



Investing With LPO

Institutional Investor Presentation



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Loan Programs Office By the Numbers



FOR INVESTORS

- ✓ Equity investors that co-invested with LPO would have **approached or exceeded** their benchmarks
- ✓ Accelerated creation of massive new domestic markets, including **\$600 Billion** in U.S. solar & wind sectors; even larger for EVs
- ✓ LPO has **over \$300 Billion** in loan authority

- ✓ **\$39 Billion** in loans & loans guarantees issued thus far
- ✓ LPO has **earned \$5.3 Billion** in interest & fees (versus \$1.0 B in losses)
- ✓ With **only 3.1%** in actual & estimated losses as % of disbursement



FOR TAXPAYERS

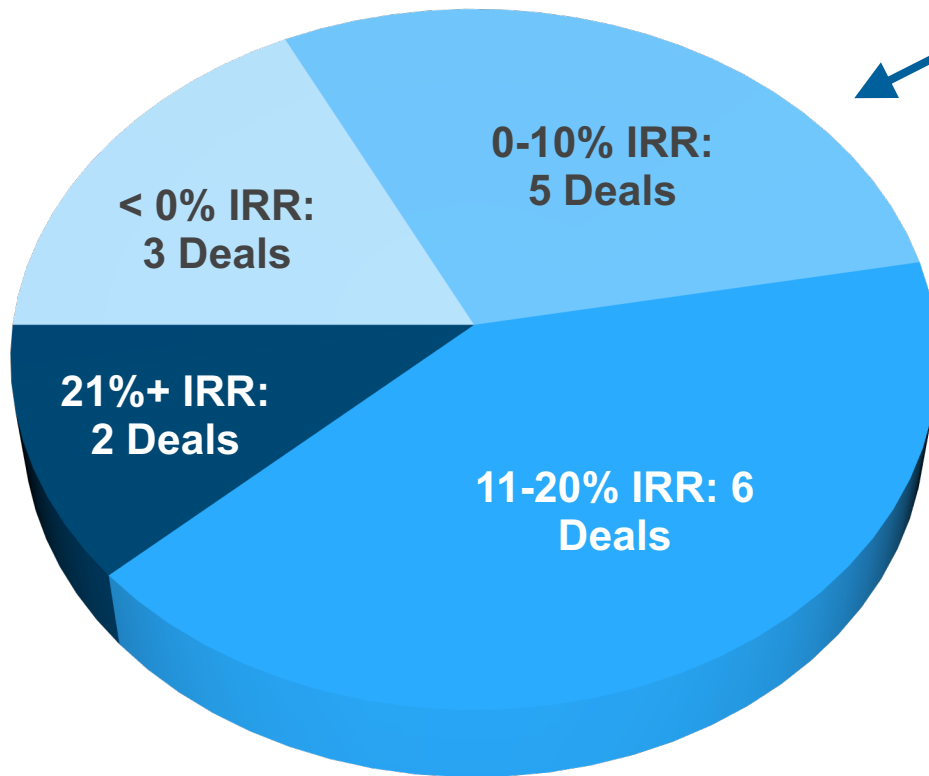


FOR AMERICA

- ✓ Projects financed have **created 46,000 permanent jobs**
- ✓ Projects have **displaced 70 MT** of greenhouse gas emissions
- ✓ Increase to **over 250 staff** to fulfill expanded mission
- ✓ Other catalytic benefits

Investing with LPO: Infrastructure Equity

LPO Infrastructure Projects
Gross IRRs

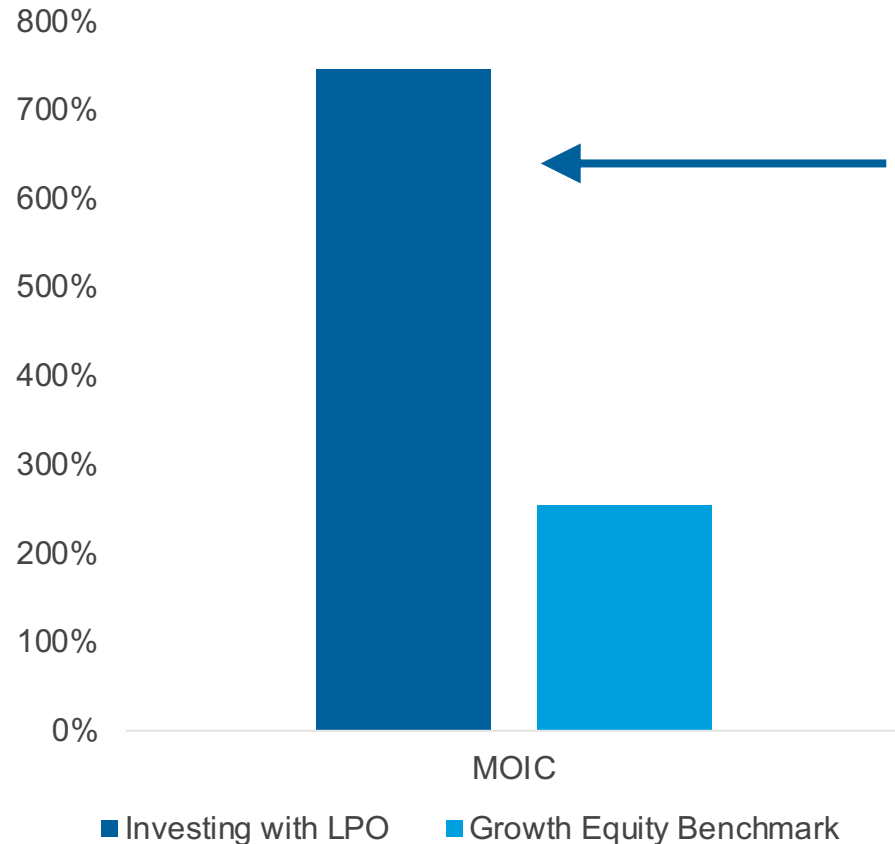


Had you invested in all LPO backed infra assets, you would have earned **10% IRR; Selecting top quartile assets would have earned **23% IRR****

Assumptions

- “Invested with LPO” is the gross returns earned by the historical equity investor that invested at the time of the LPO loan or loan guarantee.
 - a) Unlevered IRR calculated using most recent year EBITDA and applying terminal value assumptions typical of 2022.
 - b) Solar PV terminal value equity IRR assumption = 7%
 - c) Wind terminal value equity IRR assumption = 8%
 - d) Other technology investments’ terminal equity value IRR assumption = 10%
 - e) 75/25 leverage profile assumed.
 - f) FCF to equity derived from realized EBITDA assuming 3% cost of debt
 - g) For projects whose LPO loans were paid back prior to end of project life, terminal value assumptions based on final year EBITDA and estimated remaining useful project life.

