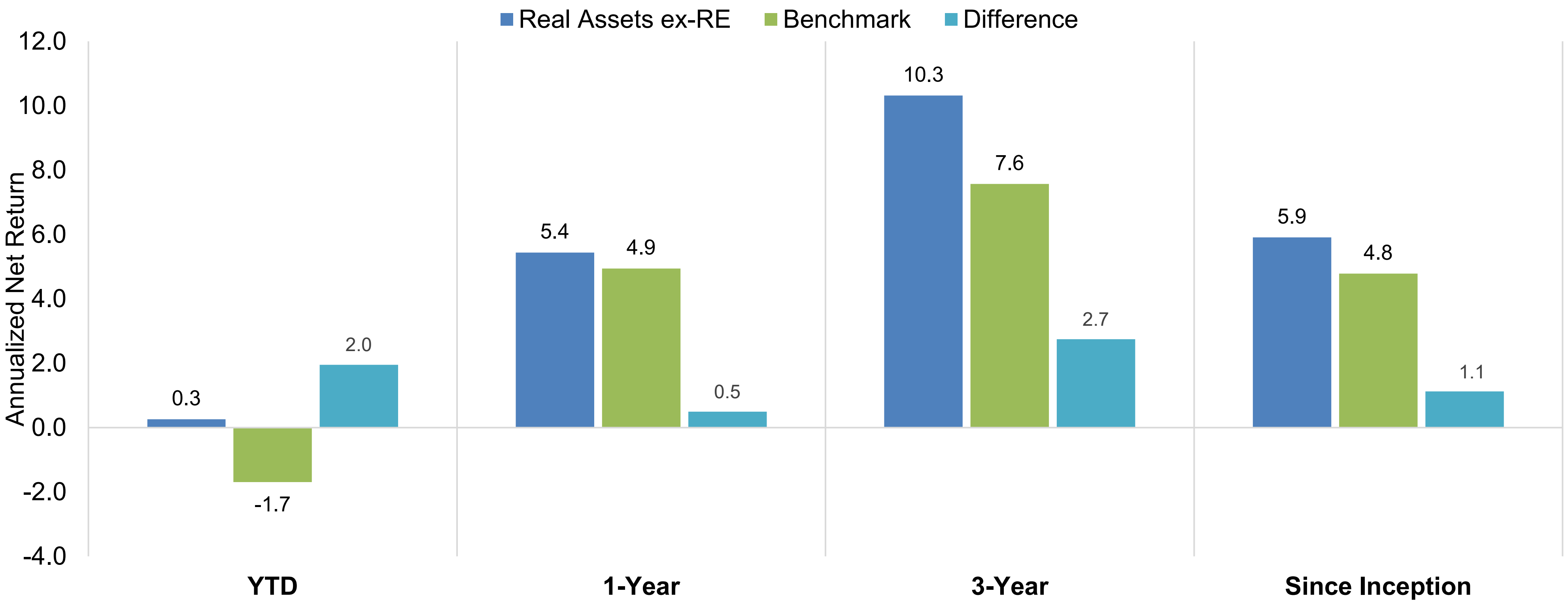
Implementation Notes

- Allocation to public markets is adjusted periodically as private NAV increases to maintain overall allocation to current strategic target weights of 5% to infrastructure and 3% to Natural Resources
- Completion Portfolio and commodities are expected to be reduced and eliminated over time as private markets assets reach full deployment in approximately 3-5 years
- Benchmarks to public market portfolios may be modified in future to better complement existing private exposures





Real Assets ex Real Estate: Performance



Note: Net Returns with YTD returns for Jan – Sep 2023, 1-yr, 3-yr, and since inception returns are annualized.

Note: Current data as of September 30, 2023, Inception dates: Real Assets ex-Real Estate, April 1, 2019, Public Infrastructure June 1, 2019, and Public Natural Resources, April 1, 2019, TIPS, May 1, 2019.

Real Assets ex Real Estate: Performance (Cont'd)

Performance vs. Benchmark (net-of-fees)

	% of Total Fund	3Q 2023	YTD	Annualized Net Return 1-Year	3-Year	Since Inception
Real Assets ex-RE	**11.1%**	**(1.5)**	**0.3**	**5.4**	**10.3**	**5.9**
Custom Benchmark		*(2.0)*	*(1.7)*	*4.9*	*7.6*	*4.8*
Excess Return		0.5	2.0	0.5	2.7	1.1
Public Infrastructure	**2.9%**	**(6.9)**	**(5.5)**	**2.4**	**5.3**	**3.7**
*Dow Jones Brookfield Global Infrastructure Composite Index**		*(6.9)*	*(4.5)*	*4.5*	*5.8*	*1.8*
Excess Return		0.0	(1.1)	(2.1)	(0.5)	1.9
Private Infrastructure	**2.6%**	**0.8**	**5.8**	**9.6**	**N/A**	**4.1**
*Dow Jones Brookfield Global Infrastructure Composite 3 mo. lag**		*(0.4)*	*12.3*	*0.8*	N/A	*7.1*
Excess Return		1.2	(6.5)	8.8	N/A	(3.0)
Public Natural Resources & Commodities	**1.6%**	**4.0**	**(3.2)**	**2.6**	**17.3**	**8.0**
*2/3 S&P Global Natl Res. 1/3 Bloomberg Commod. Idx***		*3.9*	*(1.1)*	*10.8*	*18.1*	*8.8*
Excess Return		0.0	(2.1)	(8.1)	(0.7)	(0.8)
Private Natural Resources	**1.4%**	**2.8**	**14.7**	**15.9**	**10.2**	**(3.7)**
*2/3 S&P Glbl Natl Res.1/3 Bberg Commod. Idx 3 mo. lag***		*(3.6)*	*8.4*	*7.0*	*20.1*	*13.1*
Excess Return		6.4	6.3	8.9	(9.9)	(16.8)
TIPS	**2.6%**	**(2.6)**	**(0.8)**	**1.3**	**(2.0)**	**1.6**
Bloomberg Barclays U.S. TIPS		(2.6)	(0.8)	1.2	(2.0)	1.7
Excess Return		0.0	0.0	0.1	(0.1)	(0.1)

Performance Commentary as of 3Q 2023

- Real Assets (ex real estate) outperformed the benchmark in all periods shown and since inception
- Private assets in early stages of fund cycle detract from overall performance
- Private Natural Resources includes a legacy private energy fund Other private fund commitments started in past two years
- TIPS have been lowest performing benchmark segment over three-year period

