



Financial Modeling based on Cash Flow

Welcome! The workshop will get started at 1PM.

June 13, 2024



U.S. DEPARTMENT OF
ENERGY

Office of SBIR/STTR
Programs

Workshop Agenda

- 1:00 PM — 1:10 PM** **Welcome**
- 1:10 PM — 1:30 PM** *Current State of Energy Related Industries*
Michael Delgado, Director
Rhodium Group | Energy & Climate
- 1:30 PM – 2:30 PM** *Cash is King - Financial Modeling Basics*
Max Green | DOE SBIR Phase Shift 2
Tom Teynor | DOE SBIR Phase Shift 2
- 2:30 PM – 3:00 PM** *Phase Shift II “Aha Moments” Awardee Panel*
- 3:00 PM** **Closing Remarks**





Financial Modeling & Why We Keep Revisiting It

Carol Rabke, Ph.D.

Tech to Market (T2M) Advisor - Partnering

carol.rabke@science.doe.gov



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Why do we keep revisiting financial modeling?

- Commercialization is a statutory goal of the SBIR/STTR programs
- Congress wants to see return on investment of taxpayer dollars:
 - *taxable revenues*
 - *job creation*
 - *scientific and/or societal benefit*
- Agencies are required to evaluate and report outcomes; commercialization plans are evaluated as part of your application
- SBIR funding only goes so far...