Investing with LPO: Corporate Equity



Had you invested in all LPO backed companies, you would have significantly outperformed benchmark

Assumptions

- “Growth Equity Benchmark” drawn from Cambridge Associates US-only VC/PE fund data, median net TVPI 2003 – 2023
 - a) 20% GP carry applies above 1x return of capital + 20% MOIC of GP mgmt fees, to infer gross returns
- “Invested with LPO” is the gross MOIC earned by the historical equity investor that invested at the time of the LPO loan or loan guarantee
 - a) Equity portfolio derived from public markets where available
 - b) Portfolio weightings proportional to LPO debt commitments
 - c) Equity returns are from loan closing date to today
 - d) Equity returns are inclusive of dividends, splits, corporate actions where applicable



Investing With LPO

**LPO Provides Unique Expertise
That De-risks Energy Investments**

~\$30B of Debt in 2024 Will Require ~\$15B in Equity

Private Sector

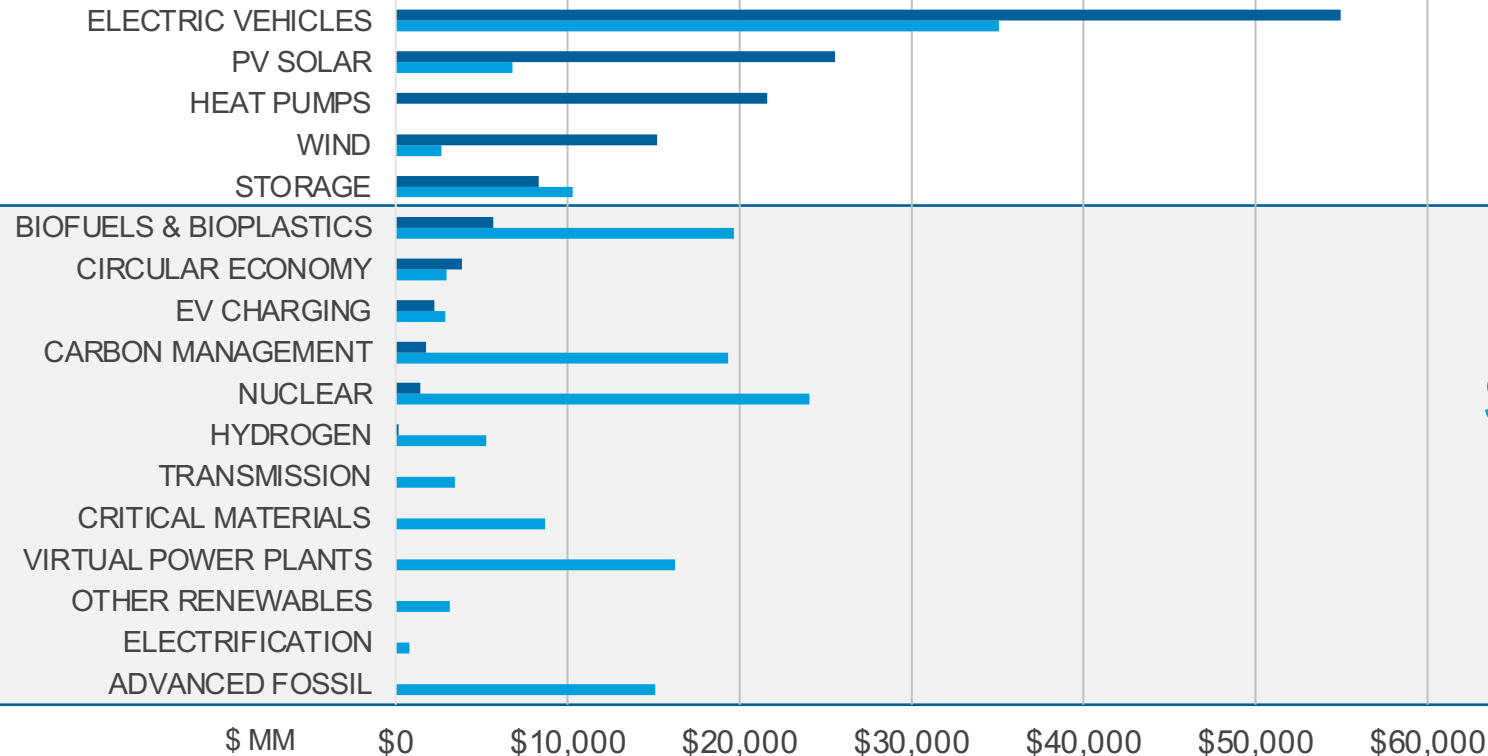
\$125.6 B

Invested in Mature Sectors

\$15.1 B

Invested in Emerging Sectors

■ Private Capital Flows (2022) ■ LPO Project Pipeline (April 2023)



LPO

\$54.8 B

In Applications for Mature Sectors

\$121.5 B

In Applications for Emerging Sectors

Notes: 1. Private capital for EV mostly sales, LPO pipeline mostly manufacturing. LPO "Wind" category all offshore wind. Other Renewables category includes geothermal and hydropower. BNEF total capital rounds to \$141B 2. Total project value of LPO applications **Source:** Bloomberg New Energy Finance (2022 deployment investment), LPO Monthly Activity report (total project costs tied to loan requests)



Updated March 2024

An “All-of-Government” Approach to De-risk Investments

LPO Business Development & Originations Teams

Team of 50+

Originates, underwrites, and structures loans with support from sector-specific pods

