

ARPA-E University Webinar:

“Charitable Investment for Energy Innovation 101”

Presenters:



Nate Gorence
Tech-to-Market Advisor



David Bank
Founder



Sarah Kearney
Founder & Executive Director



45-MIN WEBINAR AGENDA

- ▶ **5 minutes: Nate Gorence, ARPA-E**
 - ARPA-E's Mission and Goals
 - Overview of early-stage finance ecosystem for energy RD&D

- ▶ **15 minutes: David Bank, ImpactAlpha**
 - Overview of program-related investing
 - PRI case studies from other sectors

- ▶ **15 minutes: Sarah Kearney, PRIME Coalition**
 - Charitable investing to support clean energy
 - Mission and approach of PRIME, including case studies

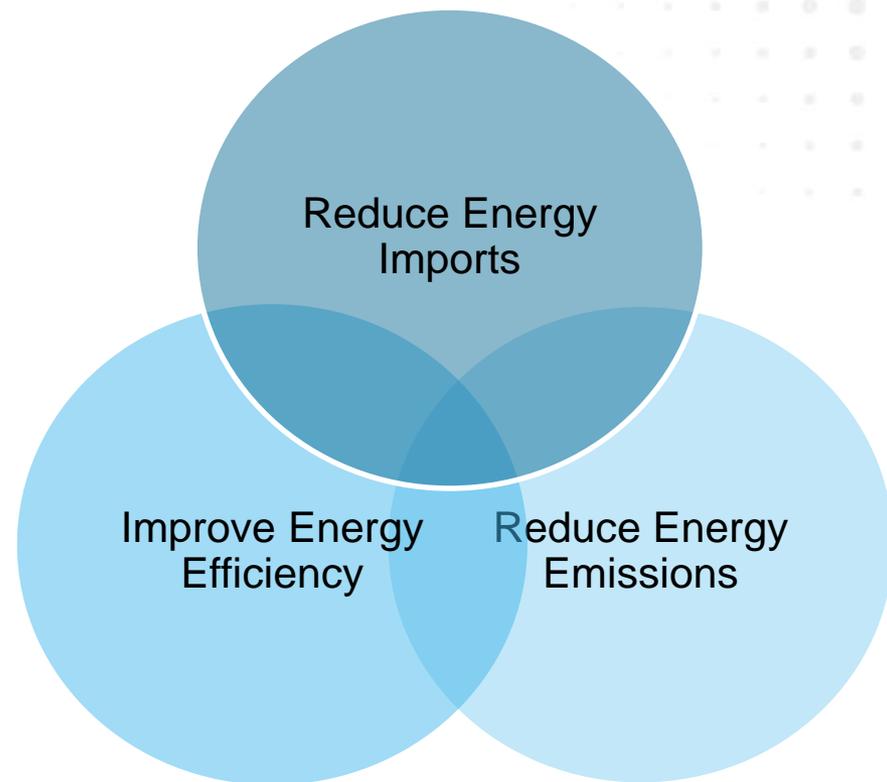
- ▶ **10 minutes: Nate Moderates Q&A with David and Sarah**

ARPA-E MISSION

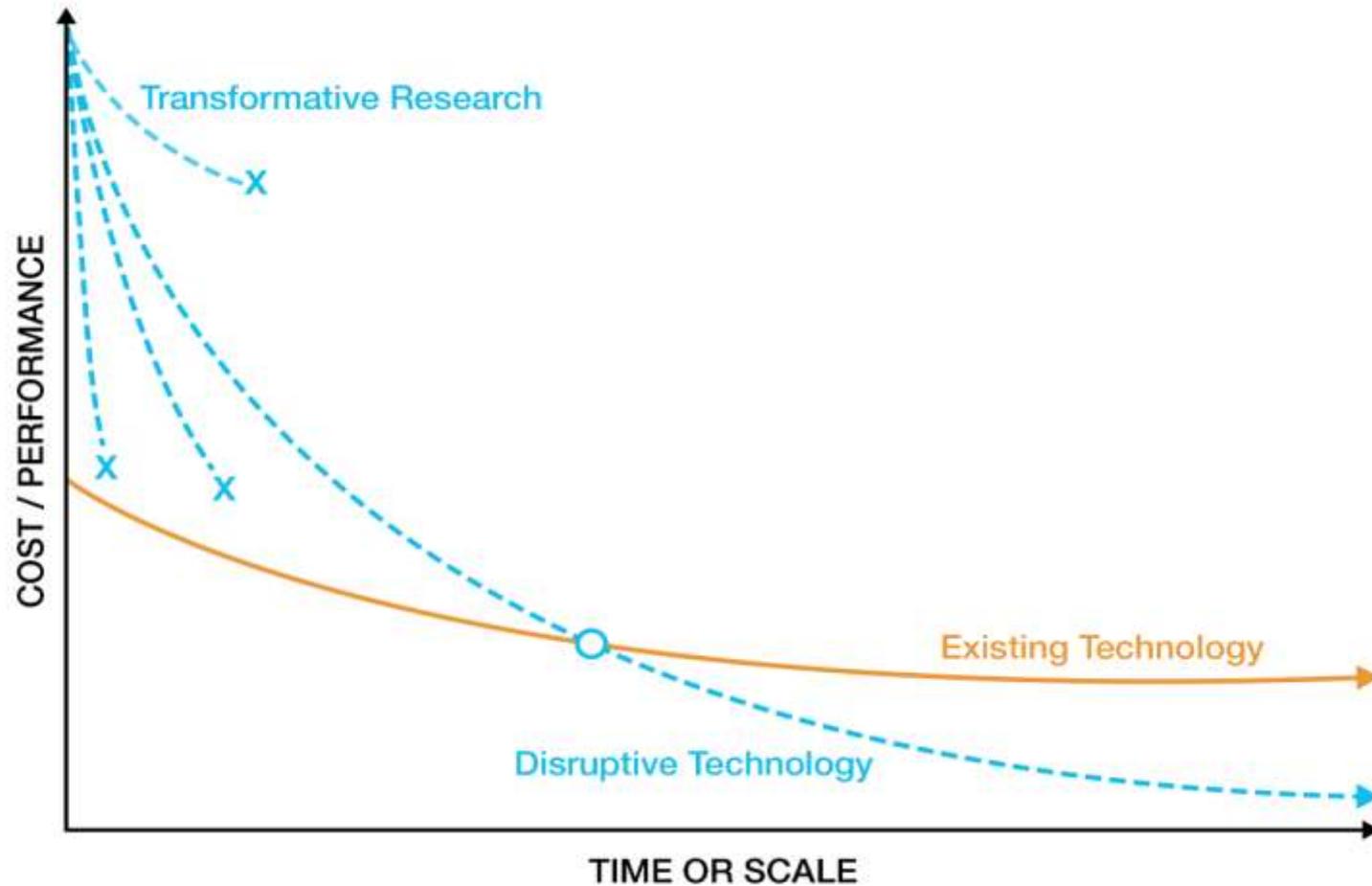
Goals: Ensure America's:

- Energy Security
- Energy Sustainability
- Economic Security
- Technological Lead in Advanced Energy Technologies

Mission: Catalyze the development of early stage transformational, high-impact energy technologies that could provide dramatic benefits



CREATING NEW LEARNING CURVES





IF IT WORKS...

WILL IT MATTER?

MEASURING SUCCESS

- ▶ Invested approximately \$1.3 billion over 7 years
 - 36 focused programs and three open funding solicitations
 - >500 projects under contract, >200 alumni projects

45 projects have attracted \$1.25B+ from the private sector



36 new companies formed



60 government projects

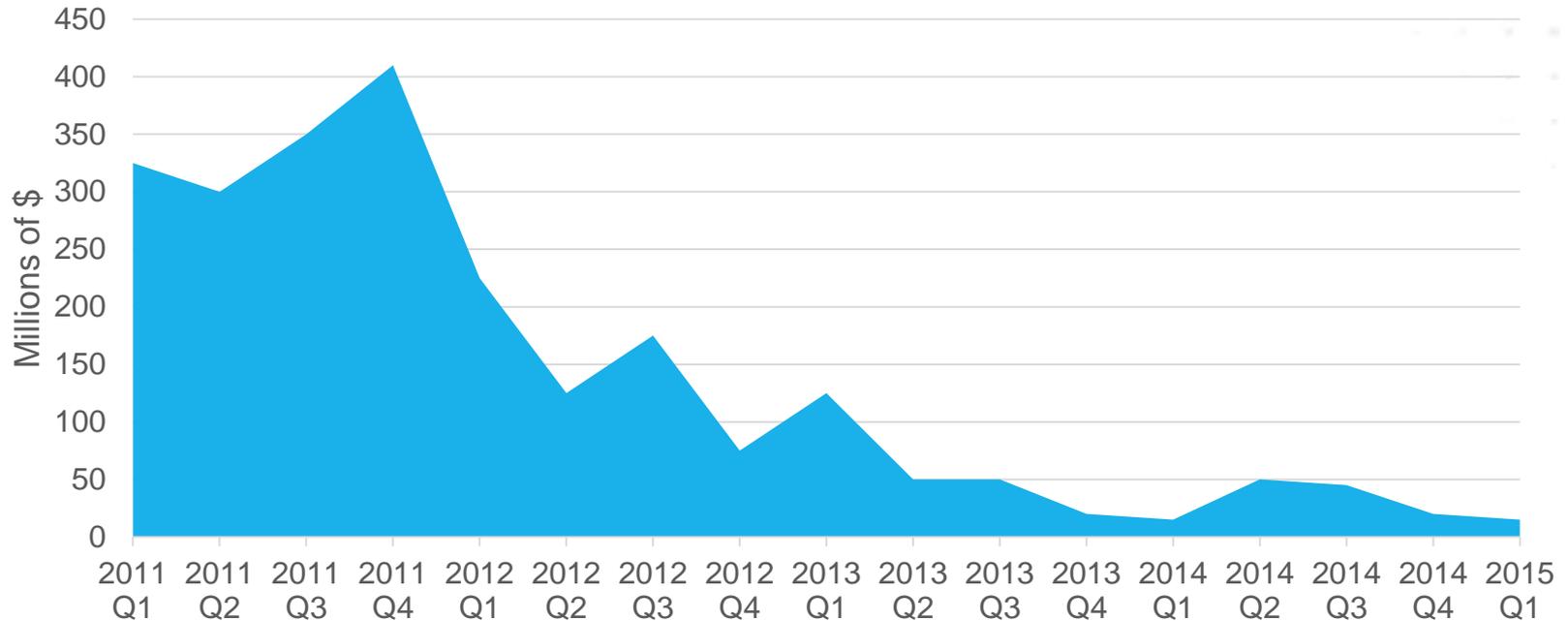


WHAT WE REALLY WANT: MARKET PRODUCTS



CLEAN ENERGY CAPITAL CHALLENGE

VC investment in early stage clean-tech 2011 – 2015*



Source: Cyclotron Road analysis of PWHC/NVCA Thompson Reuters report

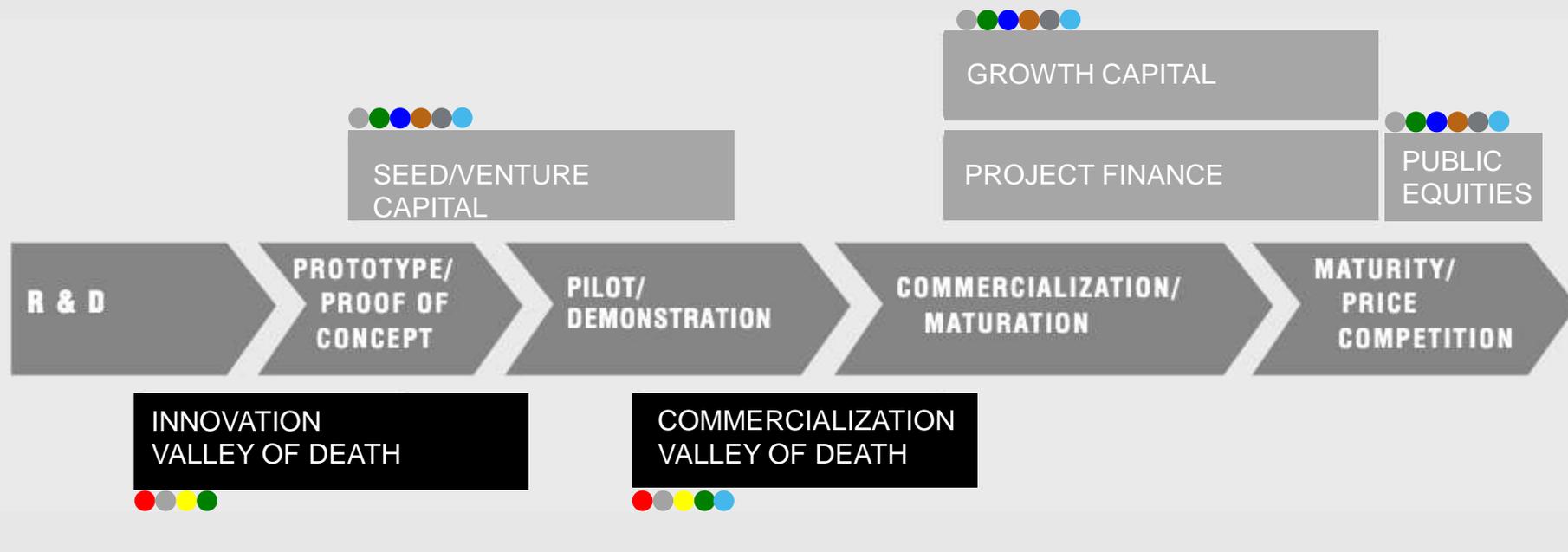
2015 Survey: “Only 5 percent [of LPs] said they were going to focus on green-focused funds, the second-lowest category...”

Source: <https://www.greentechmedia.com/articles/read/where-are-the-green-unicorns-theyre-not-in-the-traditional-venture-capital>

Opportunity: Find new sources of capital

Asset Owners:

- Foundation grants/PRIs
- Family offices
- Donor Advised Funds (DAFs)
- High Net Worth Individuals (HNWIs)
- Endowments
- Pensions
- Sovereign Funds
- Corporations



Source: PRIME Coalitions; Energizing the US Resource Innovation Ecosystem