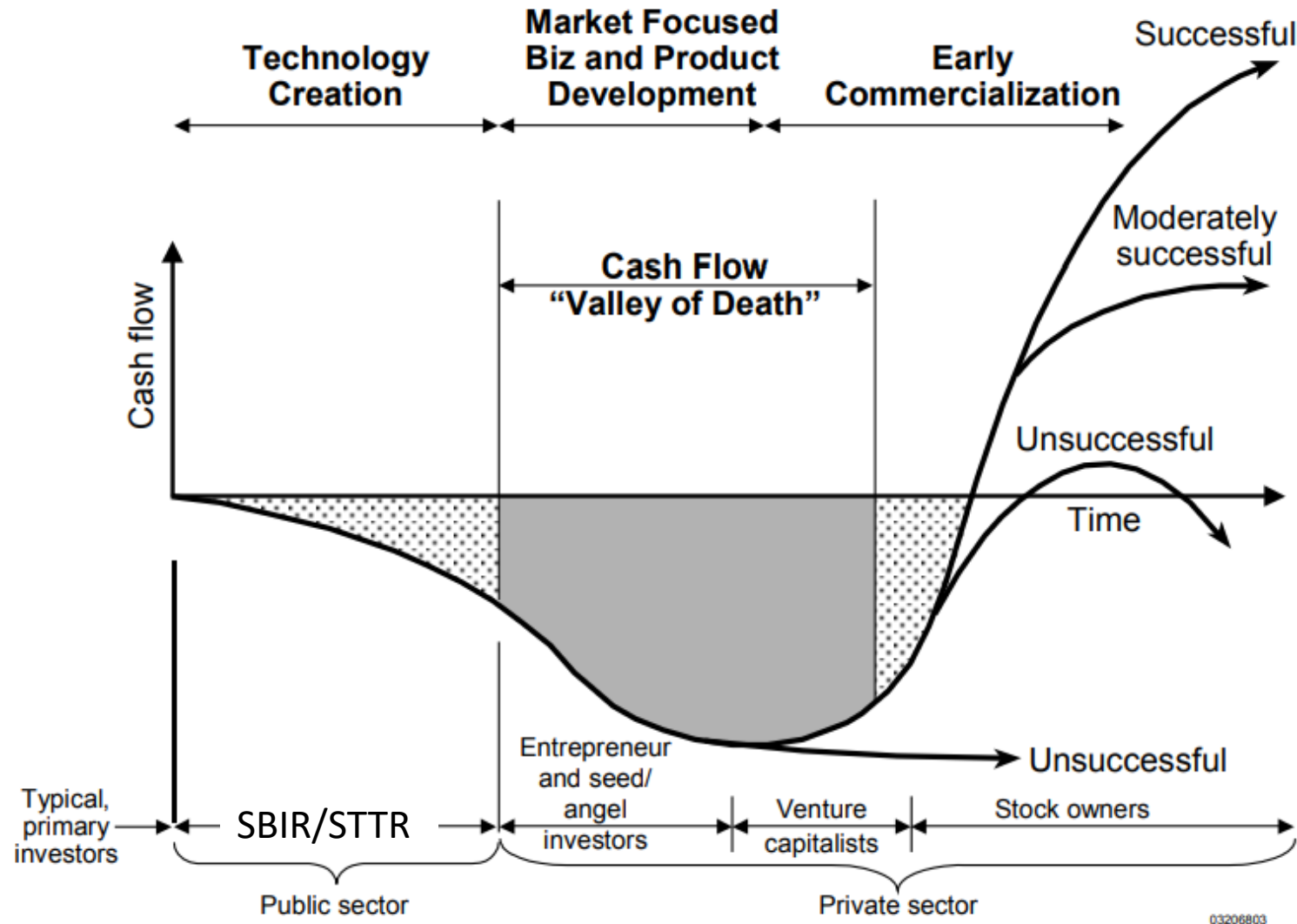
Technical Merit

Ability to Carry Out
the Project

Impact

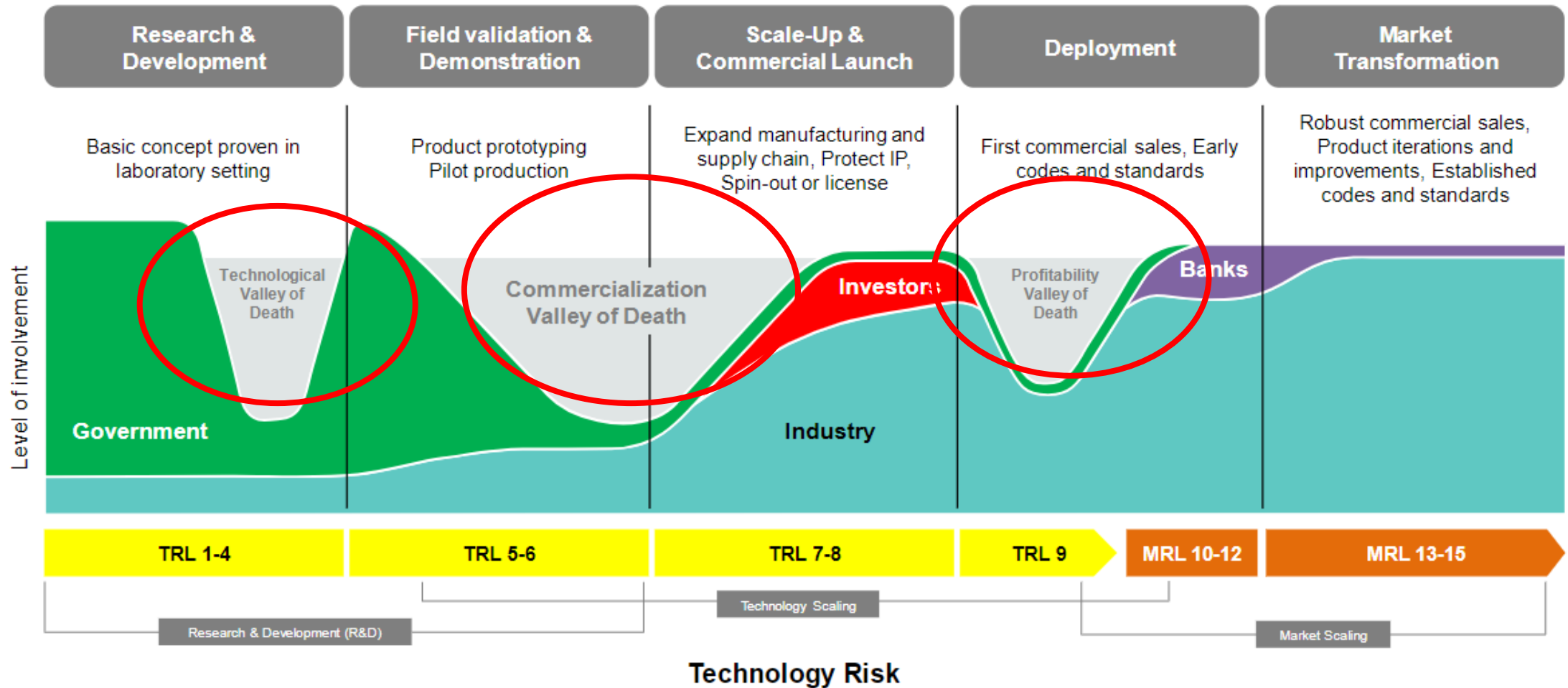
PIER Plan





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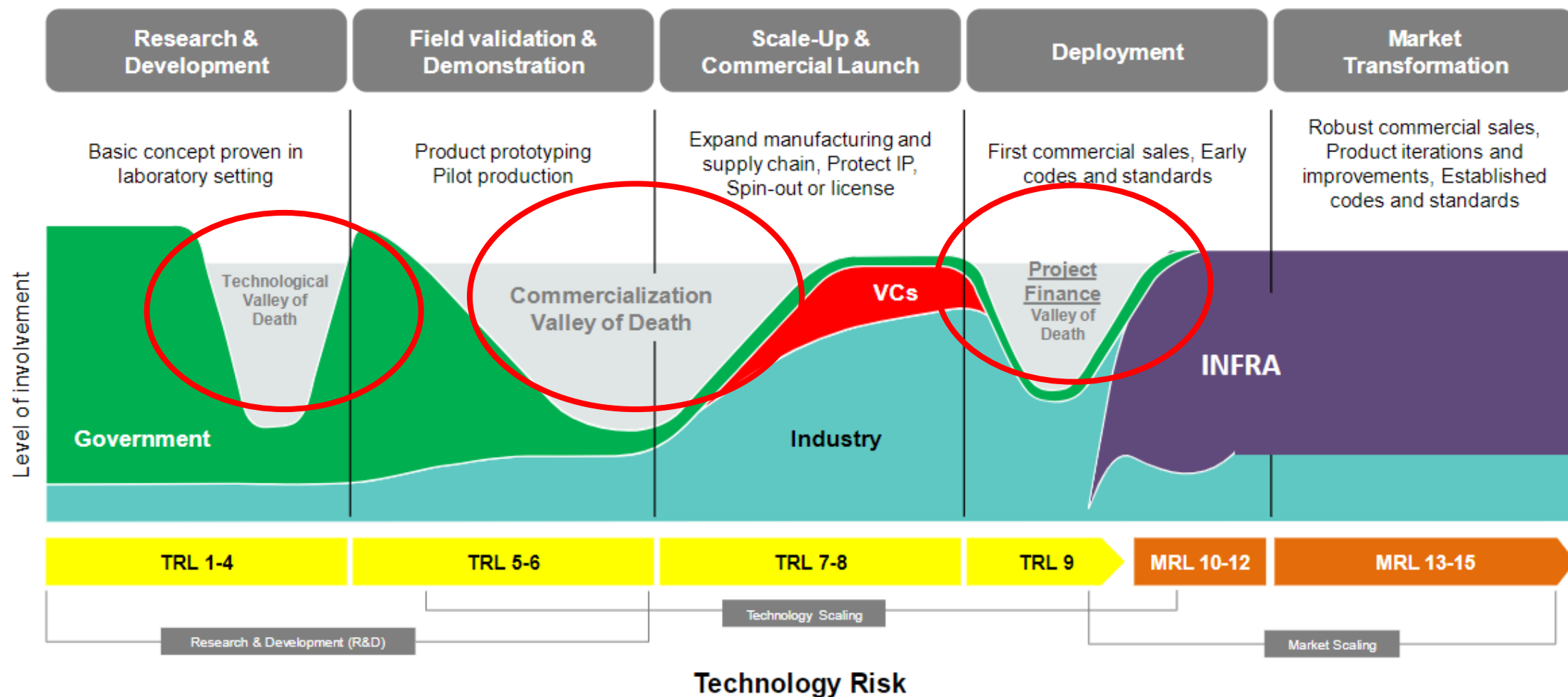




TRL = Technology Readiness Level MRL = Market Readiness Level

Source: Rob Day, Spring Lane Capital, NREL IGF 2023





TRL = Technology Readiness Level MRL = Market Readiness Level



Why do we keep revisiting financial modeling... because SBIR funding will only go so far...

- Suggested you start thinking about financial modeling and revenue generation on your Phase I application

ABC LLC estimates sales revenues of \$XX and licensing revenues of \$XX during the first 10 years of commercialization.

- Asked you to build on it and to provide validation and assumptions in your Phase II application; ***Section 4 of your Phase II commercialization plan***; also provide resources - ***TABA and Phase Shift programs***



4. Finance & Revenue Model



Describe an appropriate staged finance plan given the market opportunity. Outline the level of funding required for each stage along the path to commercialization. What are your costs to complete research and development, product, and production development/design/engineering, and to produce the product or service? What are the costs required to implement your commercialization strategy? How will you access the appropriate funds?

Provide a table with anticipated costs identifying the anticipated source of each detailing revenues or other operating capital you can devote to these. If there is a shortfall, explain how you will raise or access the appropriate funds. If no additional cash is needed explain why you are confident that is the case. Provide specific contacts, leads, previous relationships, and agreements already in place. Are any other commitments in place which will affect your ability to raise Phase III follow-on funding?

Provide an estimate of the DOE return on investment or net present value for this project. This estimate should incorporate the profit before taxes (positive cash flow) for the first 10 years of commercialization and treat the DOE SBIR or STTR funding as an investment (negative cash flow). Describe the revenue streams (licensing, product sales or other) associated with your Commercialization Plan. When do you anticipate "first revenues" from each stream? When do you expect to reach "break even"?

Provide annual proformas for the next five years (two years of the Phase II effort + 3 years' post Phase II). Income Statements are required. Cash Flow and Balance Sheets may be included if they are considered critical for your strategy. If not included, Cash Flow and Balance Sheets should be available upon request from DOE.



Key Points - Finance and Revenue Model



- **Create time-phased plan that identifies milestones, necessary funding and potential funding sources to bring technology from concept to market – LOS to validate:**
 - *Additional R&D to refine/de-risk the prototype*
 - *Legal – IP and negotiations*
 - *Pilot scale manufacturing*
 - *Marketing & sales to gain customers*
 - *Distributors, new personnel, etc.*
- **Pro forma income statement for YR1 and YR2 Phase II and three years post P2.** Include assumptions. No magic number. **Cash is King**. Are **sales projections** reasonable? Year of first revenue depends on your technology. Use the supporting discussion to expand on future markets and revenues.
- **Estimate of DOE ROI for the next 10 years.** No magic number.



Fantastic line up of speakers!



***Michael Delgado, Director
Rhodium Group | Energy & Climate***



***Max Green and Tom Teynor
DOE SBIR Phase Shift 2 Coaches & Curriculum Developers***



***Several Phase Shift II Awardee Participants!
Joe McCrick | KVA Stainless
Kimberly White | Coreform
Greg Yeric | Cerf Labs***

Why do we keep revisiting financial modeling and revenue generation??



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SBIR/STTR funding only goes so far!!