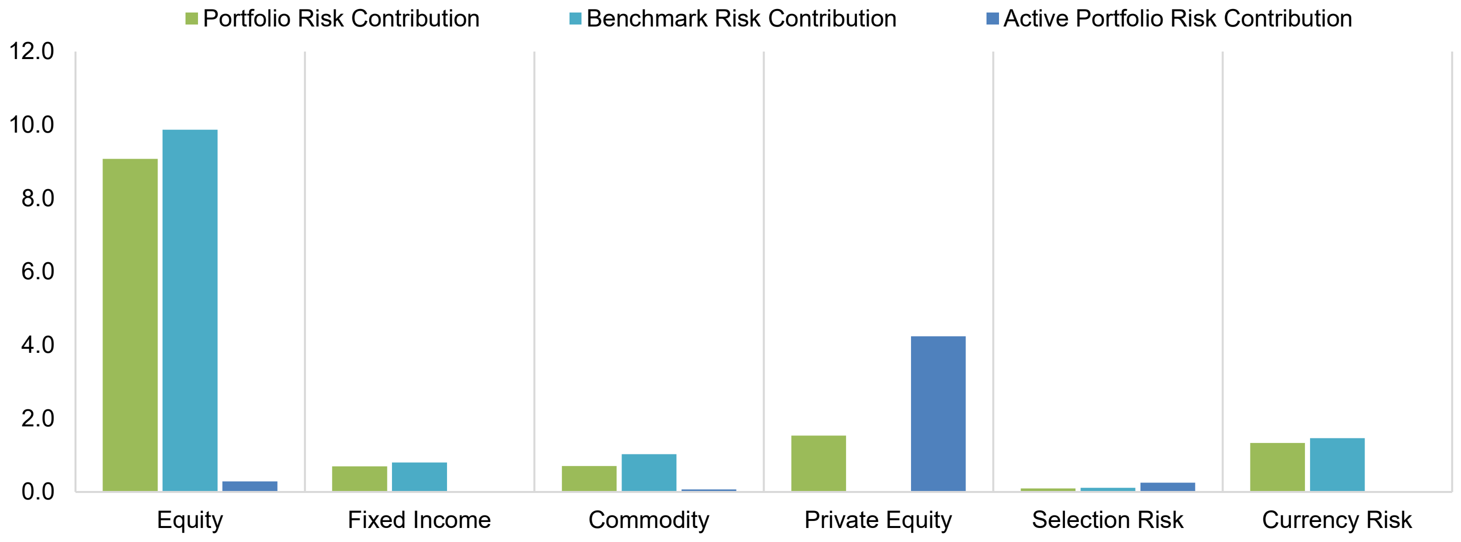
Note: Current data as of September 30, 2023, Inception dates: Real Assets ex-Real Estate, April 1, 2019; Public Infrastructure June 1, 2019, and Public Natural Resources April 1, 2019; TIPS, May 1, 2019.
** DJ Brookfield Infrastructure Idx prior to October 1, 2021.*
*** ½ S&P Small Mid Natural Resources Commodities ½ Bloomberg Commodities Index January 1, 2019 through September 30, 2021, Bloomberg Commodities Index Prior to January 1, 2019.*

Real Assets ex Real Estate: Forecast Active Risk

Risk Allocation Selection

	Weight%	Benchmark Weight%	Active Weight%	Active Risk Contribution	Allocation Risk Cont.	Selection Risk Cont.	Standalone Active Risk
Total Real Assets (Ex Real Estate)				**4.9%**	**-0.1%**	**4.9%**	**4.9%**
Natural Resources and Commodities	28.0%	27.3%	0.7%	1.1%	0.0%	1.1%	4.9%
Infrastructure	47.1%	45.5%	1.7%	3.8%	0.0%	3.8%	8.3%
TIPS	24.9%	27.3%	-2.4%	0.0%	-0.1%	0.0%	0.1%

Risk by Source



As of September 30, 2023. Source: MSCI Barra One.

Real Assets: Infrastructure

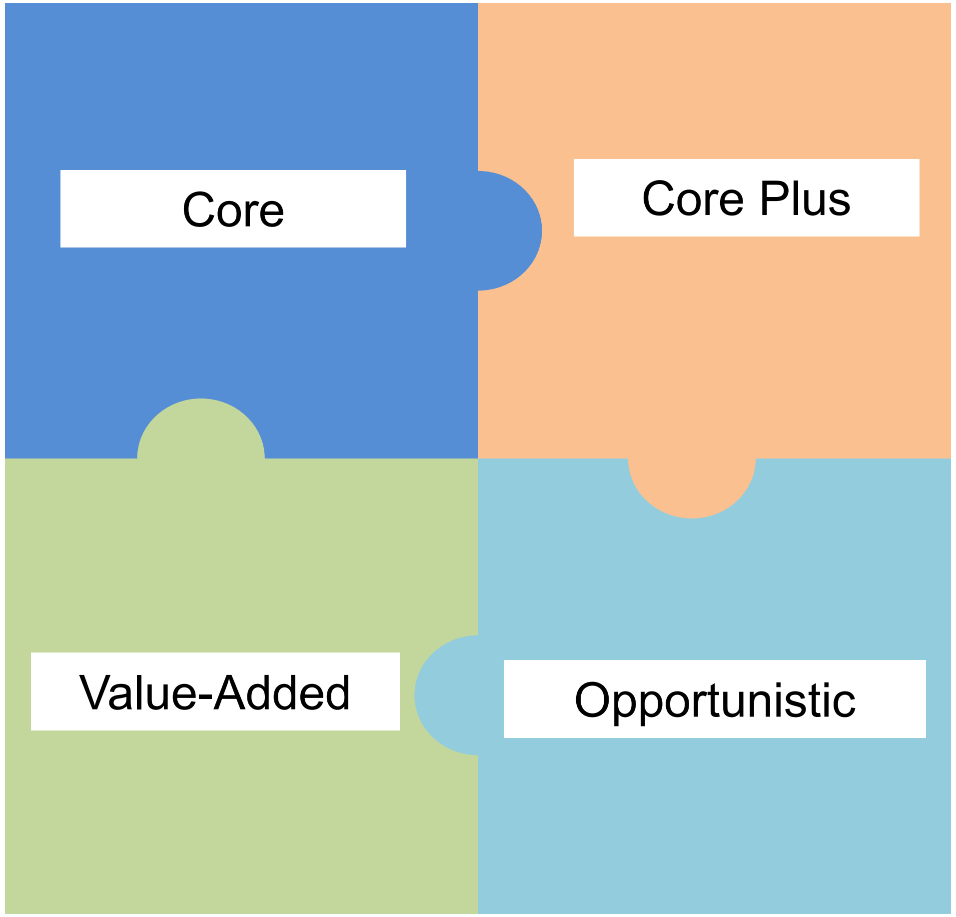
Infrastructure: Role and Objectives

Role

- Diversification: more defensive than public equities
- Provide consistent income

Objectives

- Contracted and regulated assets to provide consistent returns less correlated to GDP growth
- Some potential allocation for higher-returning core plus, value added, opportunistic spectrum
- Co-investments and other structures for lower fees and more intentional allocation



Infrastructure: Private Investments Structure

Sub-Category	Allocation Range	Target Deal Returns[1]	Net Fund Returns[2]	Asset Characteristics
Core/Core+	50 - 75%	6 - 12%	5 - 10%	Defensive, contracted assets, asset value based current yield
Non-Core	25 - 50%	11 - 20%	>10%	Balanced income/capital appreciation, regulatory protection

Industrial Sector	Examples
Energy	Power generation (renewables and conventional), energy services, district heating, transmission/distribution systems, storage facilities, midstream, water treatment, water distribution, water transportation, and waste treatment
Telecom	Fiber networks, communication towers, satellite systems, and data centers
Transportation	Toll roads, bridges, tunnels, airports, seaports, rail/transit, and parking facilities
Social	Availability based payment structures for hospitals, universities, and government buildings

- Infrastructure sub-categories differ based on risk premium and income generation
- With the rise in interest rates new capital deployment is expected to yield higher returns than historical capital once valuations have normalized thus average expectations for returns for the portfolio have come down
- Infrastructure investments will generally focus on equity within capital structure
- Current geographic focus: global funds targeting stable jurisdictions with stable currencies, i.e., mainly developed markets

Note: These proposed Core/Non-Core ranges are targets. Given the nature of LACERA's strategy of larger initial core capital deployments in private infrastructure markets, the range of core vs. non-core may be breached in the near-term but will be rebalanced through future capital deployment. Likewise, sector and geographical allocation ranges could potentially be breached but this will be rebalanced with future allocations as the portfolio is still actively deploying new capital.