LPO Risk, Technical, Environmental, Legal Teams

Team of 150+

Deep, independent diligence on financial, technical, environmental, legal risks

LPO Portfolio Management Team

Team of 20+

Active management of an operating ~\$40b loan portfolio



Loan Programs Office

**Advancing America's
economic future by
accelerating high-impact
energy and manufacturing
investments**

U.S. National Labs

20,000+ scientists and engineers

World-class technical expertise

DOE Credit Review Board

Team of 8

Deep industry and government expertise

U.S. State Department

15,000 foreign service officers

World-class country-risk expertise

The LPO Leadership Team

Experienced investors, operators, and technologists that understand your needs

98 years
of combined
finance experience

124 years
of combined energy
experience

67
executive-level
employees



Jigar Shah
Director



Bob Marcum
Deputy Director



Chris Creed
Chief
Investment
Officer



Rebecca Kasper
Chief of Staff



Sheila Moynihan
Chief
Operating
Officer



Arpita Bhattacharyya
Chief Climate
Officer



Julie Kozeracki
Senior
Advisor



Mike Reed
Director,
Technical and
Environmental
Division



Andrew McCabe
Director, Risk
Management



Rupī Kaur
Director,
Portfolio
Management



Hernan Cortes
Director,
Originations



Phil Kangas
Director,
Outreach &
Business
Development



John Sholhead
Director of
Management
& Operations

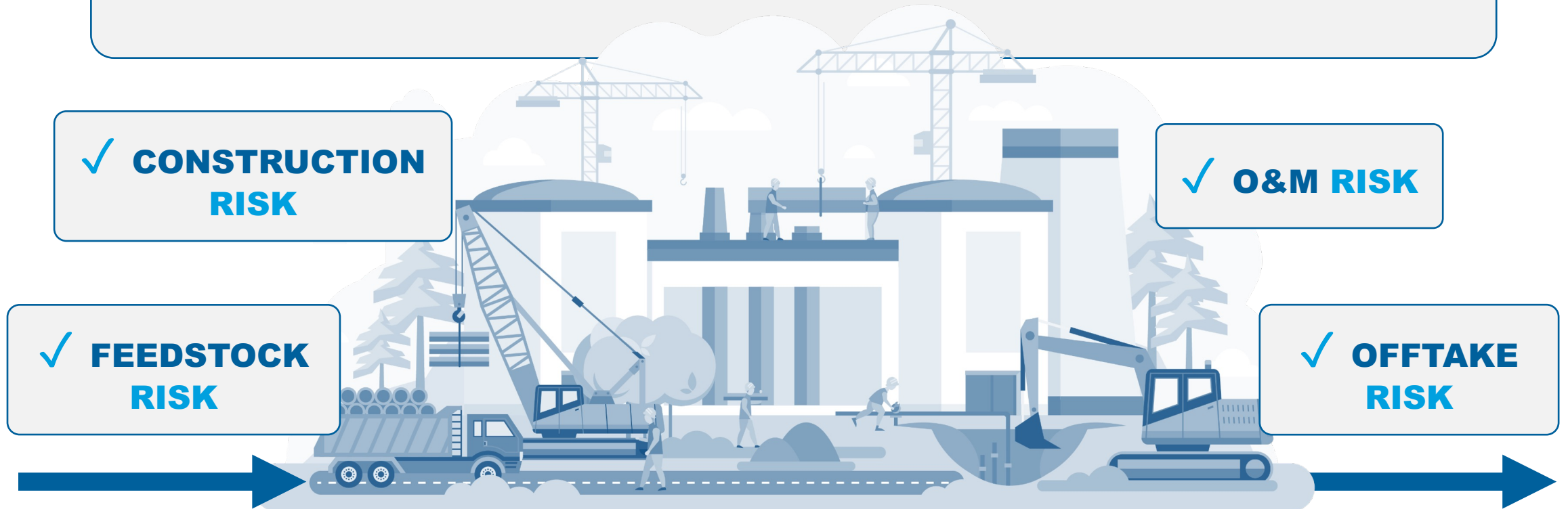


Becky Limmer
General
Counsel

LPO Has A Repeatable Diligence Framework

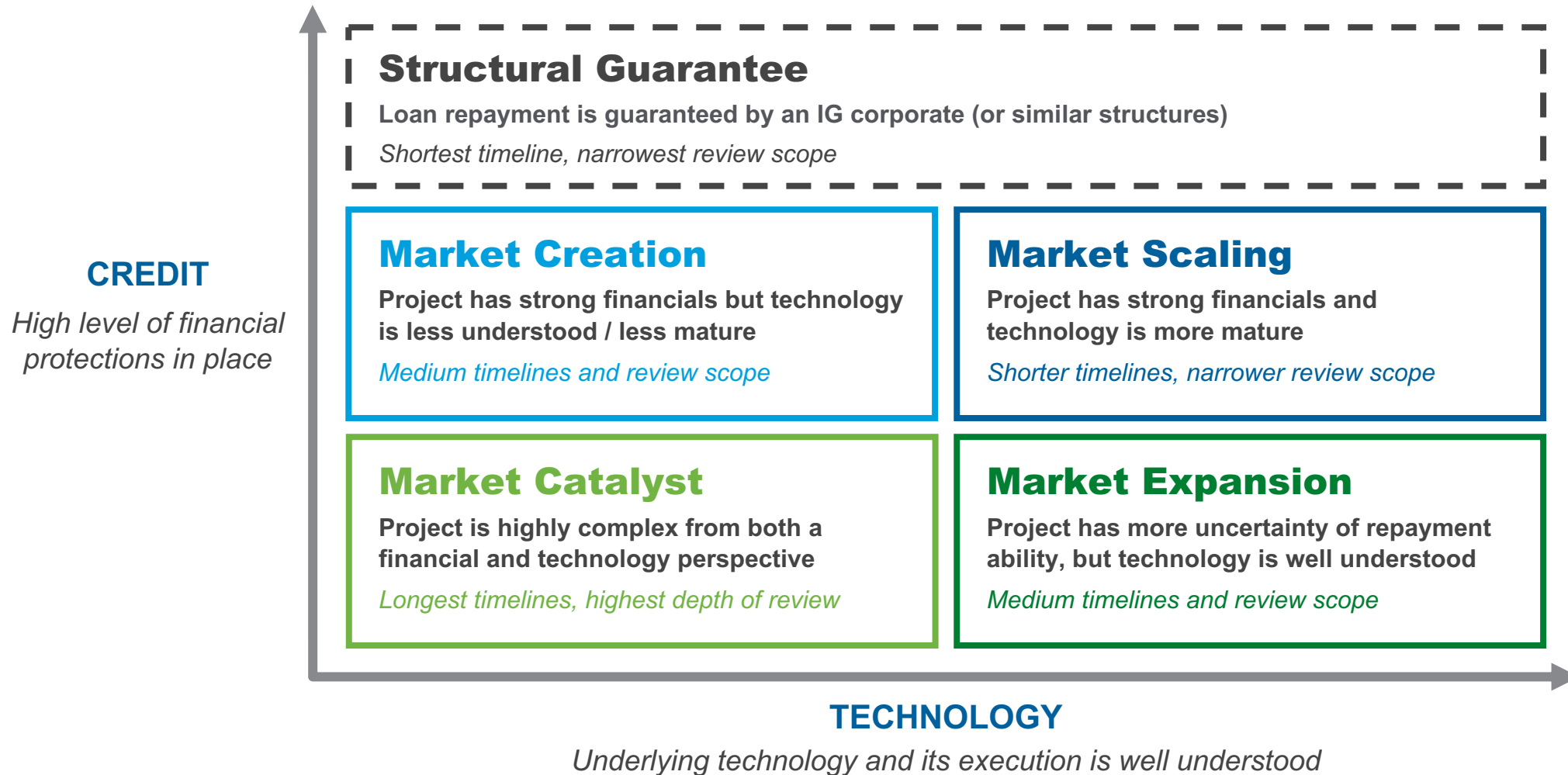
LPO has a “Henry Ford” approach to diligence of unique “snowflakes”