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Clean Investment Monitor

Tracking Clean Energy and Transportation
Investment in the United States

Energy & Climate

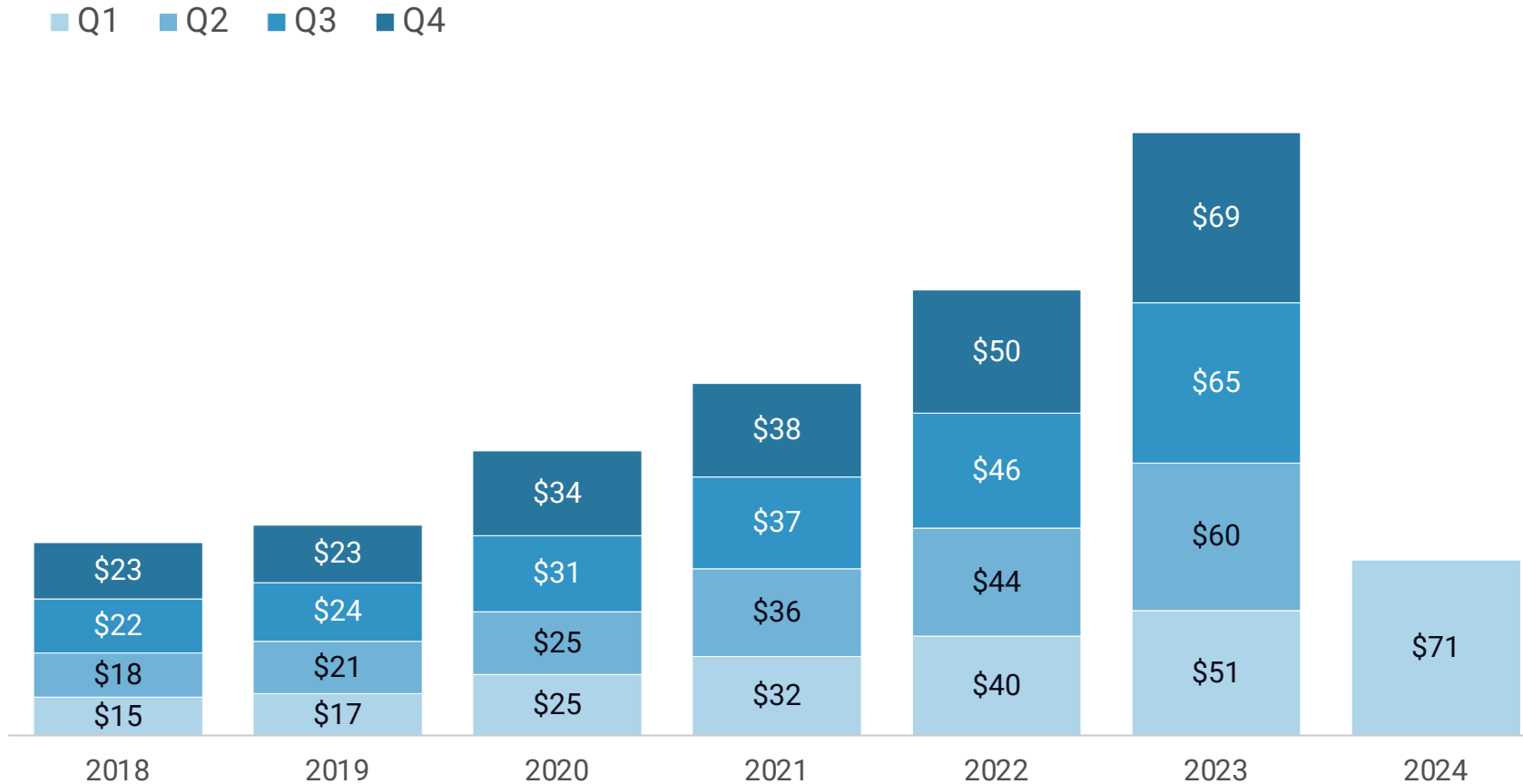
DOE Commercialization Workshop | June 13, 2024

Rhodium Group & MIT CEEPR Clean Investment Monitor



Clean investment in the US has more than tripled in last five years

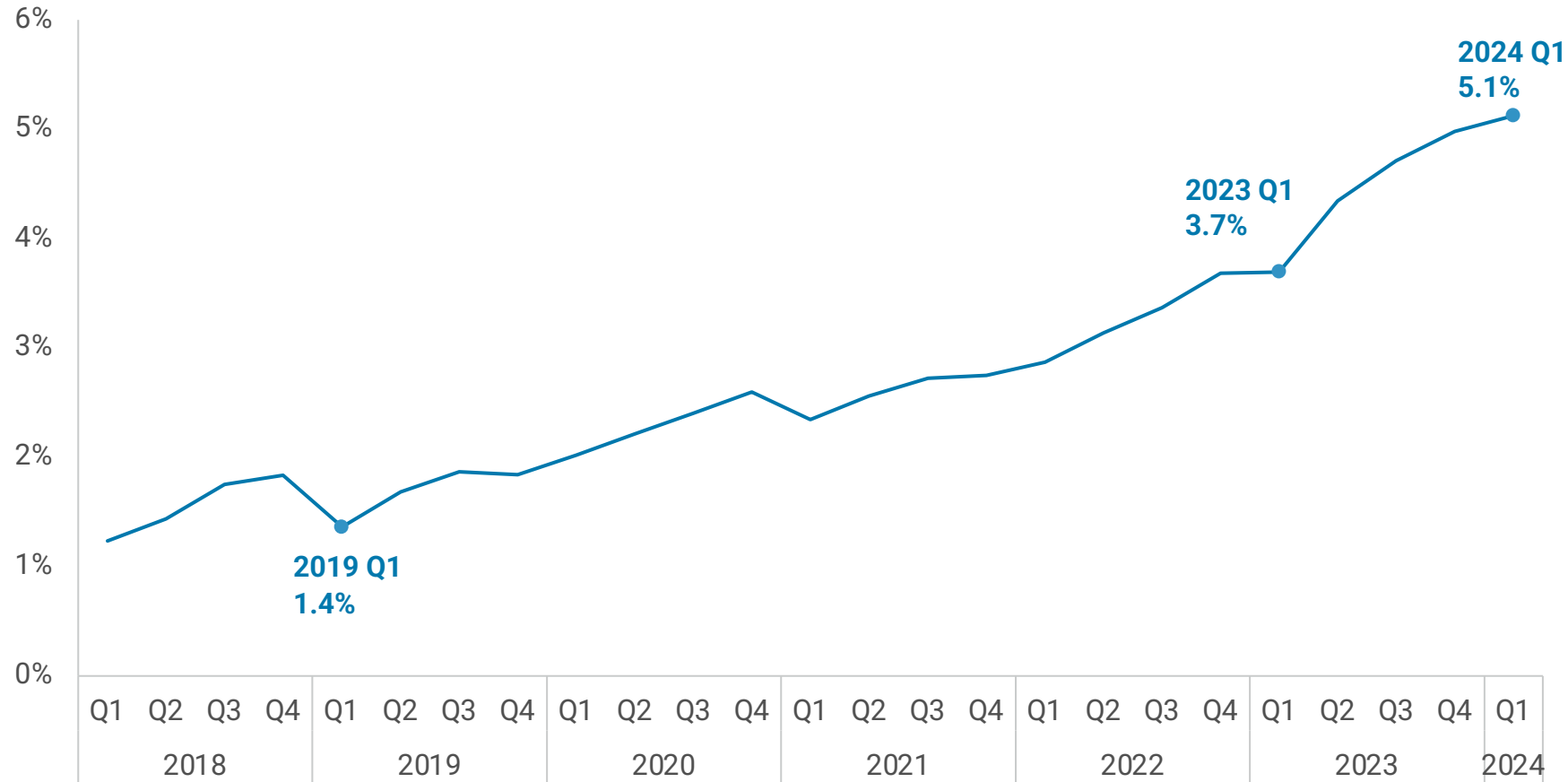
Billion 2023 USD, investment in commercial-scale structures & purchases of durable goods