[1] Source Albourne. Target Deal Returns are based on manager underwriting of deals in each respective strategy.

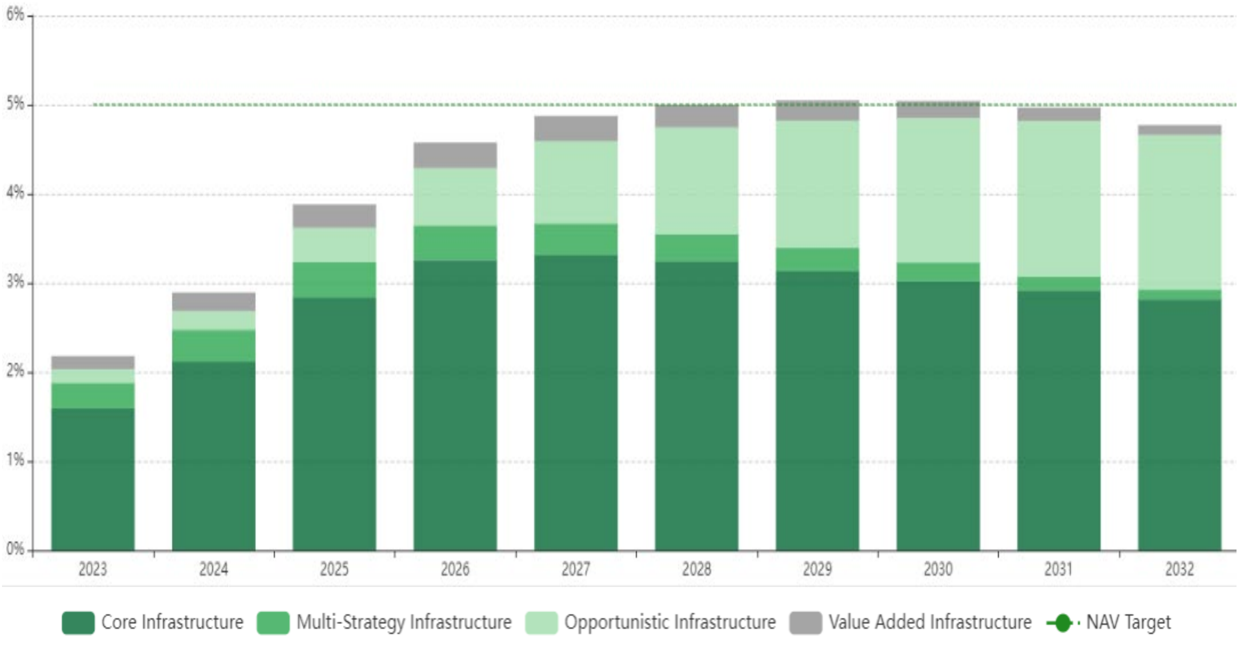
[2] Source Albourne. Expected Net Fund Returns are Albourne's estimated loss-adjusted IRRs, net of fees, for funds in each respective strategy.

Infrastructure: Forecast NAV at Assumed Pacing

	NAV + Undeployed Commitments	NAV + Undeployed Commitments	Current NAV	SAA Target
Allocation Target as % of Total Fund	$2.5Bn	3.4%	2.1%	5%

- Targeting 5% Private Infrastructure allocation by 2026

→ Goals: Hit target allocation in prudent time frame; reduce vintage year risk; avoid greatly overshooting target



Source: Albourne.

Core vs. Non-core Split

- Oversize core commitment through open-ended funds in early years (Currently 75% core vs 25% Non-Core):
  - Core deploys in two years (vs. five years for non-core)
  - Core has higher cash yield giving more flexibility for re-investment
  - Core enables to rebalance portfolio in later years through semi-annual to quarterly liquidity
- Non-core progressively becomes a larger portion of allocation mainly due to differences in return expectations (i.e., 7% for core vs. 10% for non-core)
- Core vs Non-core reaches 60/40 over the long term

Real Assets: Natural Resources/Commodities

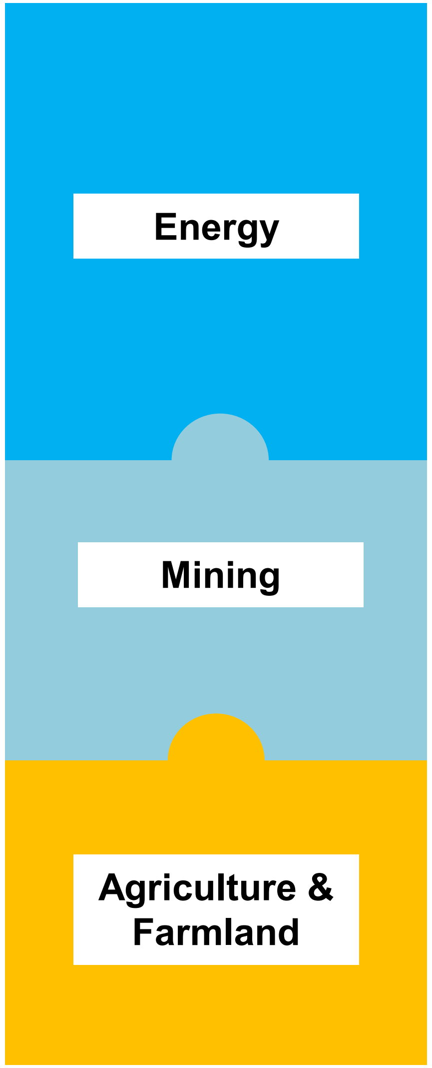
Natural Resources Role and Objectives

Role

- Diversify broad equity risk
- Serve as inflation hedge
- Generate income

Objectives

- Provide returns less correlated with broader markets
- Generate income and / or stable capital appreciation
- Higher correlation to inflation