(<https://www-cdn.law.stanford.edu/wp-content/uploads/2015/07/SSRN-id2617816.pdf>)

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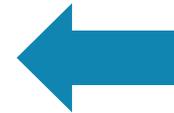
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David Bank
Founder

IMPACT ALPHA
INVESTMENT NEWS FOR A SUSTAINABLE EDGE

A grayscale photograph of the Golden Gate Bridge, showing a tall tower on the left and the bridge deck extending into the distance over the water. The sky is hazy.

Program-Related Investments: Catalytic Capital for Early- Stage Innovation

Capital doesn't always flow where it's needed

- Smallholder farmers
- Small and medium-sized enterprises
- Affordable housing and community development
- Neglected disease R&D and commercialization
- Conservation

AND...

- Early-stage climate innovation



Strategic investors are deploying capital to reduce risks, increase returns

- Demonstrate sector, market and enterprise viability;
- Mitigate risk and enable financial innovation;
- Create a track record to change risk perceptions;
- Bundle investments to diversify risk;
- Provide a financial hedge or subsidy to attract large- scale, mainstream investment.



Program-related investments (PRIs): Flexible, patient, concessionary capital

Foundation Investments to support charitable activities that involve the potential return of capital within an established time frame

IRS requirements:

1. The primary purpose is charitable
2. Financial return is not a significant purpose
3. Influencing legislation is not a purpose.