Source: Rhodium Group and MIT/CEEPR Clean Investment Monitor

Clean investment is now a critical component of total investment

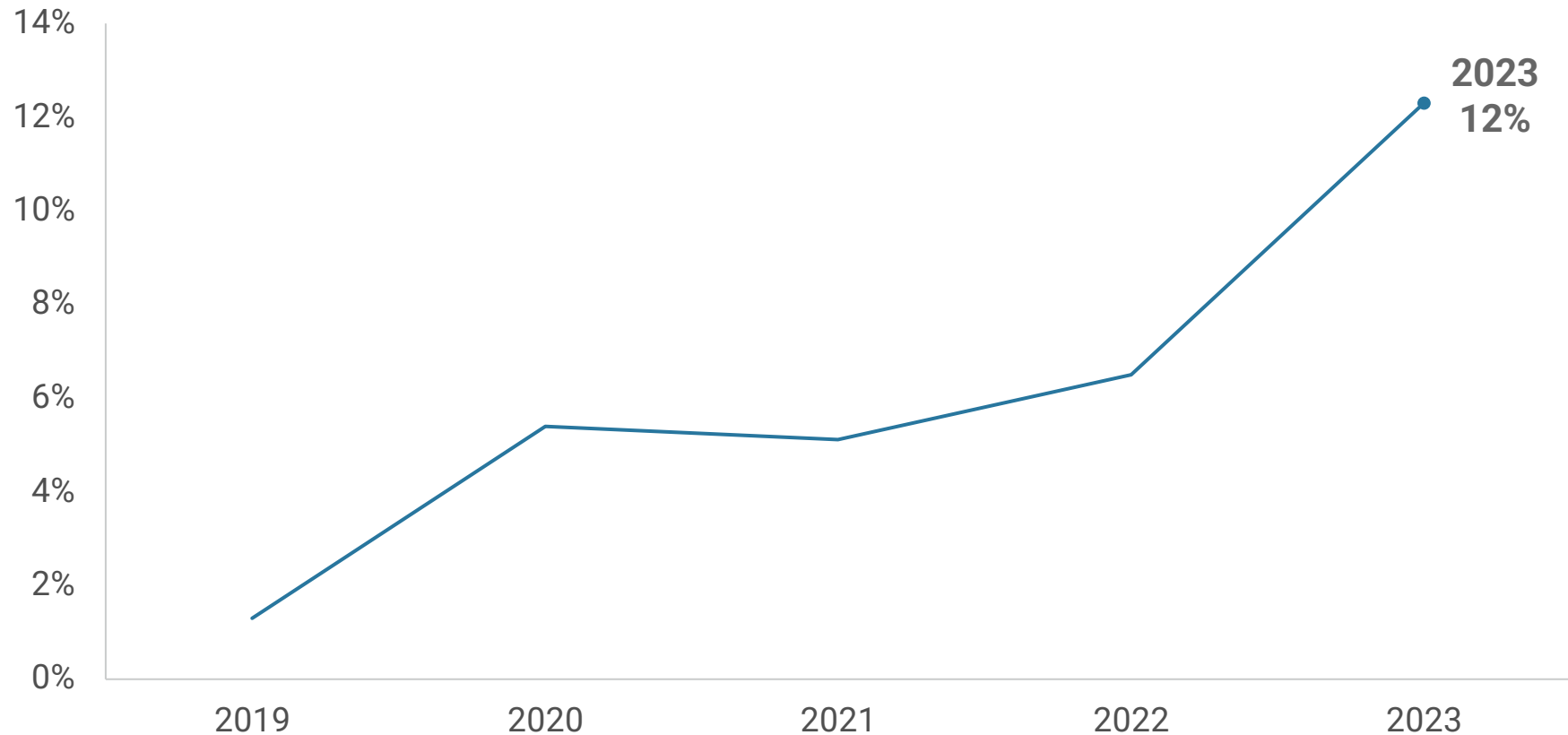
Share of total US structures & durable goods investment



Source: Rhodium Group and MIT/CEEPR Clean Investment Monitor

Growth in clean investment is a major driver of overall GDP growth

Annual growth in clean investment as a share of 2018-2023 trend real US GDP growth



Source: Rhodium Group and MIT/CEEPR Clean Investment Monitor: cleaninvestmentmonitor.org

Breaking ground across sectors

2023 US Bn in structures & durable goods construction or purchases

Retail

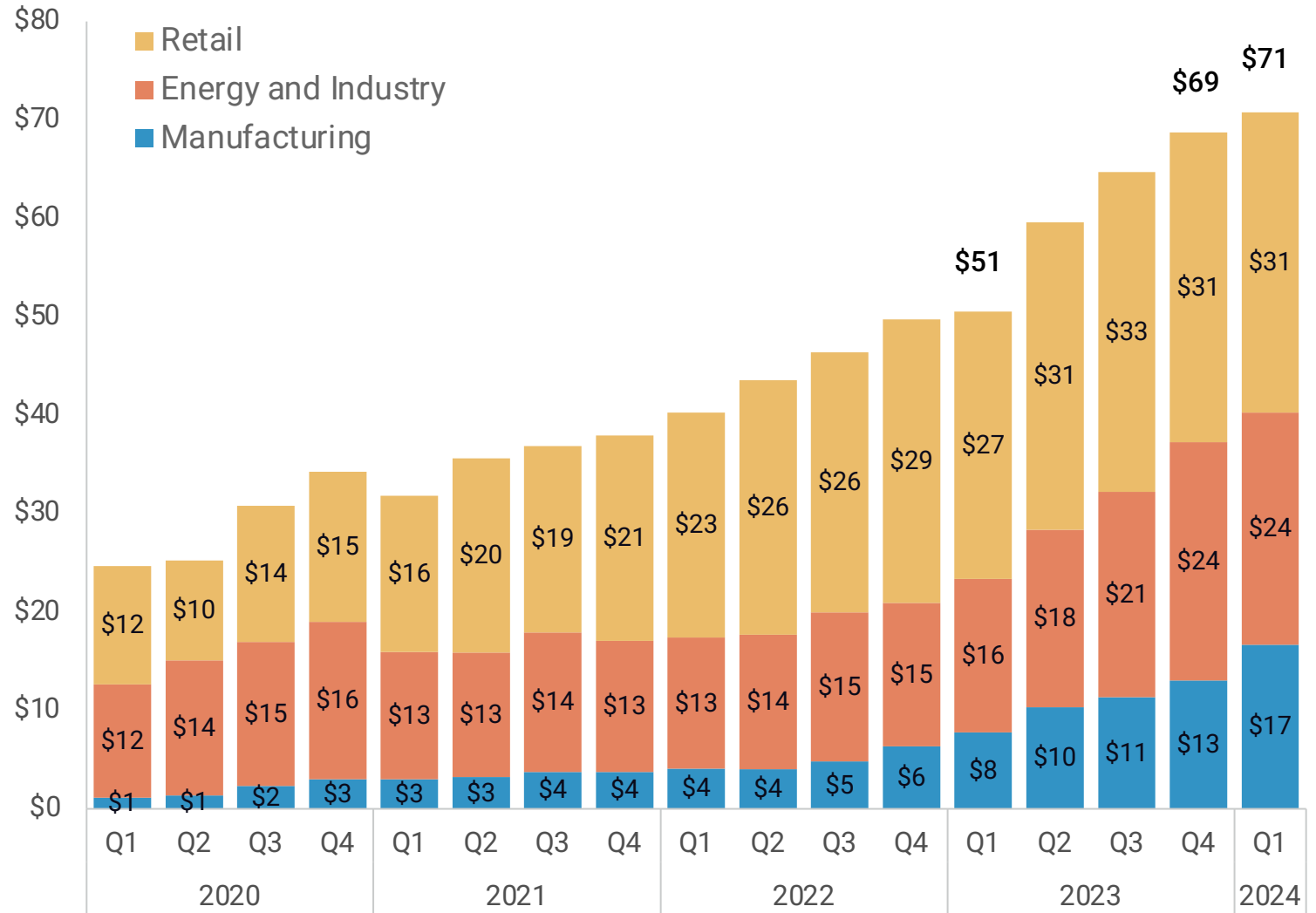
Residential & commercial deployment: zero-emission vehicles, distributed generation, & energy efficiency

Energy and Industry

Utility-scale clean electricity; clean industrial facilities: H2, cement, SAF, fuels, chemicals, steel, CCUS