Natural Resources: Opportunities

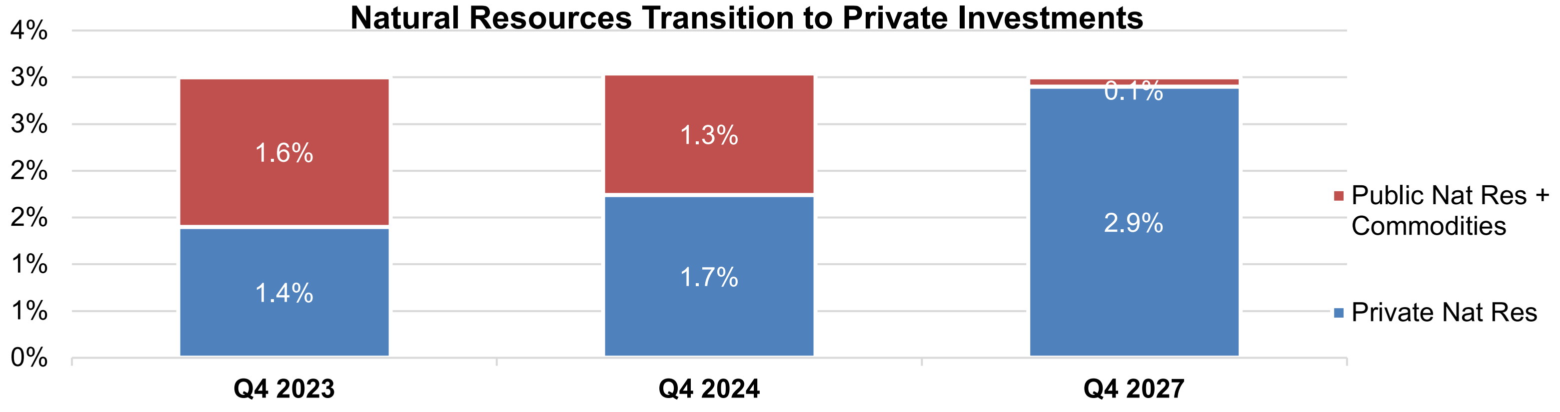
Segment/Sector Exposure	Energy	Mining	Agriculture & Farmland
Proposed Allocation Range *Current Approved Range*	0 – 70% *0 - 60%*	15 – 70% *0 - 60%*	15 – 70% *0 - 60%*
Private Markets Focus	Energy transition and low carbon investments	Private funds in Operating Projects or 2-3 years from development	Core Farmland, Agriculture (Farmland+), Agribusiness
Private Fund Returns[1]	11 – 16.5%	10 - 15%	6 - 12%
Public Markets	Exposure to natural resources public equity and commodity futures during transition to private markets		

changes

- Natural Resources at 3% of total LACERA Fund allocation
- Portfolio currently split across public 1.6% and private markets 1.4%
- Portfolio transitioning to primarily private by about 2027, exposure to public markets while private markets ramps up
- Natural Resource Private Strategies:
  - **Energy Transition**: Decarbonization / carbon reduction opportunities across industrial processes, fuels, innovative materials and processes, ranging from venture capital to late-stage growth and buyout.
  - **Mining**: Royalty / streaming, growth equity, and credit investments in junior mining companies
  - **Agriculture & Farmland**: Current farmland holdings (~$600MM) core component, future investments primarily in Agriculture venture and private equity funds

[1] *Source Albourne. Expected Net Fund Returns are estimated loss-adjusted IRRs (net of fees).*

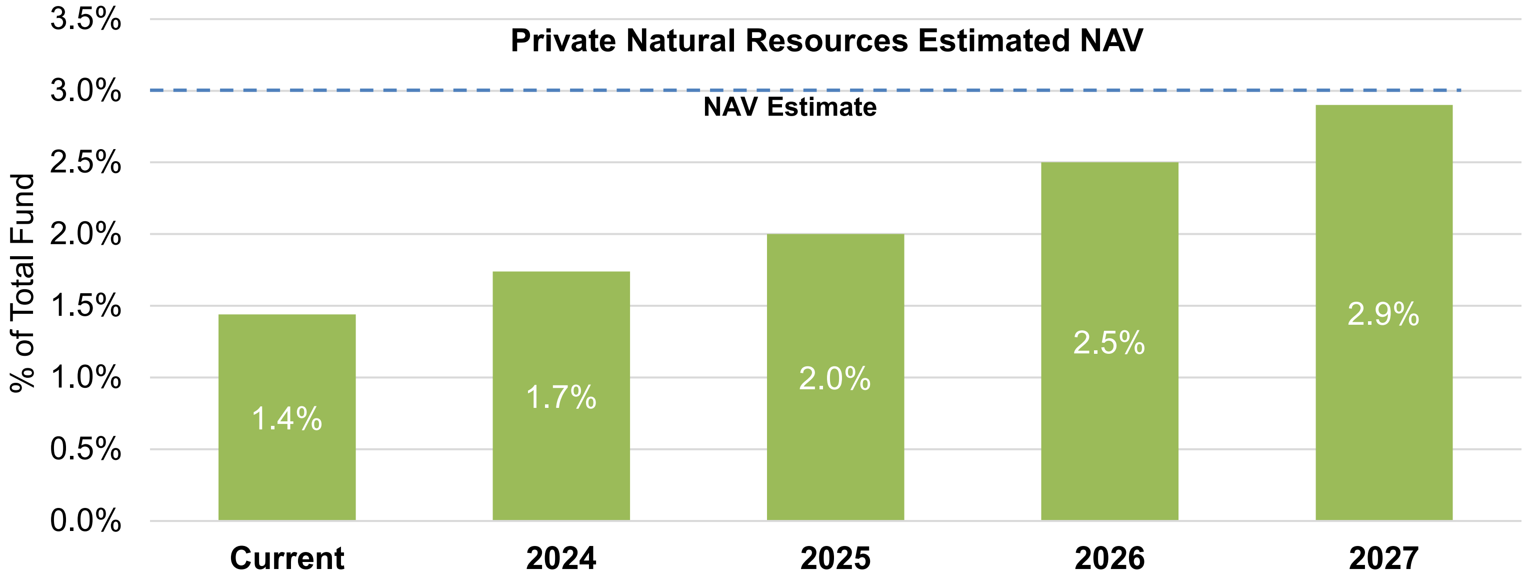
Natural Resources: Modeled Transition to Private



- Current natural resources portfolio about equally split between private and public markets
  - Public markets includes exposure to public natural resources (Energy, Mining, and Agriculture) and commodities
- Public portfolio expected to be replaced by primarily private commitments over next three to five years, to reach 3% allocation
- Broad public market Global Natural Resources equity and commodities benchmarks may be modified to more narrow sectors to complement development of private market portfolio over time
  - Public portfolios may be eliminated within three to five years

Natural Resources: Pacing

- Albourne's pacing model suggests LACERA should be targeting the pacing plan to reach its 3% strategic target to Private Natural Resources by 2027
  - Pacing plan with assumptions on overall LACERA Fund and return assumptions for asset categories could potentially result in overshooting 3% past 2027, which will be monitored and adjusted over next three years
- Net Asset Value for Natural Resources reflects market value as of September 2023



Source: Albourne.