THE FOUR STANDARD **RISKS** THAT LPO ASSESSES

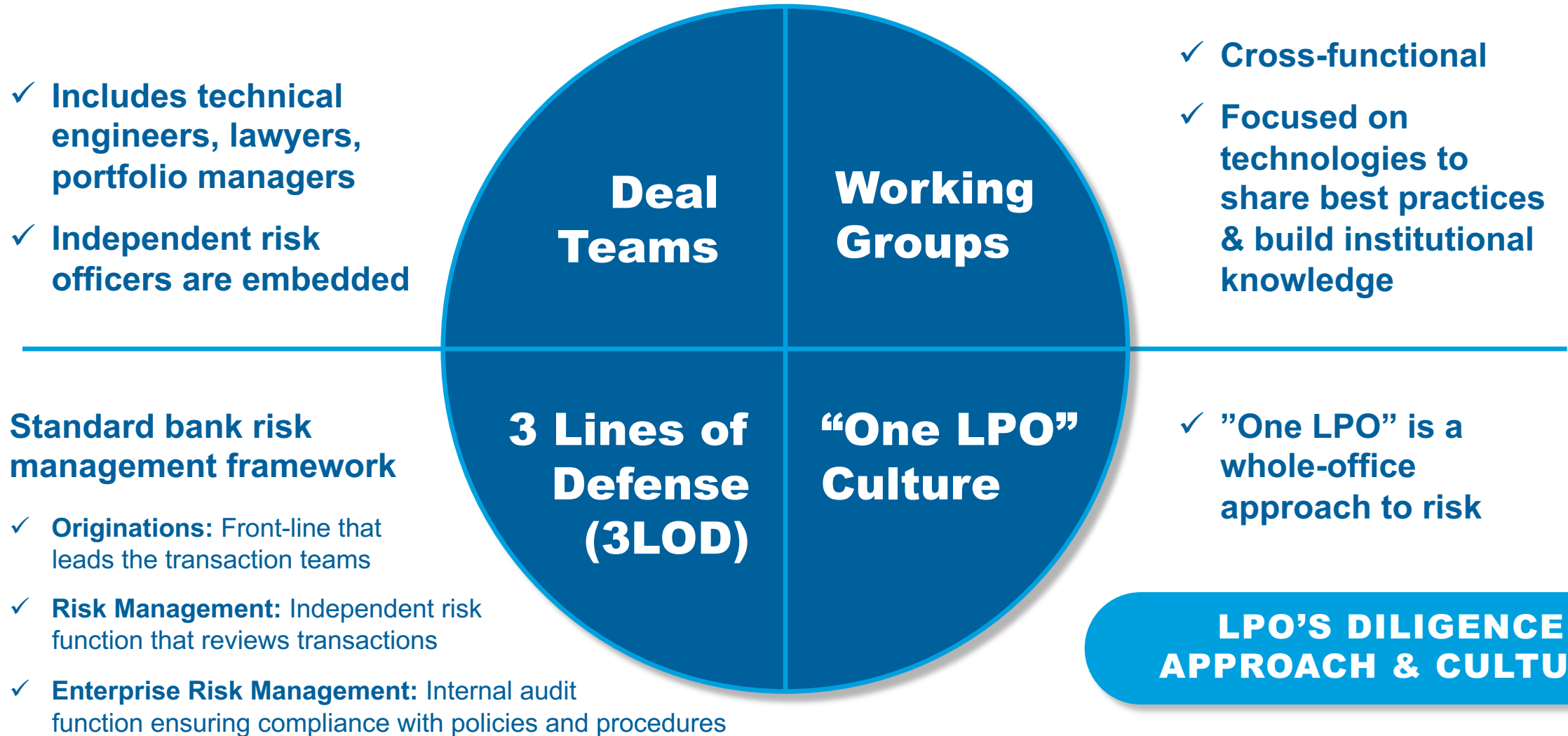


LPO Equipped to Evaluate Wide Spectrum of Projects

Same breadth, different depth

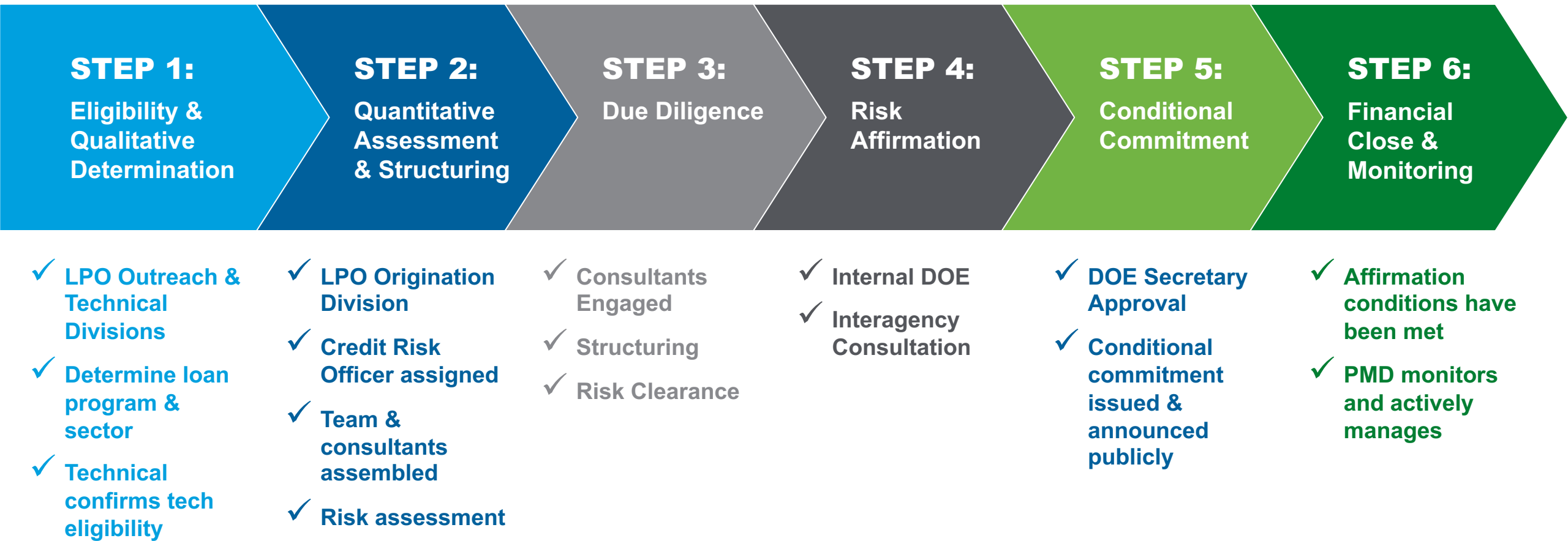


Complementary Team-Based Approach to Underwriting



LPO's Investment Process

Repeatable investment process, customized by archetype, for all deals



Standard Diligence: External Technical Analysis

Diligence Includes:

1. Project Construction & Execution

- a) Site assessment
- b) Benchmarking
- c) Management

Advisors Retained Include:

- DNV
- ICF
- Luminate
- Lummus
- Nexant
- Parsons
- S&L

World-Class Technical Diligence Capability

LPO Technical Diligence Capability

- In-house technical staff of 30 engineers and scientists
- Independent Engineers are engaged to provide 3rd party opinions
- For innovative projects, LPO leverages
 - U.S. National Labs
 - DOE resources (e.g. Geothermal Office, Hydrogen & Fuel Cells Office)
- Impact: World-class technical diligence

Impact

- This capability enables LPO to both conduct high-quality technical diligence, as well as structure reserves, performance triggers, and other loan protections to protect taxpayer interests.



**17 National Laboratories with
20,000 Scientists & Engineers**

These are the labs that invented the atomic bomb, mapped the human genome, pioneered supercomputing, among many other “firsts”.

Standard Diligence: Market Risk Analysis

Diligence Includes:

1. Production Inputs

- a) Demand/supply forecasts
- b) Industry cost curves
- c) Project market position

2. Production Outputs

- a) Offtake agreement
- b) Market price forecasts
- c) Substitution risk

Advisors Retained Include:

- Argus
- Bain
- Berkeley Research
- Deloitte
- FTI
- Guidehouse
- ICF
- IHS Global
- McKinsey
- Power Advisory

Standard Diligence: Credit Analysis

Diligence Includes:

1. Financial Analysis

- a) Credit analysis on sponsor/project
- b) Risk mitigation
- c) Sponsor model validation
- d) Lender model with stress cases

2. Key Counterparties

- a) EPC
- b) O&M
- c) Major equipment

Advisors Retained Include:

- Bain
- Deloitte
- Delphos
- GPFAC
- FTI
- Greengate
- Guidehouse
- ICS
- McKinsey
- NERA

Standard Diligence: Legal Analysis

Diligence Includes:

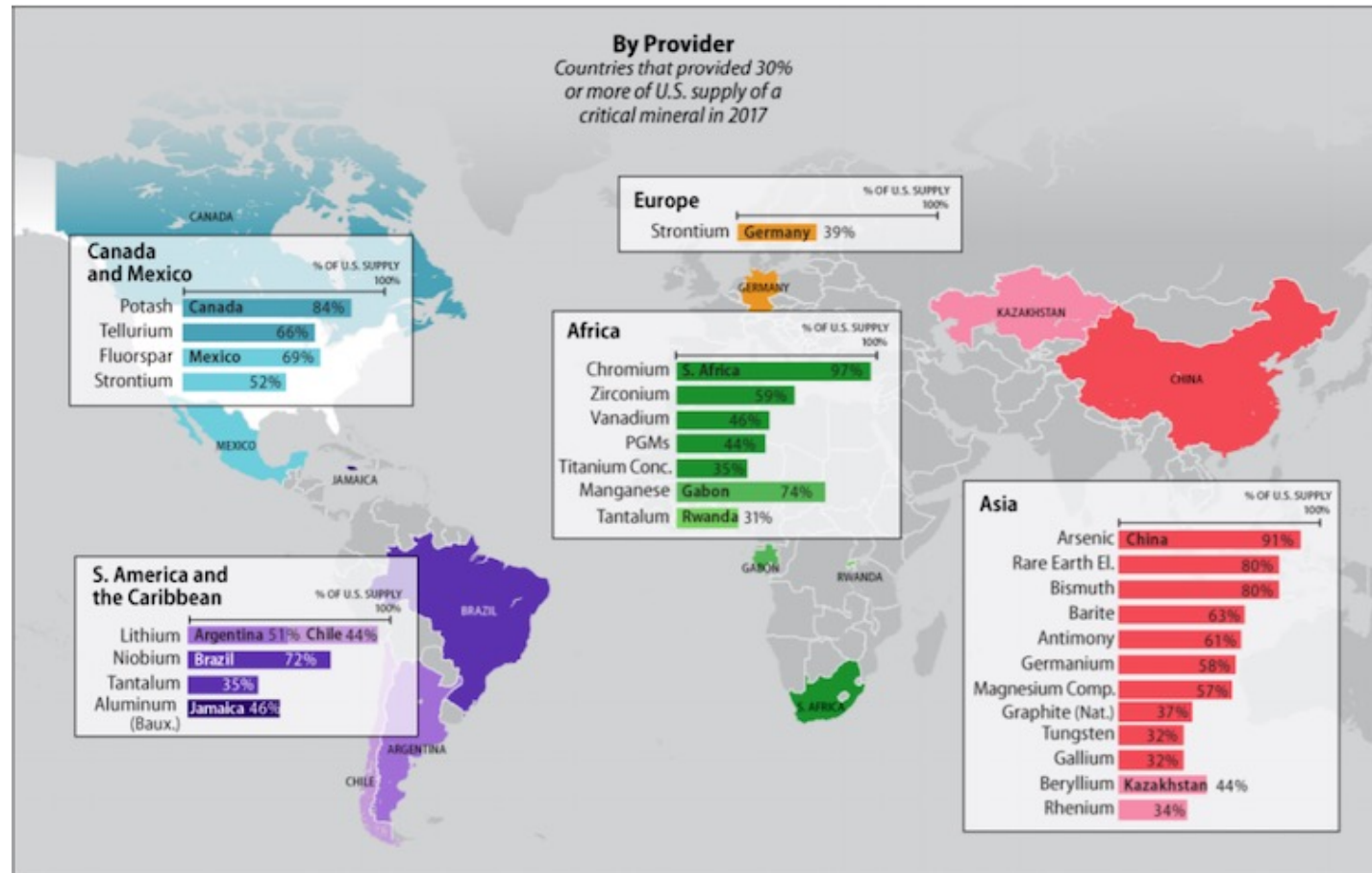
1. **Key project contracts**
 - a) Commercial terms
 - b) Defaults, remedies and termination
 - c) Dispute resolution
2. **Ownership structure & governance**
3. **Regulatory regime & permitting risk**
4. **Real estate & environmental**
5. **Pending litigation**

Advisors Retained Include:

- Allen & Overy
- Amis Patel Brewer
- Baker Botts
- Clifford Chance
- Mintz Levin
- Nixon Peabody
- Norton Rose Fulbright
- Shearman & Sterling
- Skadden
- Sullivan & Cromwell
- White & Case

Standard Diligence: Country Risk Assessments

LPO consults State Department & DFC on country supply chain risks for critical materials



Source: Congressional Research Services

A Permanent Staff of Portfolio Managers

LPO portfolio managers service staff service loans across Administrations



Case Study #1: Geothermal / Neil Hot Springs

- ✓ **Problem:** Construction delays, cost overruns, and potential heat source degradation
- ✓ **Action:** Construction plan revision, additional equity requirement
- ✓ **Result:** Project routinely exceeds 2.0x DSCR; borrower has prepaid part of its loan



Case Study #2: One Nevada Transmission (ON-line)

- ✓ **Problem:** Innovative design results in vibrations, crack during high winds
- ✓ **Action:** Required external engineering assessment, sponsor retrofit with helical strakes to modify wind patterns
- ✓ **Result:** Project exceeds revenue projections, plans to expand the line

Transformative LPO Investments: Tesla Factory

Project Summary

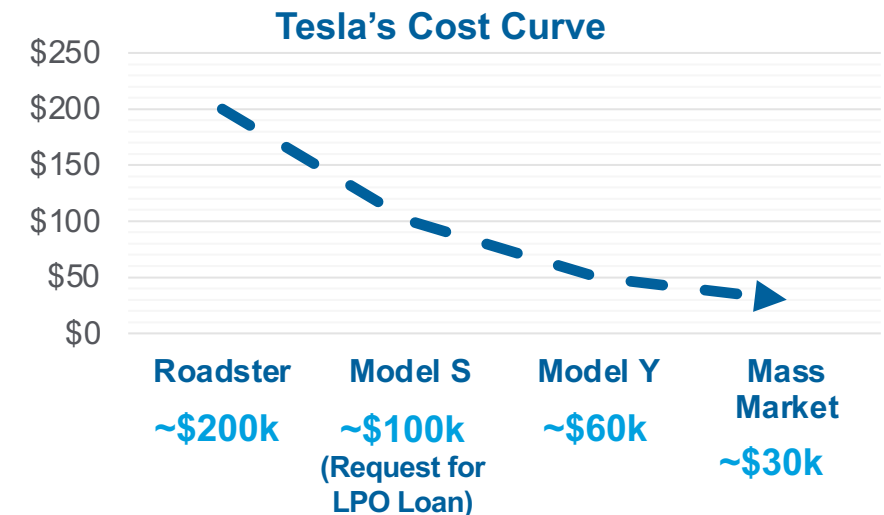
In January 2010, the Department of Energy issued a **\$465 million loan** to Tesla Motors to build a manufacturing facility for the then-new Model S

Key Risks Underwritten

- Ability to manufacture at scale a new model at a significantly lower cost point
- Market potential in a challenging post-GFC auto market

Impact

- **For the borrower:**
 - Helped Tesla to cross the “valley of death” as they successfully brought their technology down the cost curve
 - *“I would like to thank the Department of Energy...and particularly the American taxpayer from whom these funds originate. I hope we did you proud.” – Elon Musk, 2013*
- **For the U.S.:**
 - Taxpayer-funded loan was repaid early, and in full
 - Supported the creation of the first major US automaker in 70 years
 - Helped to launch the EV as a viable product category
 - Built lynchpin for ecosystem and know-how for EV manufacturing



Transformative LPO Investments: Desert Sunlight

Project Summary

In September 2011, the Department of Energy issued **\$1.5 billion in loan guarantees** to finance Desert Sunlight, a 550-MW photovoltaic (PV) solar generation plant, which reached full commercial operations in January 2015. Desert Sunlight is one of the largest PV solar plants in the world.

Key Risks Underwritten

- Reliability and degradation profile for novel CdTe technology
- Cadmium leeching into the environment
- Solar resource availability
- Scalability of technology (in 2010, 242 MW of utility-scale PV was installed - nationally)

Impact

- **For the borrower**
 - Enabled construction of the world's largest utility-scale solar farm, eventually sold to Warren Buffett's BHE
- **For the U.S.:**
 - Demonstrated the viability of large utility-scale solar
 - Validation of the First Solar product (CdTe technology). First Solar is now the last publicly listed U.S. solar panel manufacturer
 - Loan performing, despite a 2015 tornado that destroyed 170,000 panels



Transformative LPO Investments: Delta ACES I

Project Summary

In June 2022, the Department of Energy issued a **\$504 million loan guarantee** to finance a clean hydrogen and energy storage facility comprised of 220 megawatts of alkaline electrolysis with two massive 4.5 million barrel salt caverns.