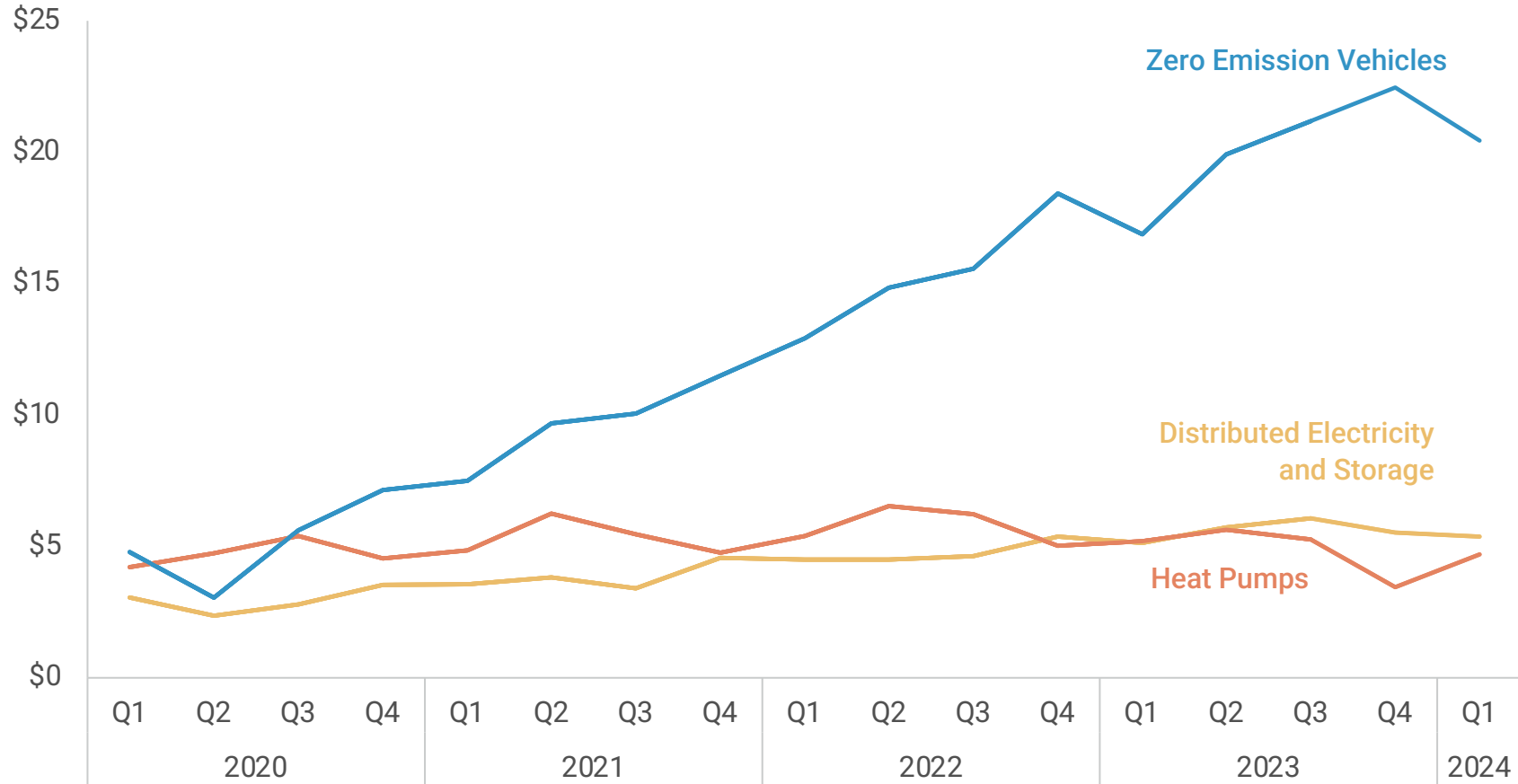
Manufacturing

Clean energy & transportation manufacturing facilities: critical minerals, batteries, ZEVs, solar, wind, electrolyzers, fueling equipment & chargers