Real Assets: TIPS

TIPS: Role and Objectives

Role

- Inflation hedge through public markets
- Income generation through coupon payments
- Diversification benefits with inflation-linked and interest rate exposure

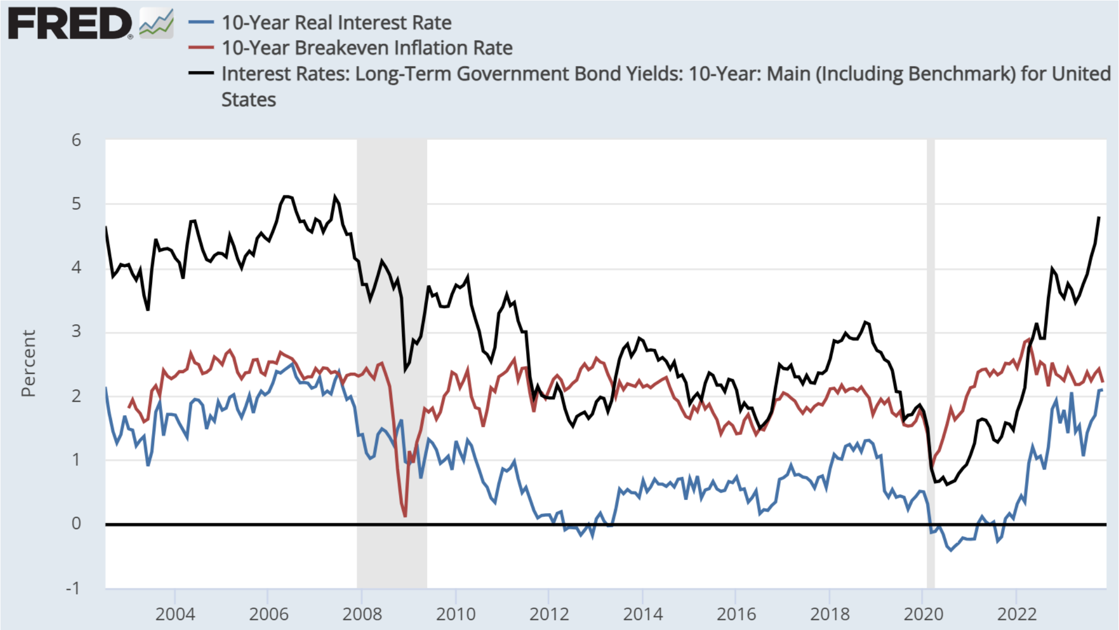
Objectives

- Protection against unanticipated changes in inflation

Implementation

- LACERA has a 3% target allocation to Treasury Inflation Protected Securities ("TIPS")
- Invested through a passive index investment

10Y Nominal, Real Yields and Breakeven Inflation[1]



[1] *Breakeven inflation measures the difference in the yield of a nominal US Treasury bond and the real yield of an equivalent-maturity inflation-protected bond (TIPS). It reflects an expectation at which the market is pricing inflation over the term of the securities.*

Real Assets: Next Steps

Emerging Manager Program

Program

- RFP process underway for selecting a manager to manage a Real Assets Separate Account program, at up to 10% of Real Assets allocation
- Program at up to $400 MM of total commitments, with fund investments ranging from $10MM - $100MM, and on average $50MM

Objectives

- Emerging managers identified as Funds I, II, or III or with less than $1 billion in fund size[1], tend to outperform more established fund managers
- Program can help LACERA establish a source of Funds for future commitments
- Manage consistent with LACERA's TIDE initiative and IPS

[1] *The Emerging Manager program will strive to identify funds I, II, or III or with less than $1 billion in size, and could invest in emerging manager funds on an exceptional basis for emerging funds that fall outside of these categories.*

Evaluation & Initiatives

What has Worked:

Inflation Hedging, Diversification, and Exposure

- Real Assets one of the few asset categories that held up well during downturn of 2022
- Inflation sensitive exposure to segments in infrastructure and natural resources paid off in recent inflationary environment
- High correlation (beta) to public markets within Real Assets during down market and TIPS duration worked against portfolio

Program Development:

Assessment

- Real Assets portfolio halfway invested in private markets ($3.9 billion in funds and $240MM in co-investments), on path to transition to a full private markets portfolio in next three to five years
- Invested in co-investments, secondaries, and club deal structures with like-minded investors

Future Initiatives:

In Progress

- Benchmark review to reflect evolving public to private markets Real Assets portfolio to be evaluated during strategic asset allocation
- Incorporate Real Assets managers into Responsible Contracting Policy and GRESB affiliation
- RFP for emerging manager underway

Real Assets: Investment Guidelines

Private Real Assets
Existing & Proposed Investment Guidelines

Per the IPS, the CIO has delegated authority to approve investments in accordance with Board-approved Asset Class Structure Review investment guidelines

Asset Class: Real Assets (Target Allocation 11% of Total Fund) – Proposed Guidelines, Private

Sub-Asset Class	Infrastructure (5% Target +1%/-3%)				Natural Resources (3% Target +/-2%)		
Sector	Energy	Telecom	Transport	Social	Energy Transition	Mining	Agriculture & Farmland
Target Allocation Range	Core/Core+: 30%-70%	Core/Core+: 10%-50%	Core/Core+: 5%-25%	Core/Core+: 0%-20%	0-70%	15-70%	15-70%
Allocation Range	Core / Core+: 50-75%; Non-Core: 25-50%				-		
Geography	US & Canada: 25%-75%; Europe: 25%-75%; Other Developed: 0%-25%; Emerging Markets: 0%-20%				Global with non-OECD up to 40%		
Investment Size/Range	Minimum commitment size $10 million						
Manager Diversification	Total committed amount to a single manager no greater than 30% of total exposure for Real Assets						
Fund Concentration	LACERA no more than 40% of total LP commitments for each fund						
Alternative Investment Vehicles	See following slide for real assets co-investment and secondaries program parameters						

Asset Class: Real Assets (Target Allocation 11% of Total Fund) – Existing Guidelines, Private

Sub-Asset Class	Infrastructure (5% Target +1%/-3%)				Natural Resources (3% Target +/-2%)		
Sector	Energy	Telecom	Transport	Social	Energy Transition	Mining	Agriculture & Farmland
Target Allocation Range	Core/Core+: 35%-65%	Core/Core+: 10%-40%	Core/Core+: 5%-25%	Core/Core+: 0%-20%	0-60%		
Allocation Range	Core / Core+: 50-75%; Non-Core: 25-50%				-		
Geography	US & Canada: 25%-75%; Europe: 25%-75%; Other Developed: 0%-25%; Emerging Markets: 0%-20%				Primarily OECD, with select non-OECD exposures		
Investment Size/Range	Minimum commitment size $10 million						
Manager Diversification	Maximum 30% of Total MV plus undrawn commitments						
Fund Concentration	LACERA no more than 40% of Total LP commitments for each fund						

Private Real Assets Co-Investments & Secondaries Existing & Proposed Investment Guidelines

Per the IPS, the CIO has delegated authority to approve investments in accordance with Board-approved Asset Class Structure Review investment guidelines

Proposed Guidelines	Co-Investments	Secondary Purchases
Sourcing	All current LACERA managers and consultant approved managers	
Investment Size	Up to 4% of existing Infrastructure or Natural Resources allocation	LACERA's ownership of purchased Fund not to exceed 40% of Fund
Geography	Align with private fund guidelines	
Deal Types	Private investments in Infrastructure & Natural Resources	
Annual Capital Deployment	Up to 30% of Real Assets target annual commitments in co-investments and secondaries	
Use of Third Party	Third party consultant confirms LACERA's due diligence was satisfactorily followed	
Deal Exposure	LACERA's ownership of co-investment asset or Fund not to exceed 40% of total under GP (combining co-invest & fund exposure)	