Low-interest loans



CONSERVATION FINANCE

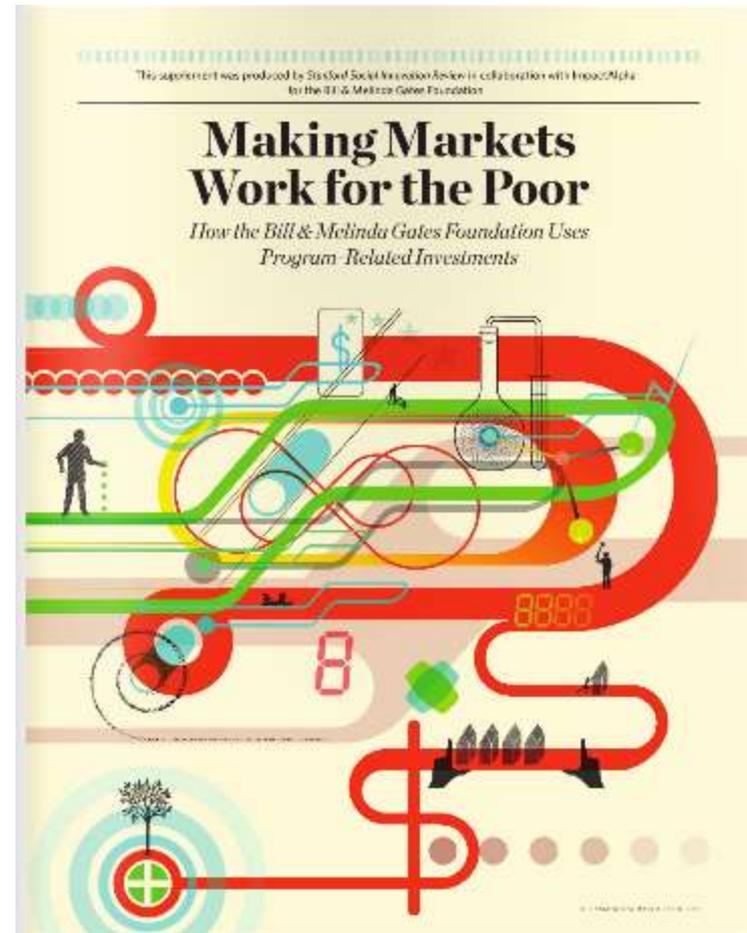
Ecotrust Forest: Making the Math Work for Sustainable Timber in the Northwest

BY DENNIS PRICE • JUNE 8, 2015

- Packard Foundation
- \$10 million, 7.5 years, 1% loan
- Lowers cost of capital
- Crowds in commercial investors
- Demonstrates market potential

Direct early-stage equity

- Gates Foundation
- Kymab (transgenic mouse platform)
- \$20 million equity investment
- \$3.7 million in research grants
- High-risk
- Global Access Agreement



Indirect equity investments

DBL PARTNERS
DOUBLE BOTTOM LINE VENTURE CAPITAL



- DBL Partners I: \$75 million
 - Ford, Casey, MacArthur, Heron foundations
 - Tesla, Solar City, Revolution Foods
- DBL Partners II: \$150 million
- DBL Partners III: \$400 million.
 - Off-Grid Solar
 - Advanced Micro-Grid Solutions

Philanthropic leaders, but few followers

- 80,000 U.S. Foundations making roughly \$50 billion each year in **grants**
- 487 foundations made 3,728 **PRIs** totaling \$3.76 billion (since 2003)
- **Less than 1% of foundations make PRIS and on average dedicate only half of 1% of their grant budgets**



2016 guidance from the IRS



- New examples of qualifying PRIs:
 - Disease research
 - Environment
 - Education
 - Smallholder agriculture
 - Use of loan guarantees

FULL STACK CAPITAL

IRS Widens the Scope of Program-Related Impact Investing by Foundations

BY DENNIS PRICE • APRIL 22, 2016

For Entrepreneurs

- **Educate** yourself (PRI requirements)
- **Identify** your impact and how to measure it
- **Find** the right investor or educate the ones you have
- **Don't forget** grants
- **Beware** (hidden) costs of capital



For co-investors



- **Access** low-cost capital
- **Enhance** reputation
- **Share** and mitigate risks
- **Gain** industry and market expertise
- **Beware** strategic investors
- **Assess** charitable requirements
- **Get ready** for bureaucratic lag

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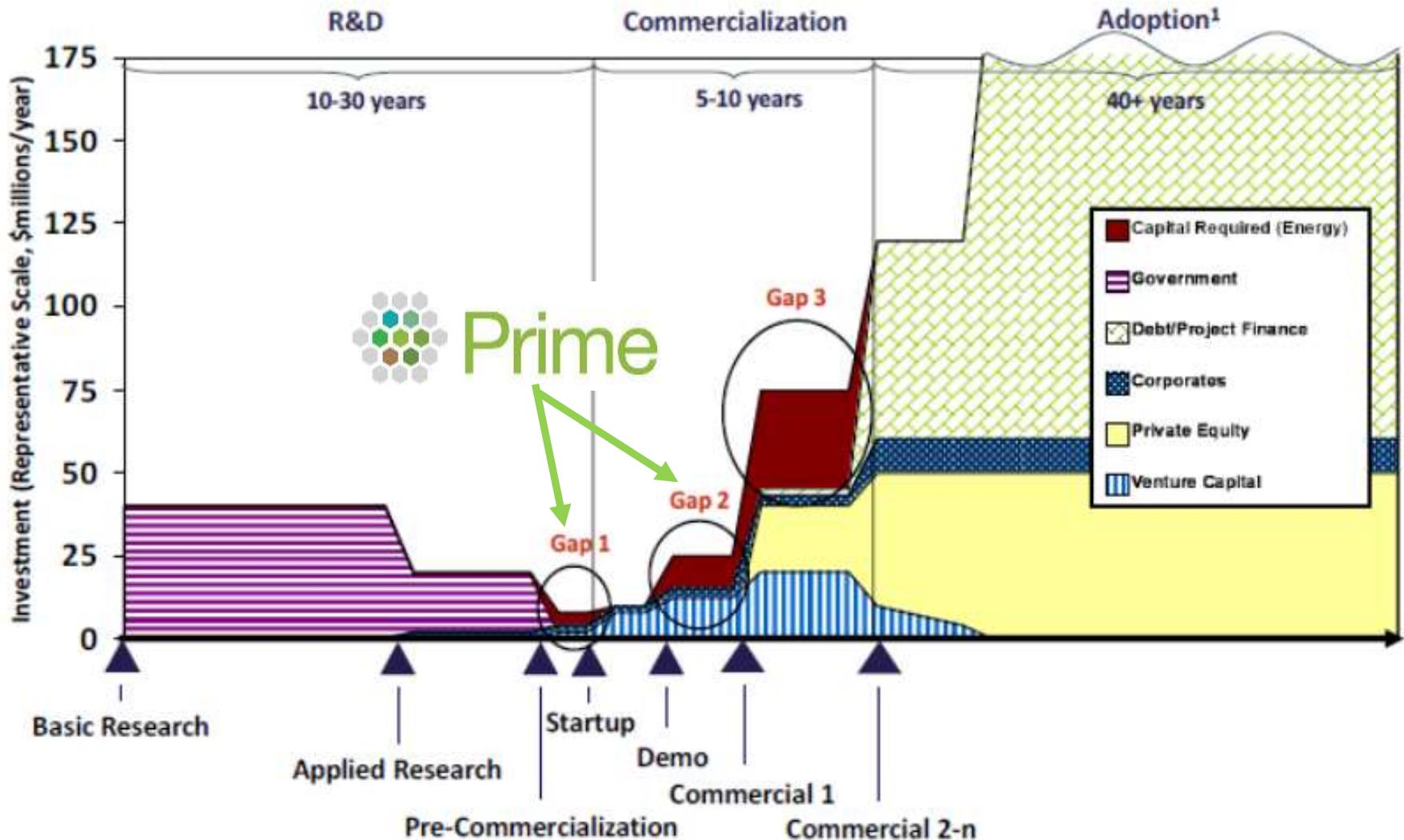