Retail investment by technology

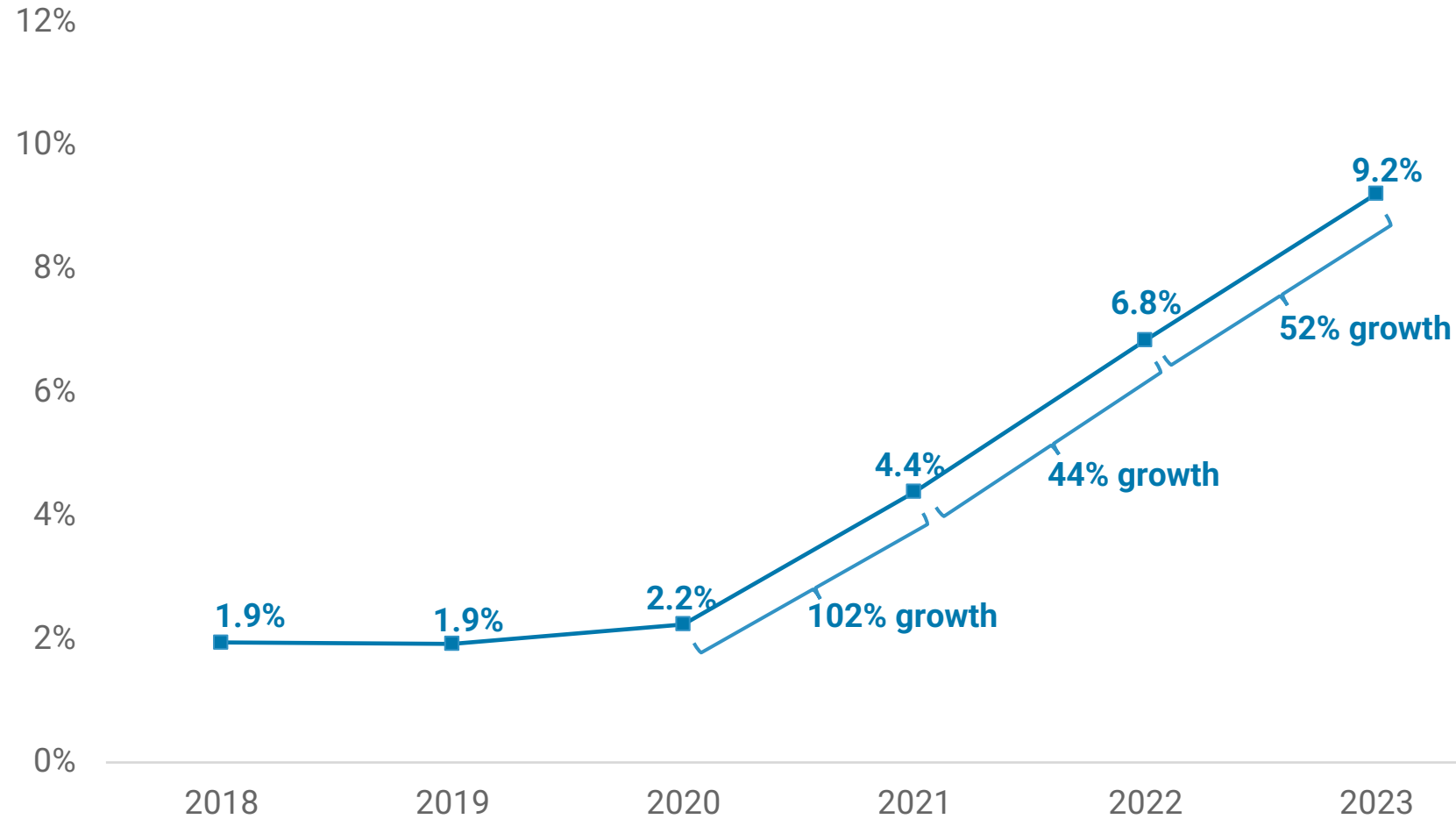
Billion 2023 USD



Source: Rhodium Group and MIT/CEEPR Clean Investment Monitor

Growing pains are real: ZEV growth rate poses challenges for OEMs

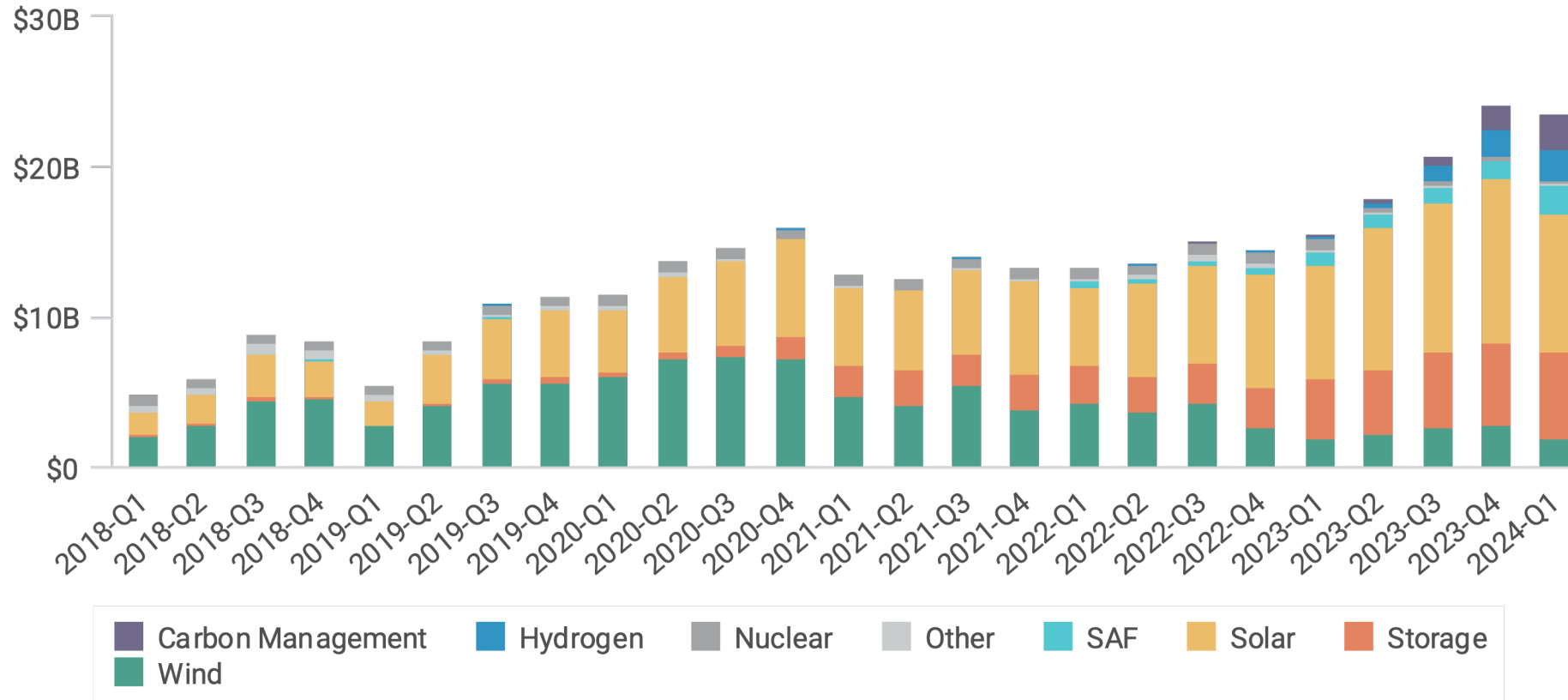
Actual light-duty BEV, PHEV, and FCEV registrations as a share of total sales



Source: Rhodium Group / MIT-CEEPR Clean Investment Monitor, Energy Innovation, REPEAT Project

Energy and Industry: steady clean growth, with newcomers on the rise

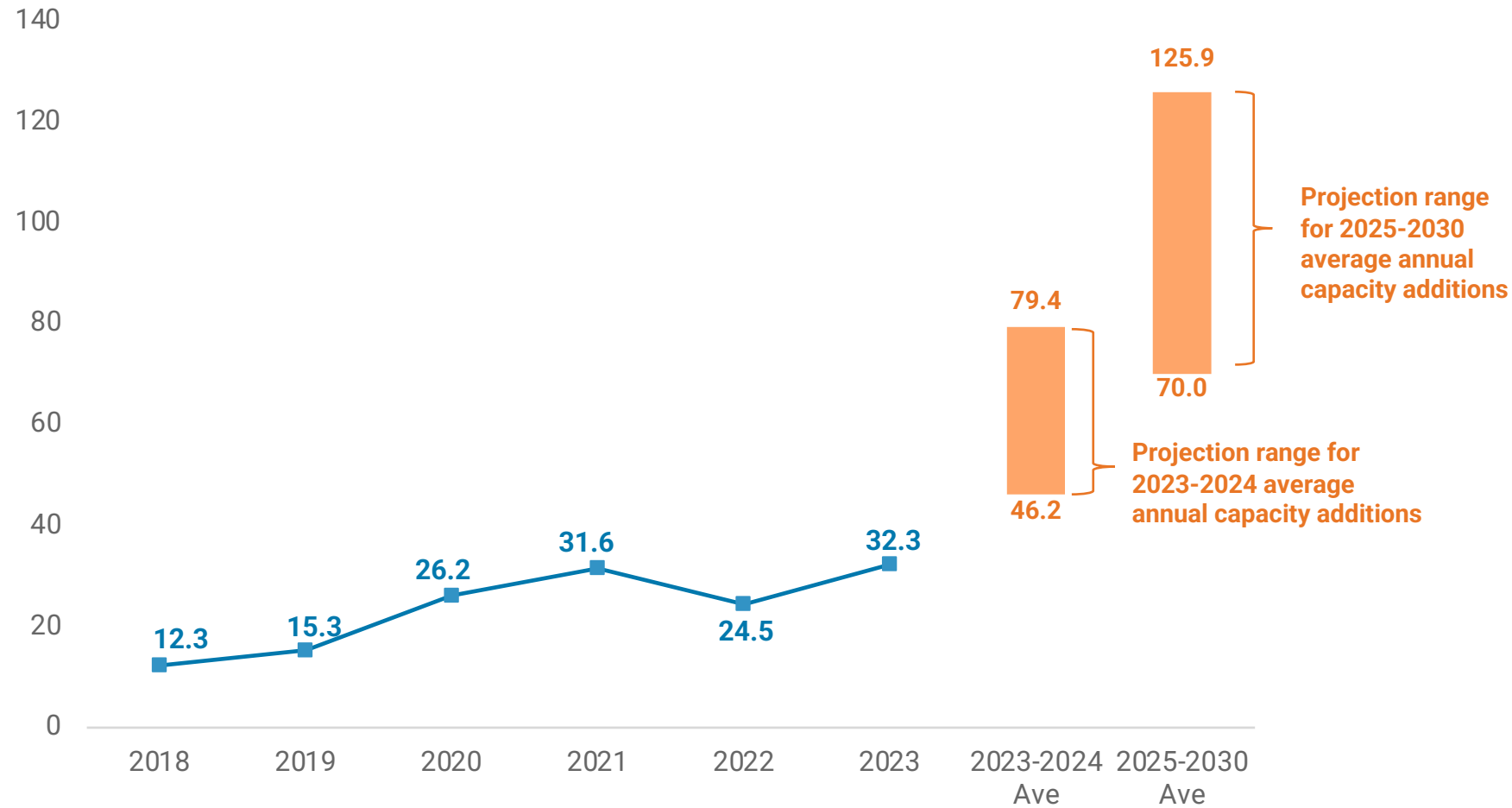
Billion 2023 USD. Solar + storage dominant, but emerging climate technologies made up 25% of Q1 actuals



Source: Rhodium Group and MIT/CEEPR Clean Investment Monitor: cleaninvestmentmonitor.org