Existing Guidelines	Co-Investments	Secondaries
Sourcing	• Co-investments by Board-approved Real Asset GPs currently managing capital on behalf of LACERA	• A fund managed by a GP in which LACERA is an existing real assets investor
Investment Size	Up to $50 million	
Geography	USA, Canada, Europe, UK, Australia, and NZ	Global with Majority of Assets in developed markets
Deal Types	• Infrastructure • Natural Resources	• Infrastructure and Natural Resources • Fund must be at least 70% deployed, committed or reserved • Fund must have been managed by current team for at least 3 years
Annual Capital Deployment	$250 million maximum cumulatively across co-investments and secondaries	
Advisory Confirmation	Third party (Albourne) confirms LACERA's due diligence was satisfactorily followed	Third party advisor confirms valuation
Investment Limitations	N/A	
Deal Exposure	LACERA's ownership of co-investment asset or Fund not to exceed 1/3 of total under GP (combining co-invest & fund exposure)	

Private Real Assets Co-Investments & Secondaries Proposed Investment Guidelines (Cont'd)

Per the IPS, the CIO has delegated authority to approve investments in accordance with Board-approved Asset Class Structure Review investment guidelines

Proposed Guidelines	Secondary Sales
Eligibility	All current LACERA LP positions and Co-Investment positions
Parameters	• All sales must provide strategic, tactical, and/or economic benefits that assist LACERA in meeting its investment goals • The program will consider selling undesired holdings that include both mature secondaries (i.e. fully invested funds) and hybrid secondaries (i.e. partially invested funds with undrawn commitments) o Sell determinations will fall under the following criteria: – **Poor Performing**: Poor performing assets that have little to no potential to materially improve the future performance of the Real Assets program – **Tail Ends**: Mature assets that have provided a significant portion of their potential performance, whether attractive or poor, and the remainder of the assets have little to no potential to materially improve the future performance of the Real Assets program. These assets will typically have little value remaining in the capital account and/or few holdings remaining in the fund – **Non-strategic**: Assets that have an investment focus that is no longer a strategic part of LACERA's investment objectives and there is little to no potential to materially improve the future performance of the Real Assets program – **Strategic**: Assets that can help improve the overall purchase prices and returns associated with the secondary sale • The secondary sale program will opportunistically consider the sale of single limited partnership interests and portions of partnership interests as well as portfolios of multiple limited partnership interests. Portfolio sales will be considered when the aggregated benefit to the Real Assets program is more attractive than individual dispositions

Public Real Assets
Existing & Proposed Investment Guidelines Public

Per the IPS, the CIO has delegated authority to approve investments in accordance with Board-approved Asset Class Structure Review investment guidelines

Asset Class: Real Assets (Target Allocation 11% of Total Fund) – Existing & Proposed Guidelines				
Sub-Asset Class	**Infrastructure (5% Target +1%/-3%)**	**Commodities & Public Natural Resources (3% Target +/-2%)**		**TIPS (3% Target +/-3%)**
Category		**Public Natural Resources (2% Target)**	**Commodities (1% Target)**	
Benchmark	**Dow Jones Brookfield Global Infrastructure Composite Index**	**S&P Global Natural Resources Index**	**Bloomberg Commodity Index***	**Bloomberg Barclays U.S. TIPS**
Leverage	None	None	No Intended leverage. Commodity exposure should be managed between 95-105% of account value including collateral	None
Currency Hedging	Allowable	Allowable	No	N/A
Duration	N/A	N/A	N/A	+/-0.2 years vs benchmark duration
Tracking Error	3-8% against Benchmark	3-8% against Benchmark	3-5% against benchmark	N/A
Proxy Voting	Yes	Yes	N/A	N/A
Securities Lending	No	No	Yes (collateral fixed income)	Yes

Note: The collateral portion of the Commodities portfolio is benchmarked against ICE BofA 3-Month Treasury Bill Index.

Real Assets Emerging Manager Program Proposed Investment Guidelines

Per the IPS, the CIO has delegated authority to approve investments in accordance with Board-approved Asset Class Structure Review investment guidelines

Asset Class: Real Assets (Target Allocation 11% of Total Fund) – Proposed Guidelines		
Sub-Asset Class	**Infrastructure (5% Target +1%/-3%)**	**Natural Resources (3% Target +/-2%)**
Sectors	Infrastructure and Natural Resources Sectors	
Program Framework	Separate Account or Fund of one emerging manager program	
Allocation Target and Range	10% target with a 0-15% range	
Emerging Manager Definition	In general funds I, II, or III or with less than $1 billion in fund size, with select exceptions	
Investment Size	Fund investments ranging from $10MM - $100MM, average of $50MM	
Graduation Description	Graduation entails an investment from LACERA directly in a future fund outside of the emerging manager program	
Graduation Target Timeframe	3-7 years after an initial investment	
Graduation Approval	In accordance with Board-approved Asset Class Structure Review private fund investment guidelines	

Recommendation Summary

Continue Private Asset Pacing in New Funds and Co-invests

- For Infrastructure commit to Non-Core and Core fund allocations, targeting an overall **5%** allocation in **3-5** years with up to **40%** in Non-Core
- For Natural Resources commit to funds in Energy Transition, Mining, and Agriculture & Farmland, targeting an overall **3%** allocation in **3-5** years
- Commit to co-investment and secondaries up to **30%** of Real Assets target **annual** commitments

Revised Guidelines

- Adopt proposed revised guidelines on slides **34-38**

Appendix

Investment Pacing: Infrastructure

- Albourne's commitment model suggests LACERA should be targeting the pacing plan to reach its 5% strategic target to Private Infrastructure by 2027
- Assuming the goal is for LACERA to build a portfolio with a 60%/40% split between Core and Non-Core investments, respectively

US$, millions

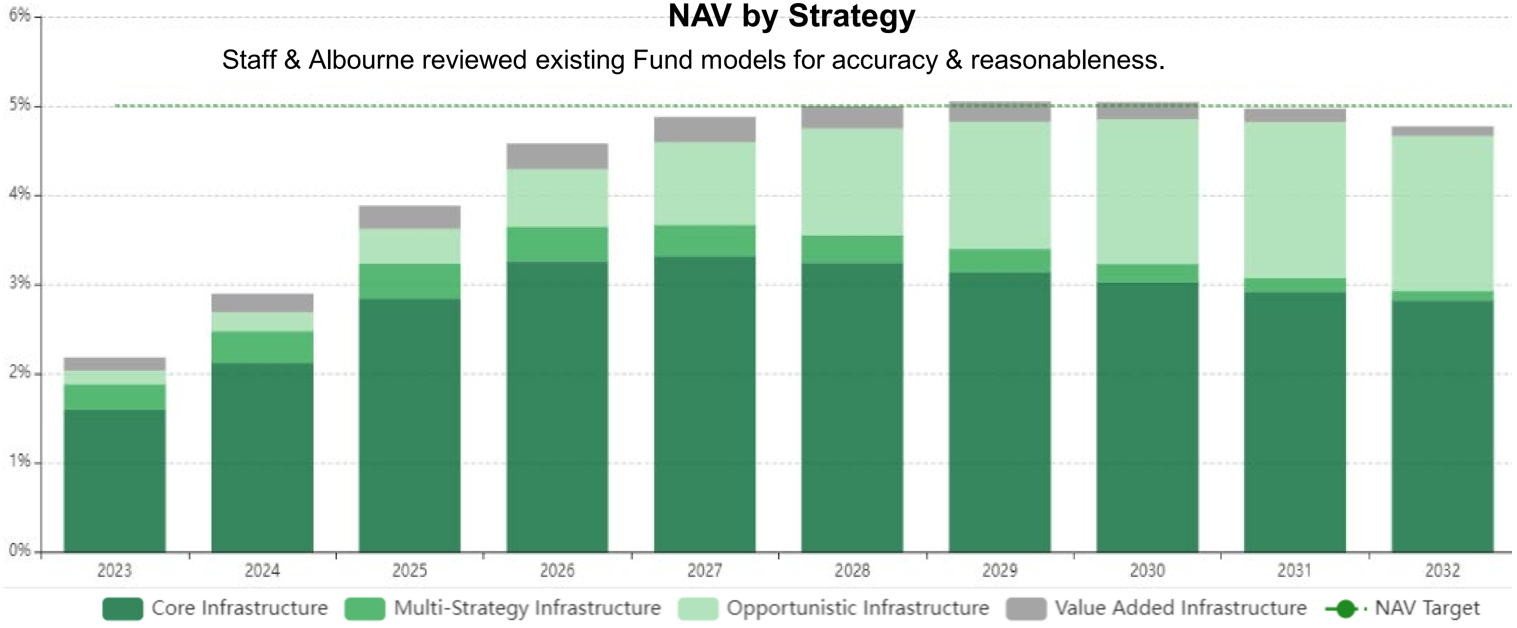
	2024	2025	2026	2027	2028
Core	$ 600	$ 300			
Non-Core	300	300	300	300	300
Total	$ 900	$ 600	$ 300	$ 300	$ 300