Key Risks Underwritten

- Subsurface risks: Storage capacity and withdrawal rate
- Project management: First-of-a-kind storage + clean hydrogen, serving as feedstock for a hybrid CCGT
- Electrolyzer performance and degradation
- Water resource availability

Impact

- **For the loan applicant:**
 - Enabled construction of an innovative first-of-a-kind project
 - Sets up further development of further ACES projects nearby
- **For the U.S.:**
 - Early signal of technical and financial viability of a hydrogen hub, ahead of future developments



Stay in touch with LPO!



Learn more about LPO and all of its financing programs at: [Energy.gov/LPO](https://energy.gov/LPO)

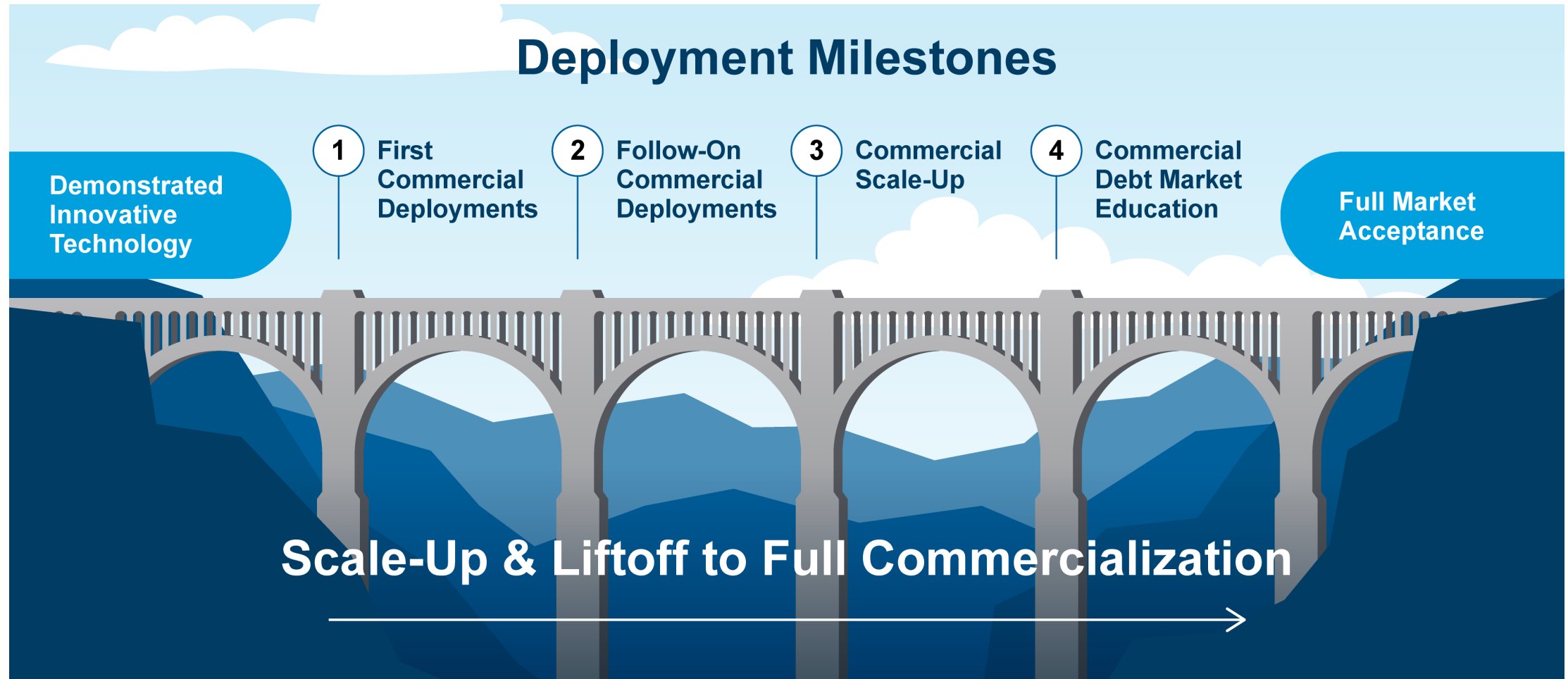
Questions? Call: [202-287-5900](tel:202-287-5900) or Email: LPO@hq.doe.gov

Appendix



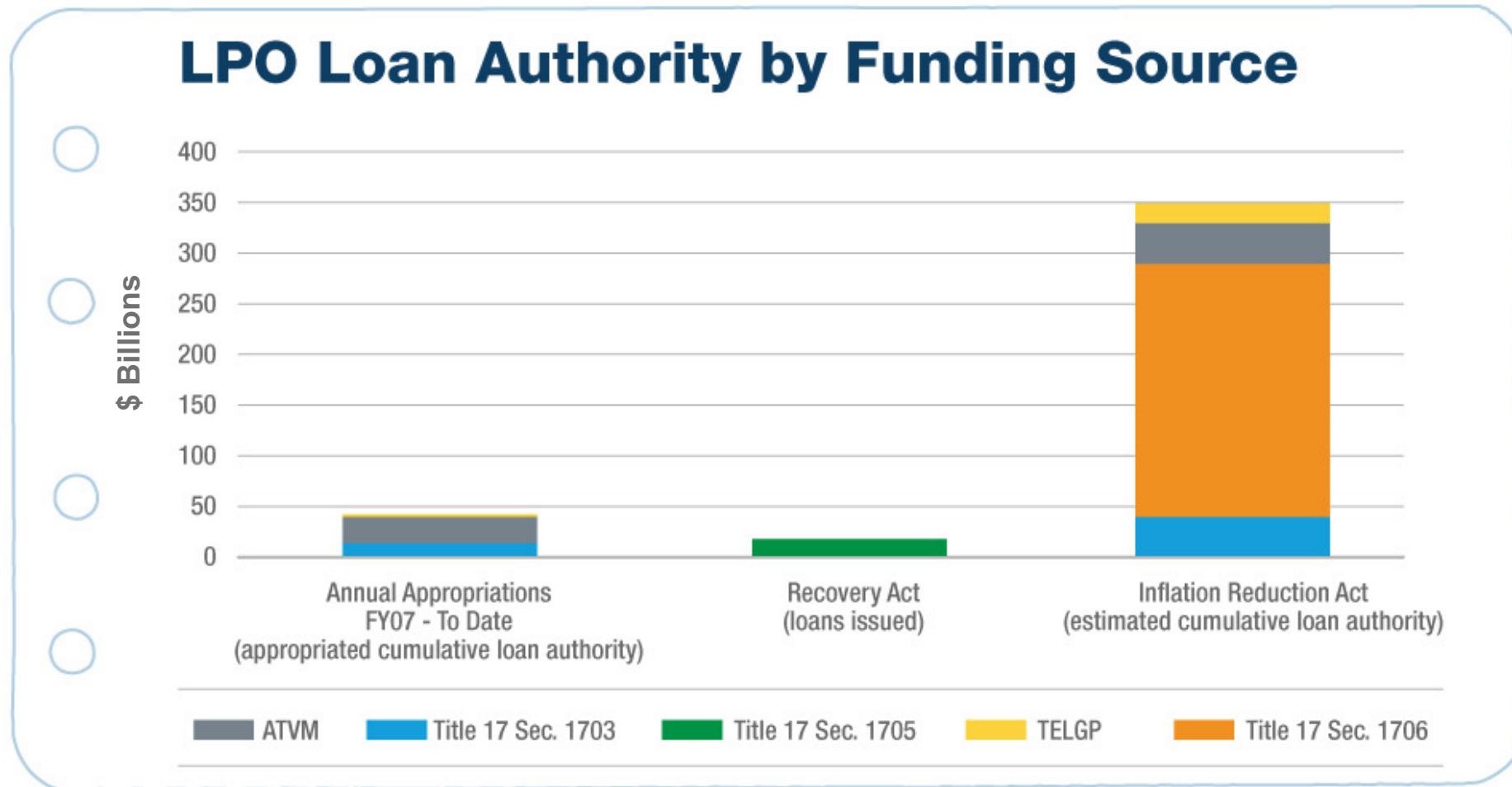
New Technologies Need Investor Momentum

Confidence in future capital builds ecosystems that scale down cost curves



BIL & IRA Have Given LPO a Renewed Mandate

Today's loan authority can ensure sufficient investor momentum to build ecosystems