Need to increase pace of clean electricity interconnection

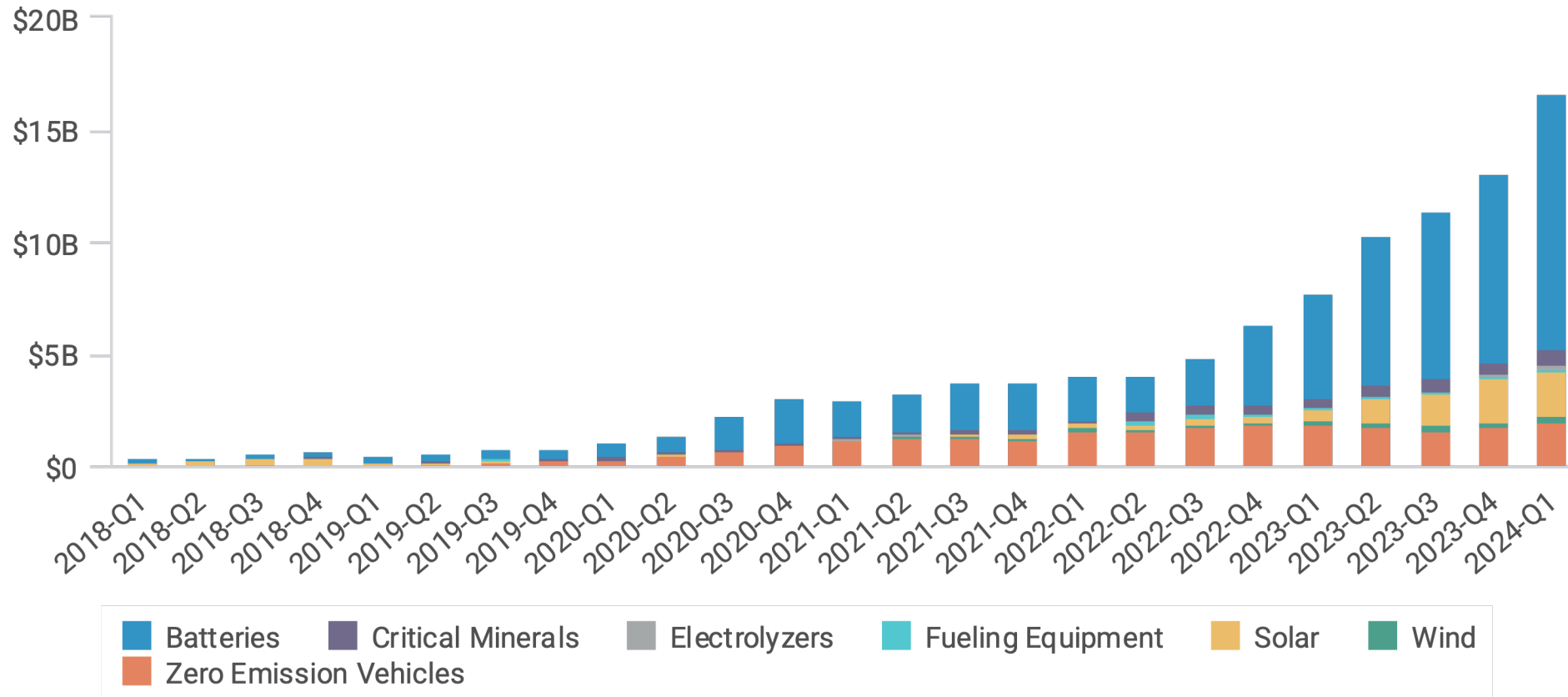
Actual GW clean electricity capacity additions vs. predicted range at time of IRA passage



Source: Rhodium Group / MIT-CEEPR Clean Investment Monitor, Energy Innovation, REPEAT Project

Manufacturing of clean goods is a new growth engine for the US

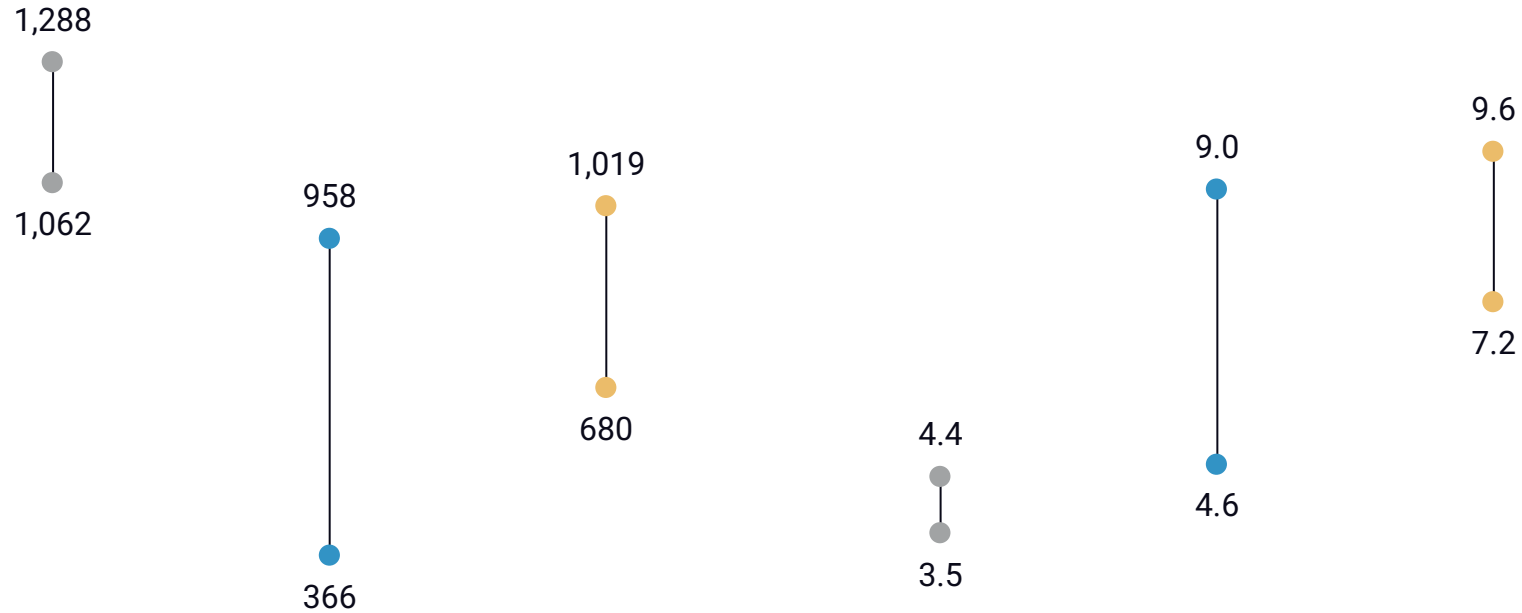
2023 USD. EV supply chain continues to dominate, but solar is emerging



Source: Rhodium Group and MIT/CEEPR Clean Investment Monitor: cleaninvestmentmonitor.org

2030 ZEV supply chain over-shooting on batteries, at low end on assembly

2030 announced capacity vs. projected demand. GWh of batteries (left) and Mn vehicles (right)



Announced Domestic Capacity	Demand Under Current Policy	Demand Under Joint Action
1,062	958	1,019

Batteries (GWh)

Announced Domestic Capacity	Demand Under Current Policy	Demand Under Joint Action
3.5	4.6	9.0

EVs (Million)