Strategy Model (assumptions for new commitments)

- Core: Open, 5% yield, target return = 7%
- Non-Core: Closed-end, target return = 10%

NAV by Strategy

Staff & Albourne reviewed existing Fund models for accuracy & reasonableness.



Non-core

Core

Source: Albourne.

For illustrative purposes only

Investment Pacing: Natural Resources

- Albourne's commitment model suggests LACERA should be targeting the pacing plan to reach its 3% strategic target to Private Natural Resources by 2027
- Assuming the goal is for LACERA to build a diversified portfolio across Agriculture, Mining and Energy Transition Fund strategies

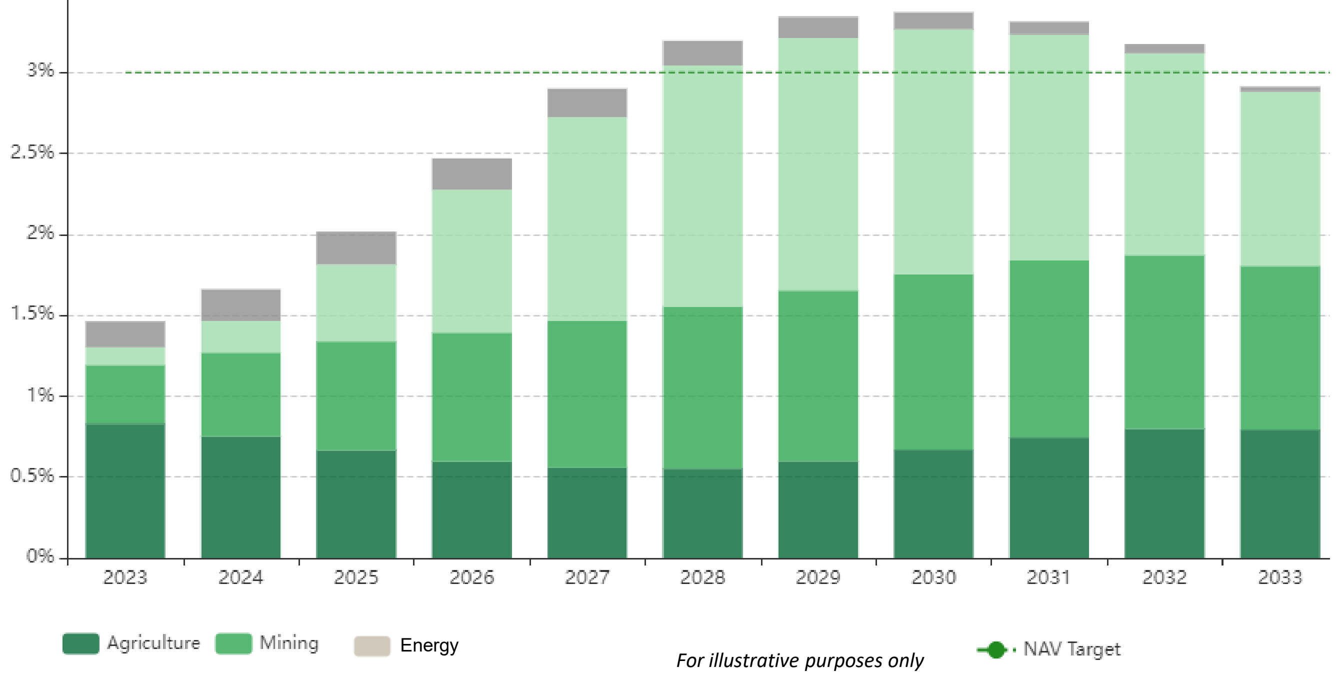
US$, millions

	2024	2025	2026	2027	2028
Ag & Mining	$ 150	$ 150	$ 150	$ 300	$ 300
Energy	500	500	300		
Total	$ 650	$ 650	$ 450	$ 300	$ 300

Strategy Model (assumptions for new commitments)

- Agriculture: target return = 6%
- Mining: target return = 15%
- Energy : target return = 16.5%

Staff & Albourne reviewed existing Fund models for accuracy & reasonableness.



For illustrative purposes only

Source: Albourne.

Real Assets and Inflation Hedges – Private: Infra., NR & Commodities Investment

Per the IPS, the CIO has delegated authority to approve investments in accordance with Board-approved Asset Class Structure Review investment guidelines

Functional Asset Class: Real Assets and Inflation Hedges (Target Allocation 17% +/- 3% of Total Fund); Asset Class: Infrastructure (Target Allocation 5% +1%/-3% of Total Fund), Natural Resources & Commodities (Target Allocation 3% +/- 2% of Total Fund), and TIPS (Target Allocation 3% +/- 3% of Total Fund)							
Benchmark	**Infrastructure: Dow Jones Brookfield Global Composite Infrastructure TR; Natural Resources & Commodities: 33% Bloomberg Commodity, 66% S&P Global**						
Sub-Asset Class (Allocation)	**Infrastructure (5% Target +1%/-3%)**				**Natural Resources (3% Target +/- 2%)**		
Industry Sector	**Energy**	**Telecom**	**Transport**	**Social**	**Energy Transition**	**Mining**	**Agriculture & Farmland**
Sector Target Allocation Range	Core/Core+: 30%-70%	Core/Core+: 10%-50%	Core/Core+: 5%-25%	Core/Core+: 0%-20%	0%-70%	15%-70%	15%-70%
Geography	US & Canada: 25%-75%; Europe: 25%-75%; Other Developed: 0%-25%; Emerging Markets: 0%-20%				Global with non-OECD up to 40%		
Investment Size/Range	Minimum commitment size $10 million						
Manager Diversification/Concentration	Manager Diversification: Total committed amount to a single manager no greater than 30% of total exposure to Real Assets						
Fund Concentration	LACERA no more than 40% of Total LP commitments for each fund						
Emerging Manager Program	Allocation: 10% target with a 0% - 15% range; See Emerging Manager Program page for details						
Co-Investments and Secondaries	See Co-Investments and Secondaries page for details						
Asset Class Specific – Other							
Core/Non-Core	Core/Core+: 50%-75%; Non-Core: 25%-50%				N/A		