Sarah Kearney

Founder & Executive Director



Capital gaps along the energy innovation and deployment pipeline are holding us back.



One acute problem is that no one is willing to go FIRST in supporting early-stage energy innovators.

US Venture Capital

(Q4 2015)



SOFTWARE



BIOTECH

\$300M



CLEANTECH

Philanthropists are uniquely positioned to step in and catalyze investment.

	Venture Capital	Bond Investors	Government	PRI
long return time	X	●	●	●
high risk investment	●	X	●	●
company building	●	●	X	●

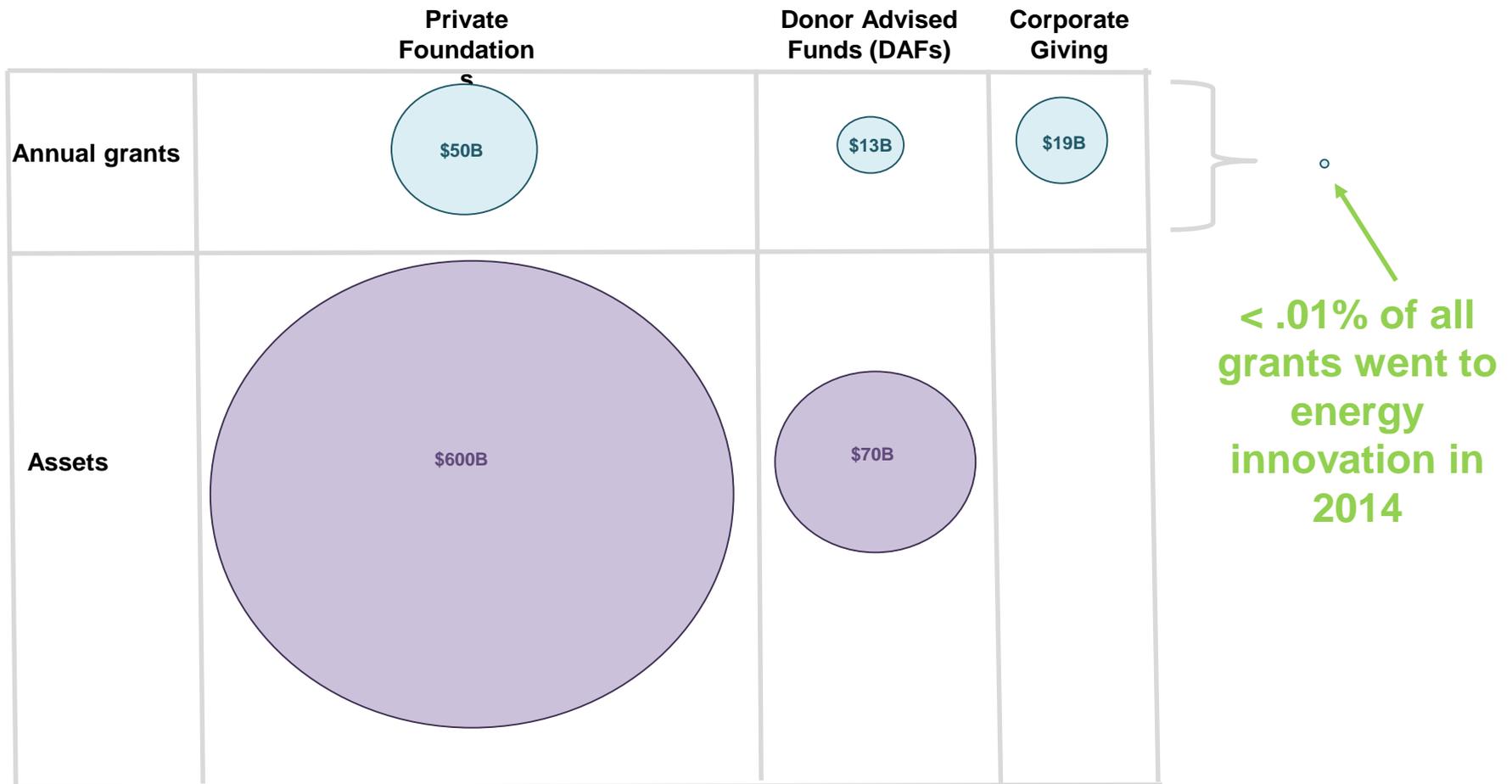
But nobody's doing it...