IRA Improves Economics Across Clean Energy Techs

But for newer technologies, technical diligence emerges as a key open question

Technology	New IRA Support	Sample Technical Risks
Biomass	SAF Tax Credit, Clean Fuel PTC	Conversion Efficiency, Thermal Events
Carbon Sequestration	Carbon Sequestration Tax Credit (45Q)	Capture Permanence
Clean Hydrogen	Hydrogen PTC (45V), Carbon Sequestration Tax Credit (45Q), DOE Hydrogen Hubs	Electrolyzer Type, Hourly Matching
Clean Vehicles	Clean Vehicle Credit (30D), Commercial Clean Vehicles (45W)	Battery Chemistry, Degradation, Thermal Events
Energy Storage	Standalone ITC (48)	Battery Chemistry, Degradation, Thermal Events
Nuclear	Investment Tax Credit, Production Tax Credit	Safety, Design Innovation

Source: Bloomberg New Energy Finance

In Parallel With Both Grants and Tax Credits

Focused on triggering a tsunami of private sector financing for commercial deployment of emerging clean energy technologies before the end of the decade.

Manufacturing Tax Credit (48C)

Tax credit allocation: \$10 billion

Hydrogen Hubs

Federal funding: \$8 billion

Carbon Management

Federal funding: \$7 billion

Industrial Decarbonization

Federal funding: \$6.3 billion

Critical Minerals & Batteries

Federal funding: \$6 billion

Transmission Facilitation Program

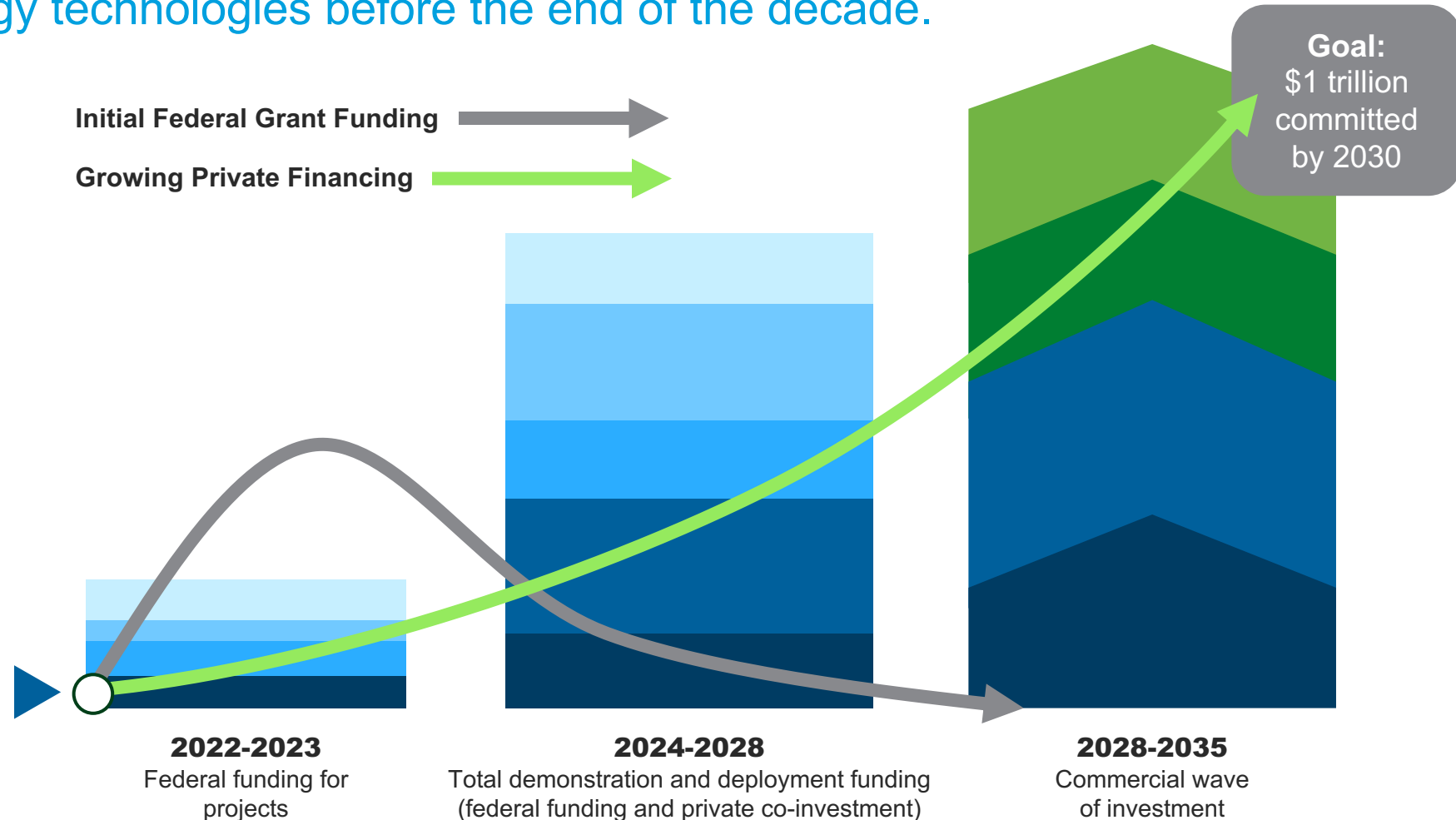
Federal funding: \$2.5 billion

Automotive Supply Chain Modernization

Federal funding: \$2 billion

Initial Federal Grant Funding

Growing Private Financing



The Private Capital Multiplier

Additional private capital follows LPO investment, validating LPO's rigorous diligence

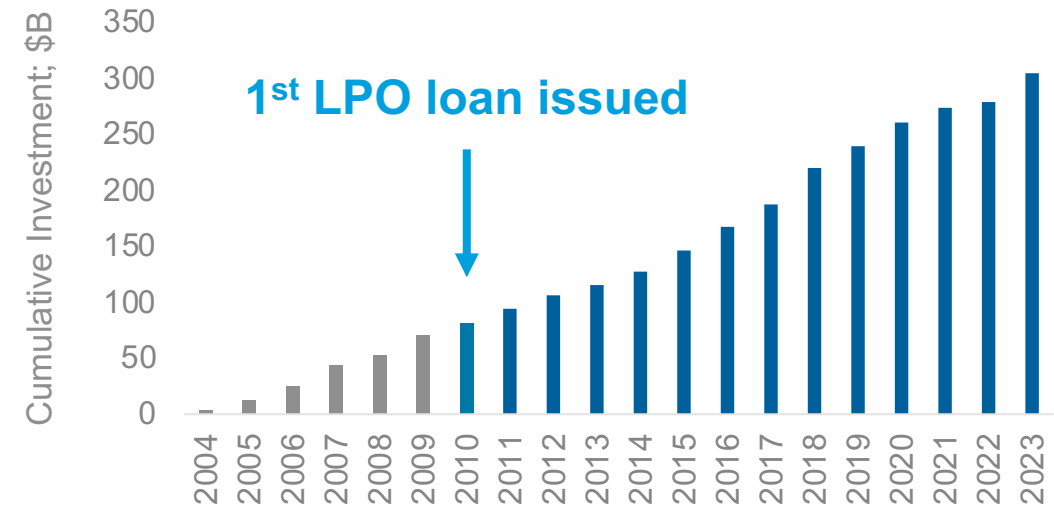
19.8x

More Capital Invested, post-LPO loan
US Utility-Scale Solar Investment



2.4x

More Capital Invested, post-LPO loan
US Utility-Scale Wind Investment



LPO de-risked utility-scale solar and wind assets with early landmark investments. The private sector responded to this de-risking by “crowding in” 200% to 2000% additional capital into these assets. These two industries alone now employ 90,000 Americans today.