Real Assets and Inflation Hedges – Infra., NR & Commodities Co-Investments and Secondaries

Per the IPS, the CIO has delegated authority to approve investments in accordance with Board-approved Asset Class Structure Review investment guidelines[1]

<table>
<tr><th colspan="4">Functional Asset Class: Real Assets and Inflation Hedges (Target Allocation 17% +/- 3% of Total Fund); Asset Class: Infrastructure (Target Allocation 5% +1%/-3% of Total Fund), Natural Resources & Commodities (Target Allocation 3% +/- 2% of Total Fund)</th></tr>
<tr><td>Benchmark</td><td colspan="3">Infrastructure: Dow Jones Brookfield Global Composite Infrastructure TR; Natural Resources: 33% Bloomberg Commodity, 66% S&P Global</td></tr>
<tr><td>Sub-Asset Class (Allocation)</td><td colspan="3">Infrastructure (5% Target +1%/-3%); Natural Resources & Commodities (3% Target +/- 2%)</td></tr>
<tr><td>Alternative Investment Vehicle</td><td>Co-Investments</td><td>Secondary Purchases</td><td>Secondary Sales</td></tr>
<tr><td>Geography</td><td colspan="2">Align with private fund guidelines</td><td rowspan="7">• All sales must provide strategic, tactical, and/or economic benefits that assist LACERA in meeting its investment goals
• The program will consider selling undesired holdings that include both mature secondaries (i.e. fully invested funds) and hybrid secondaries (i.e., partially invested funds with undrawn commitments)
o Sell determinations will fall under the following criteria:
– Poor Performing: Poor performing assets that have little to no potential to materially improve the future performance of the Real Assets program
– Tail Ends: Mature assets that have provided a significant portion of their potential performance, whether attractive or poor, and the remainder of the assets have little to no potential to materially improve the future performance of the Real Assets program. These assets will typically have little value remaining in the capital account and/or few holdings remaining in the fund
– Non-strategic: Assets that have an investment focus that is no longer a strategic part of LACERA's investment objectives and there is little to no potential to materially improve the future performance of the Real Assets program
– Strategic: Assets that can help improve the overall purchase prices and returns associated with the secondary sale
• The secondary sale program will opportunistically consider the sale of single limited partnership interests and portions of partnership interests as well as portfolios of multiple limited partnership interests. Portfolio sales will be considered when the aggregated benefit to the Real Assets program is more attractive than individual dispositions</td></tr>
<tr><td>Investment Size/Range</td><td>Up to 4% of existing Infrastructure or Natural Resources allocation</td><td>LACERA's ownership of purchased Fund not to exceed 40% of Fund</td></tr>
<tr><td>Sourcing</td><td colspan="2">All current LACERA managers and consultant-approved managers</td></tr>
<tr><td>Deal Types</td><td colspan="2">Private investments in Infrastructure and Natural Resources</td></tr>
<tr><td>Annual Capital Deployment</td><td colspan="2">Up to 30% of Real Assets target annual commitments in co-investments and secondaries</td></tr>
<tr><td>Use of Third Party</td><td colspan="2">Third party consultant confirms LACERA's due diligence was satisfactorily followed</td></tr>
<tr><td>Deal Exposure</td><td colspan="2">LACERA's ownership of co-investment asset or Fund not to exceed 40% of total under GP (combining co-invest and fund exposure)</td></tr>
</table>

[1] *Board-approved Asset Class Structure Review investment guidelines, in their entirety, apply to the asset class's Co-Investments and Secondaries. In the event of conflict or inconsistency, asset class Co-Investments and Secondaries-specific parameters supersede broader asset class investment guidelines.*

Real Assets and Inflation Hedges – Public: Infra., NR & Commodities, TIPS Investment

Per the IPS, the CIO has delegated authority to approve investments in accordance with Board-approved Asset Class Structure Review investment guidelines

Functional Asset Class: Real Assets and Inflation Hedges (Target Allocation 17% +/- 3% of Total Fund); Asset Class: Infrastructure (Target Allocation 5% +1%/-3% of Total Fund), Natural Resources & Commodities (Target Allocation 3% +/- 2% of Total Fund), and TIPS (Target Allocation 3% +/- 3% of Total Fund)

Benchmark	**Infrastructure: Dow Jones Brookfield Global Composite Infrastructure TR; Natural Resources & Commodities[1]: 33% Bloomberg Commodity, 66% S&P Global; TIPS: BBg Barc U.S. TIPS**			
Sub-Asset Class (Allocation)	**Infrastructure (5% Target +1%/-3%)**	**Natural Resources & Commodities (3% Target +/- 2%)**		**TIPS (3% Target +/- 3%)**
Sub-Asset Class Category		**Natural Resources**	**Commodities**	
Leverage	None		None intended. Commodity exposure should be managed between 95%-105% of account value including collateral	None
Volatility	Tracking Error: 3%-8% vs benchmark		Tracking Error: 3%-5% vs benchmark	None
Hedging/Currency	Currency Hedging: Allowable		No	N/A
Quality/Duration	N/A			Duration: +/- 0.2 years vs benchmark
Asset Class Specific – Other				
Proxy Voting	Yes		N/A	
Securities Lending	No		Yes (collateral fixed income)	Yes

[1] *The collateral portion of the Commodities portfolio is benchmarked against ICE BofA 3-Month Treasury Bill Index.*

Real Assets & Inflation Hedges – Infra., NR & Commodities Emerging Manager

Per the IPS, the CIO has delegated authority to approve investments in accordance with Board-approved Asset Class Structure Review investment guidelines[1]

Functional Asset Class: Real Assets and Inflation Hedges (Target Allocation 17% +/- 3% of Total Fund); Asset Class: Infrastructure (Target Allocation 5% +1%/-3% of Total Fund), Natural Resources & Commodities (Target Allocation 3% +/- 2% of Total Fund)		
Benchmark	**Infrastructure: Dow Jones Brookfield Global Composite Infrastructure TR; Natural Resources & Commodities: 33% Bloomberg Commodity, 66% S&P Global**	
Sub-Asset Class (Allocation)	**Infrastructure (5% Target +1%/-3%)**	**Natural Resources & Commodities (3% Target +/- 2%)**
Investment Size/Range	Fund investments ranging from $10MM - $100MM, average of $50MM	
Program Framework	Separate Account or Fund of one emerging manager program	
Program Allocation Target and Range	Allocation: 10% target with a 0% - 15% range	
Emerging Manager Definition	In general funds I, II, or III or with less than $1 billion in fund size, with select exceptions	
Graduation Description	Graduation entails an investment from LACERA directly in a future fund outside of the emerging manager program	
Graduation Target Timeframe	3 – 7 years after an initial investment	
Graduation Approval	In accordance with Board-approved Asset Class Structure Review private fund investment guidelines	

[1] *Board-approved Asset Class Structure Review investment guidelines, in their entirety, apply to the asset class's EMP. In the event of conflict or inconsistency, asset class EMP-specific parameters supersede broader asset class investment guidelines.*