- 5,861 PRIs on record (1969-2014)
- 172 (3%) PRIs pertain to science and engineering innovation
- 33 of those (0.6%) pertain to climate change mitigation.

- 2,863 organizations received PRIs
- 87 (3%) recipients pertain to S&E innovation
- 19 of those (0.7%) pertain to climate change mitigation.

- 686 foundations made PRIs
- 44 (6%) PRI-makers relevant to S&E innovation
- 12 of those (2%) made PRIs that pertain to climate change mitigation.

The marketplace of charitable investors is large, but idiosyncratic, fragmented, and inaccessible to energy innovators.



High barriers prevent philanthropists from investing directly into early-stage ventures today – here's what we heard during our listening tour in 2013.

I didn't know I could use my grant dollars to make for-profit investments.

My grant team is not organizationally structured to behave like a for-profit investment firm.

I thought that's what venture capital was doing.

Is it true that there are good investments dying on the vine?

I can't find any examples of other grant-makers making investments like this in the field.

I'm not a technical expert – I need support on technical due diligence. How much would that cost to do right?



I'm inundated with investment opportunities and it's very difficult to know which might actually need philanthropic intervention.

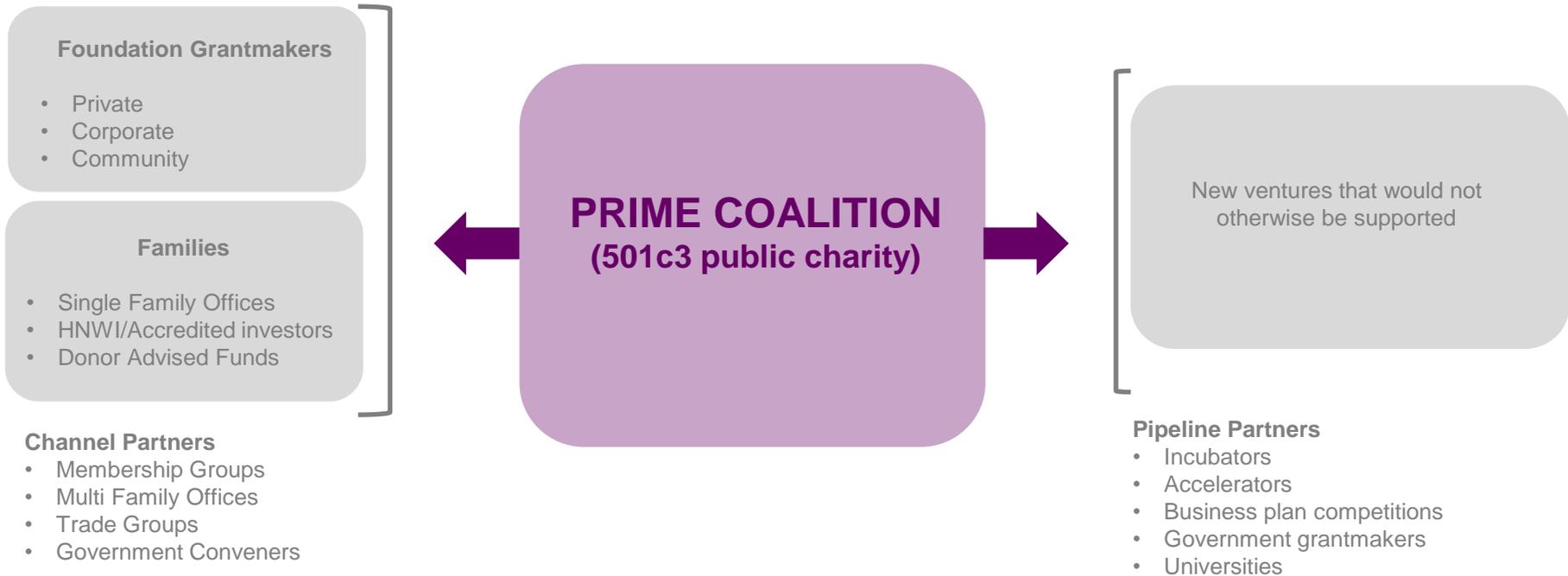
How can I be sure that this is the best use of my philanthropy, or that a specific investment might actually help solve the climate problem?

I don't know where to look for co-investors or follow-on investors – I don't want to be out on a limb by myself.

Would I potentially get in trouble with the IRS if I break the rules? How can I know with certainty that something qualifies as charitable?

Once I find a company I might want to support, I can't convince my own accountants, attorneys and advisors to let me do it with charitable capital.

PRIME was purpose-built in 2014 to lower today's barriers and unlock philanthropic investment for climate change mitigation.



Since 2014, pioneering philanthropic partners have supported:

1 PRIME's nonprofit programming with traditional grants



2 PRIME's docket companies with charitable investment capital



PRIME's mission, vision and Theory of Change led us to focus on two core programs in the near-term:

1 facilitate demonstrative investments

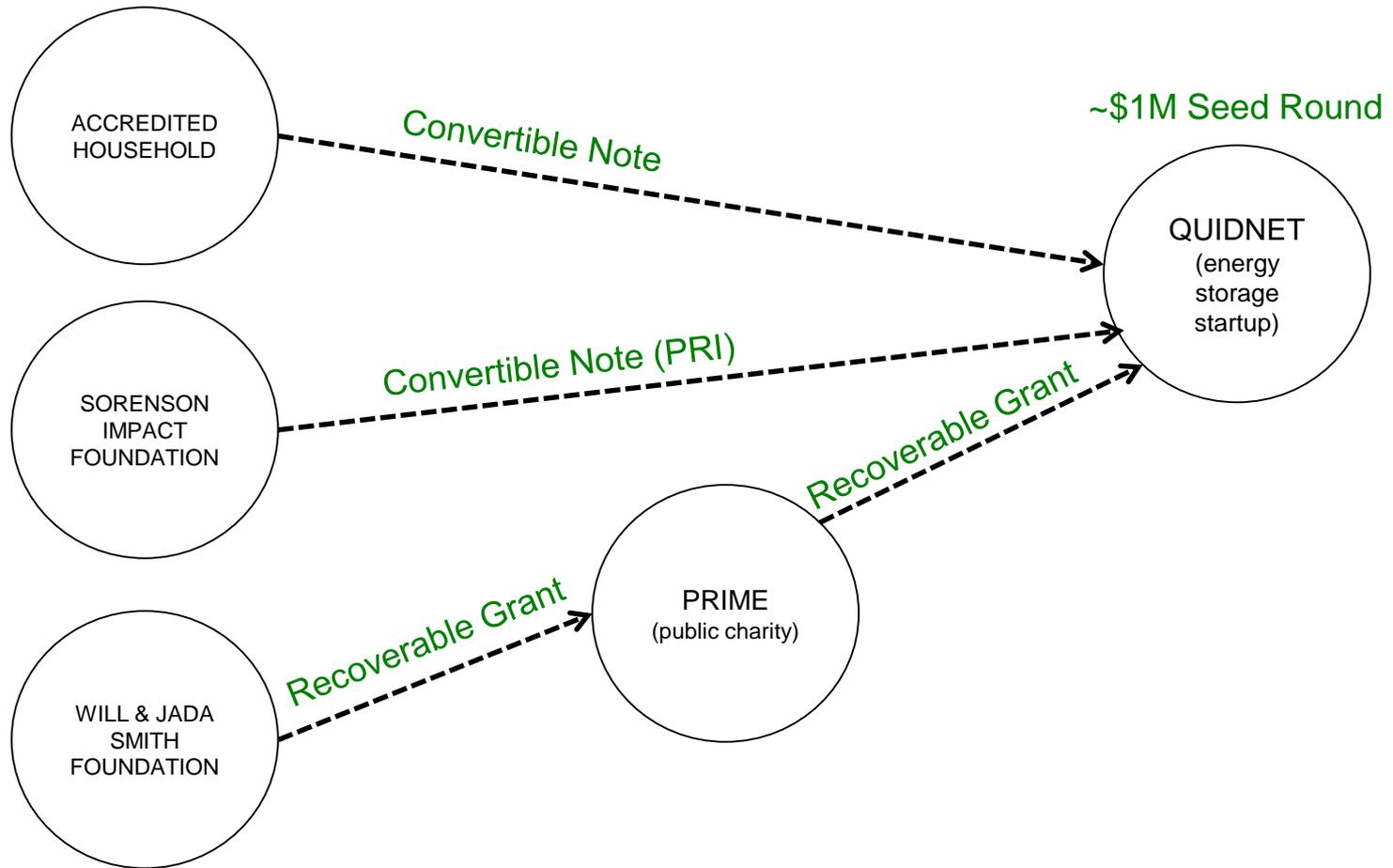


2 build connectivity between philanthropists and climate innovators

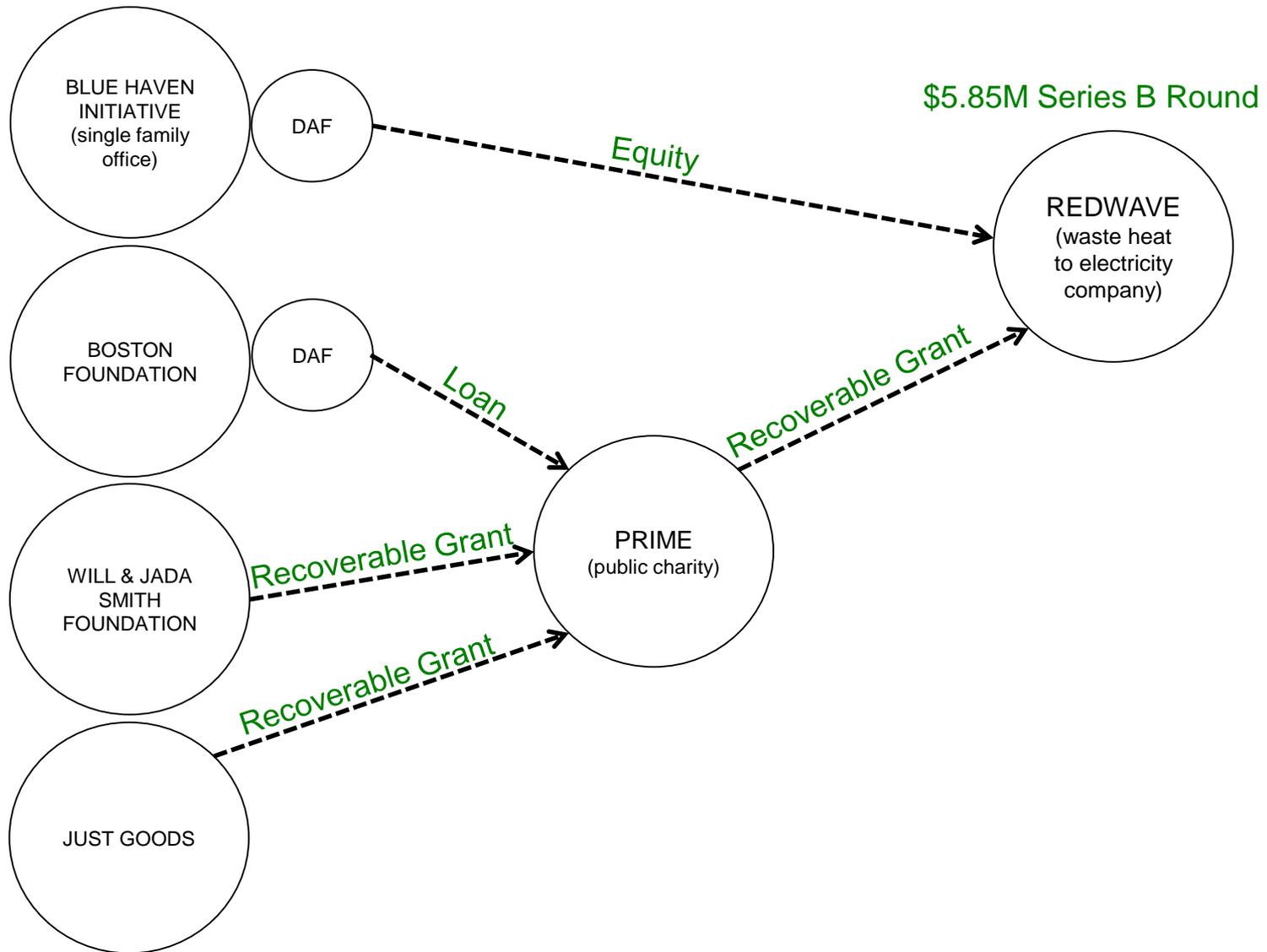
We've learned a lot about the mechanics of placing charitable capital into early-stage energy companies along the way, here are all options today!