Source: Bloomberg New Energy Finance, SEIA 2020 jobs census, Statista

Building Consensus in Uncharted Waters

DOE has aggregated private sector consensus for six technologies in “Liftoff” reports

TECHNOLOGY

Example private sector-identified hurdles to achieving commercial “Liftoff”

ADVANCED NUCLEAR



Commercial stalemate between potential customers & industrial base

CARBON MANAGEMENT



Lack of common-use transport & storage infrastructure

CLEAN HYDROGEN



Shortage of long-term offtake

INDUSTRIAL DECARBONIZATION



Overreliance on a small portfolio of technologies with relatively low ARLs

LONG DURATION ENERGY STORAGE



~50% reduction in capex needed to compete with Li-ion & hydrogen

VIRTUAL POWER PLANTS



Low confidence from utilities based on market complexity & fragmentation

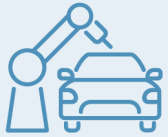
\$4B In Net Cash Inflows For Taxpayers

LPO has a strong track record of making sound investments, a significant accomplishment in the context of its mission to advance America's economic future

LPO Portfolio Performance Summary as of June 30, 2023	
Loan and Loan Guarantees Issued	\$38.76 billion
Conditional Commitments	\$17.27 billion
Amount Disbursed	\$33.20 billion
Principal Repaid	\$14.17 billion
Interest Paid*	\$4.74 billion
Actual and Estimated Losses	\$1.03 billion
Actual and Estimated Losses as % of Total Disbursement	3.1%

The Next Generation of LPO Financing

LPO is working with stakeholders across innovative clean energy & advanced transportation sectors



Advanced Vehicles & Components

- Vehicles • Components • Lightweighting • Manufacturing • Electric Vehicle (EV) Battery Manufacturing • Electrification •



Clean Energy Supply Chain

- Solar Manufacturing Supply Chain •



Clean Fuels & Products

- Advanced Biofuels • Biodiesel • Cellulosic Biofuels • Renewable Diesel • Renewable Natural Gas (RNG) • Sustainable Aviation Fuel (SAF) • Waste Conversion •



Critical Materials

- Extraction • Manufacturing • Mining • Processing • Recovery • Recycling •



EV Charging

- Deployment • Manufacturing •



Hydrogen

- Generation • Infrastructure • Transportation •



Offshore Wind

- Offshore Wind Generation • Offshore Wind Supply Chain & Vessels •



Renewables Deployment

- Geothermal • Hydrokinetics • Hydropower • Repowering Onshore Wind • Other Renewables Deployment •



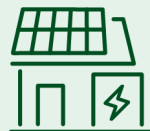
Storage

- EV Bidirectional Storage • Newer Battery Chemistries & Flow Batteries • Compressed Air Energy Storage • Pumped Storage Hydropower • Thermal Energy Storage •



Transmission

- Grid Efficiency • Grid Reliability • High-Voltage Direct Current (HVDC) Systems • Offshore Wind Transmission • Systems Sited Along Rail & Highway Routes •



Virtual Power Plants

- Connected Distributed Energy Resources (DERs) •



Advanced Fossil

- Carbon Feedstock Waste Conversion • Fossil Infrastructure Repurposing & Reinvestment • Hybrid Generation • Hydrogen Generated From Fossil Sources • Synfuel •



Carbon Management

- Carbon Capture & Storage (CCS) • Carbon Dioxide Removal (CDR) • Direct Air Capture (DAC) • Industrial Decarbonization • CO₂ Transportation Infrastructure •



Advanced Nuclear

- Advanced Nuclear Reactors • Micro Reactors • Nuclear Fuel Cycle • Nuclear Supply Chain • Nuclear Upgrades & Upgrades • Small Modular Reactors (SMRs) •



Tribal Energy

- Energy Development Projects • Energy Storage • Fossil Energy • Microgrids • Renewable Energy • Transmission Infrastructure • Transportation of Fuels •

Early, Transformative Investments Across Sectors

LPO's Project Portfolio: Active, Repaid & Discontinued Loans & Loan Guarantees (1 of 2)

Project	LPO Tech Sector	Loan Amount (\$ MM)	Loan Status
VOGTLE	Advanced Nuclear	\$ 11,500	Active
FISKER	Advanced Vehicles & Components	\$ 192	Discontinued
FORD		\$ 5,900	Repaid
NISSAN		\$ 1,450	Repaid
TESLA		\$ 465	Repaid
ULTIUM CELLS		\$ 2,500	Active
VPG		\$ 50	Discontinued
SOLYNDRA	Clean Energy Supply Chain	\$ 535	Discontinued
ABENGOA BIOENERGY	Clean Fuels & Products	\$ 132	Repaid
SYRAH VIDALIA	Critical Materials	\$ 102	Active
ADVANCED CLEAN ENERGY STORAGE	Hydrogen	\$ 504	Active
CRESCENT DUNES	Renewables Deployment (Concentrating Solar Power)	\$ 737	Discontinued
GENESIS		\$ 852	Repaid
IVANPAH		\$ 1,600	Active
MOJAVE		\$ 1,200	Active
SOLANA		\$ 1,450	Active



Early, Transformative Investments Across Sectors

LPO's Project Portfolio: Active, Repaid & Discontinued Loans & Loan Guarantees (2 of 2)

Project	LPO Tech Sector	Loan Amount (\$ MM)	Loan Status
BLUE MOUNTAIN	Renewables Deployment (Geothermal)	\$ 98	Repaid
ORMAT NEVADA		\$ 350	Active
USG OREGON		\$ 97	Active
GRANITE RELIABLE	Renewables Deployment (Onshore Wind)	\$ 169	Repaid
KAHUKU		\$ 117	Repaid
RECORD HILL		\$ 102	Active
SHEPHERDS FLAT		\$ 1,300	Active
ABOUND SOLAR	Renewables Deployment (Utility-Scale PV Solar)	\$ 400	Discontinued
AGUA CALIENTE		\$ 967	Active
ALAMOSA		\$ 91	Discontinued
ANTELOPE VALLEY SOLAR RANCH		\$ 646	Active
CALIFORNIA VALLEY SOLAR RANCH		\$ 1,200	Active
DESERT SUNLIGHT		\$ 1,500	Active
MESQUITE 1		\$ 337	Active
STEPHENTOWN SPINDLE	Storage	\$ 25	Discontinued
ONE NEVADA LINE	Transmission	\$ 343	Active
HESTIA	Virtual Power Plants	\$ 3,000	Active