Philanthropic Organization Type	Type of Support	Transaction Mechanism	Recipient of Capital (corporate form)	With whom does philanthropist negotiate terms?	Who makes capital expenditure decisions?	Use of capital	Who does follow-on monitoring (business & impact)?
GRANT-MAKING FOUNDATION	Operating support to PRIME	Grant	PRIME (501c3)	PRIME	PRIME	nonprofit programming and/or docket company support	Foundation
	Docket company support - PRIME as pass-through	Recoverable Grant	PRIME (501c3)	PRIME	Docket company	specific company development	PRIME
		Loan - PRI	PRIME (501c3)	PRIME	Docket company	specific company development	PRIME
	Direct support to docket company	PRI – Debt, Equity, Convertible Debt, Guarantee	Docket company (various for-profit: C Corp, LLC, etc)	Docket company	Docket company	specific company development	Foundation
		Mission Investment - Debt, Equity, Convertible Debt, Guarantee	Docket company (various for-profit: C Corp, LLC, etc)	Docket company	Docket company	specific company development	Foundation
GRANT-MAKING PUBLIC CHARITY	Operating support to PRIME	Grant	PRIME (501c3)	PRIME	PRIME	nonprofit programming and/or docket company support	Grantor
	Support for docket companies - PRIME as pass-through	Recoverable Grant	PRIME (501c3)	PRIME	Docket company	specific company development	PRIME
		Loan	PRIME (501c3)	PRIME	Docket company	specific company development	PRIME
	Direct support to docket companies	Mission Investment - Debt, Equity, Convertible Debt, Guarantee	Docket company (various for-profit: C Corp, LLC, etc)	Docket company	Docket company	specific company development	Investor
DONOR ADVISED FUND (DAF)	Operating support to PRIME	Grant	PRIME (501c3)	PRIME	PRIME	nonprofit programming and/or docket company support	DAF manager
	Support for docket companies - PRIME as pass-through	Recoverable Grant	PRIME (501c3)	PRIME	Docket company	specific company development	PRIME
		Loan	PRIME (501c3)	PRIME	Docket company	specific company development	PRIME
	Direct support to docket companies	Mission Investment - Debt, Equity, Convertible Debt, Guarantee	Docket company (various for-profit: C Corp, LLC, etc)	Docket company	Docket company	specific company development	DAF manager
OTHER ACCREDITED INVESTOR	Operating support to PRIME	Donation	PRIME (501c3)	PRIME	PRIME	nonprofit programming and/or docket company support	Donor
	Support for docket companies - PRIME as pass-through	Recoverable Grant	PRIME (501c3)	PRIME	Docket company	company development	PRIME
	Direct support to docket companies	Mission Investment - Debt, Equity, Convertible Debt, Guarantee	Docket company (various for-profit: C Corp, LLC, etc)	Docket company	Docket company	specific company development	Investor
UNACCREDITED INVESTOR	Operating support to PRIME	Donation	PRIME (501c3)	PRIME	PRIME	nonprofit programming and/or docket company support	Donor

Quidnet Energy: PRIME's first proof-of-concept investment



RedWave Energy: PRIME's second demonstrative investment



PRIME's 2016 docket was selected from 2015 Registry of 1,300 companies...



membranes that reduce the cost and energy of desalination and water treatment



meter collar that enables solar and other renewable resources to connect to the grid cheaply, safely, and rapidly



grid control software that enables efficient management of grids and microgrids



ultra-high-efficiency, low-cost solar material



affordable, distributed, carbon-free nuclear power



Ways energy innovators can be proactive in seeking philanthropic investment in the near-term:

Level set about FOMO – philanthropic investment in energy not really happening yet

Make sure you're in the PRIME Registry via www.primecoalition.org

Check out PRIME's tools to help you construct your own argument for "charitability"

Attend PRIME's in-person training sessions for entrepreneurs

Once you're in the door with a philanthropist, come back to us – we can help with peer-to-peer validation!

Reach out to Scott Burger, PRIME's Director of Operations – scott@primecoalition.org

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Advanced Research Projects Agency • ENERGY



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