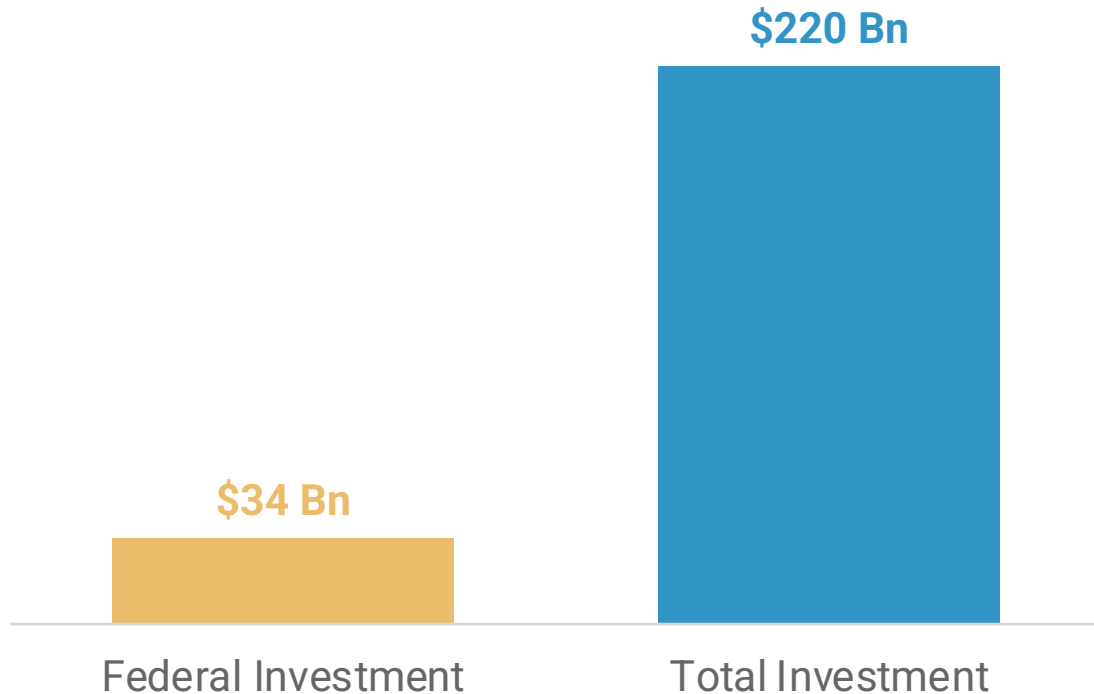
Source: Rhodium Group and MIT/CEEPR Clean Investment Monitor

Total clean investment in FY2023 is 5-6x Federal spend

Includes fiscal cost of tax credits, grants, loans, and loan guarantees in categories eligible under the IRA

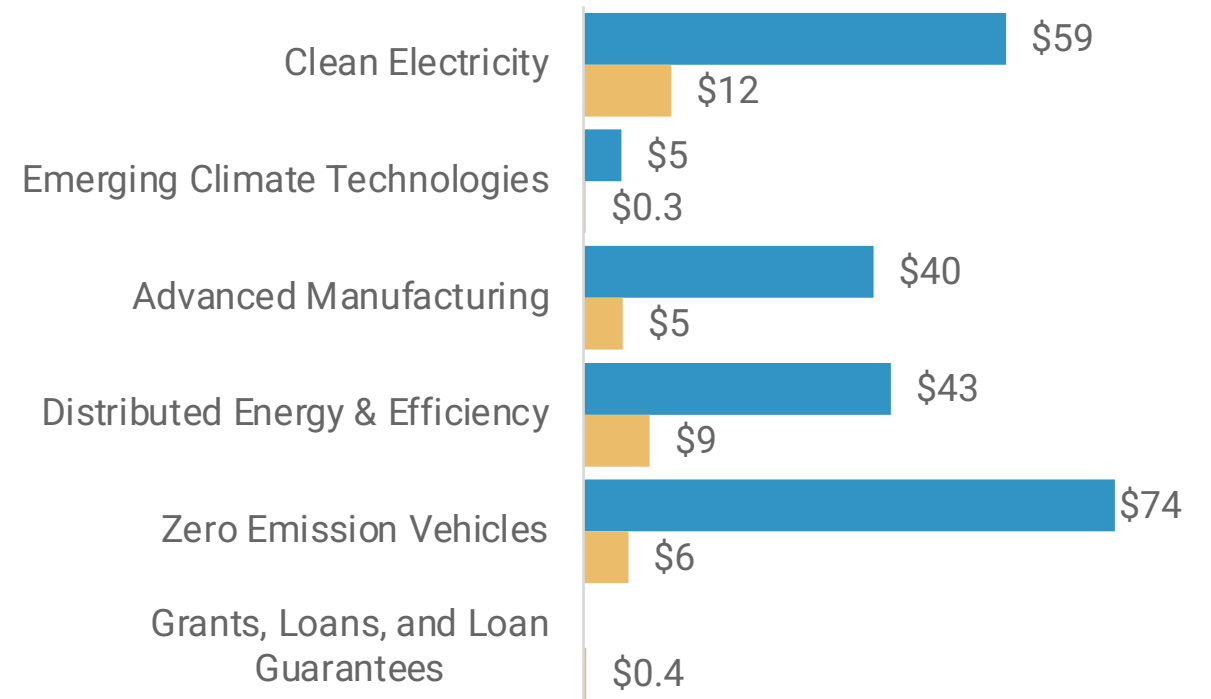
Federal and total FY2023 investment

Billion 2022 USD



Federal spending by category, FY2023

Billion 2022 USD



Source: Rhodium Group and MIT/CEEPR Clean Investment Monitor: cleaninvestmentmonitor.org

Clean Investment Monitor

cleaninvestmentmonitor.org

datarequest@cleaninvestmentmonitor.org

Intro to Cash Flow

DOE SBIR

Tom Teynor & Max Green | 2024



ENTREPRENEURIAL *FINANCIAL PLANNING*



*DISCLAIMER

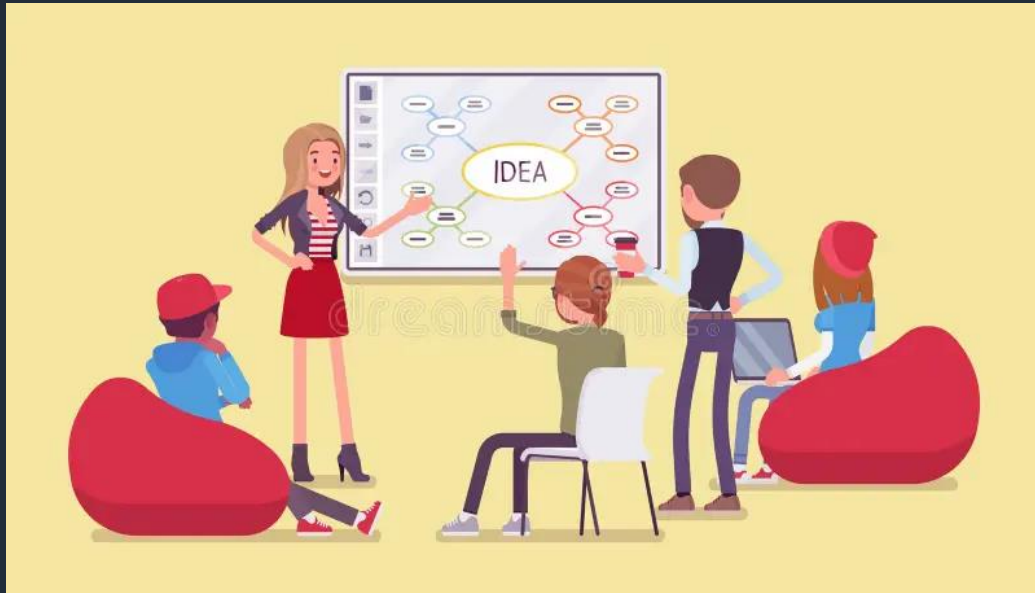
**This cash flow presentation is intended for conceptual and educational purposes only. The information provided is not a substitute for professional advice.*

We strongly recommend that you seek specific guidance from your accountant, attorney, investors, board directors, and other advisors regarding your individual financial situation.



PURPOSE

SHARPEN FOCUS TOWARDS DEVELOPING A
SUCCESSFUL & SUSTAINABLE BUSINESS



BUILD INVESTOR CONFIDENCE

Dilutive or Non-Dilutive



FINANCIAL VISION

RALLY THE TEAM



PROFESSIONAL ADVICE



You will need a financial team

(bookkeeper / fractional accountant / full-time team)

FINANCIAL STATEMENTS

PROFIT & LOSS

INCOME

\$ COMING IN

MINUS

EXPENSES

\$ GOING OUT

PROFIT OR LOSS

BALANCE SHEET

ASSETS

* OWN \$\$\$\$\$

MINUS

LIABILITIES

* DUE \$\$\$\$\$

WORTH \$\$\$\$\$

CASH FLOW STATEMENT

BALANCE

BALANCE

START

END

\$

\$

DIFFERENCE!

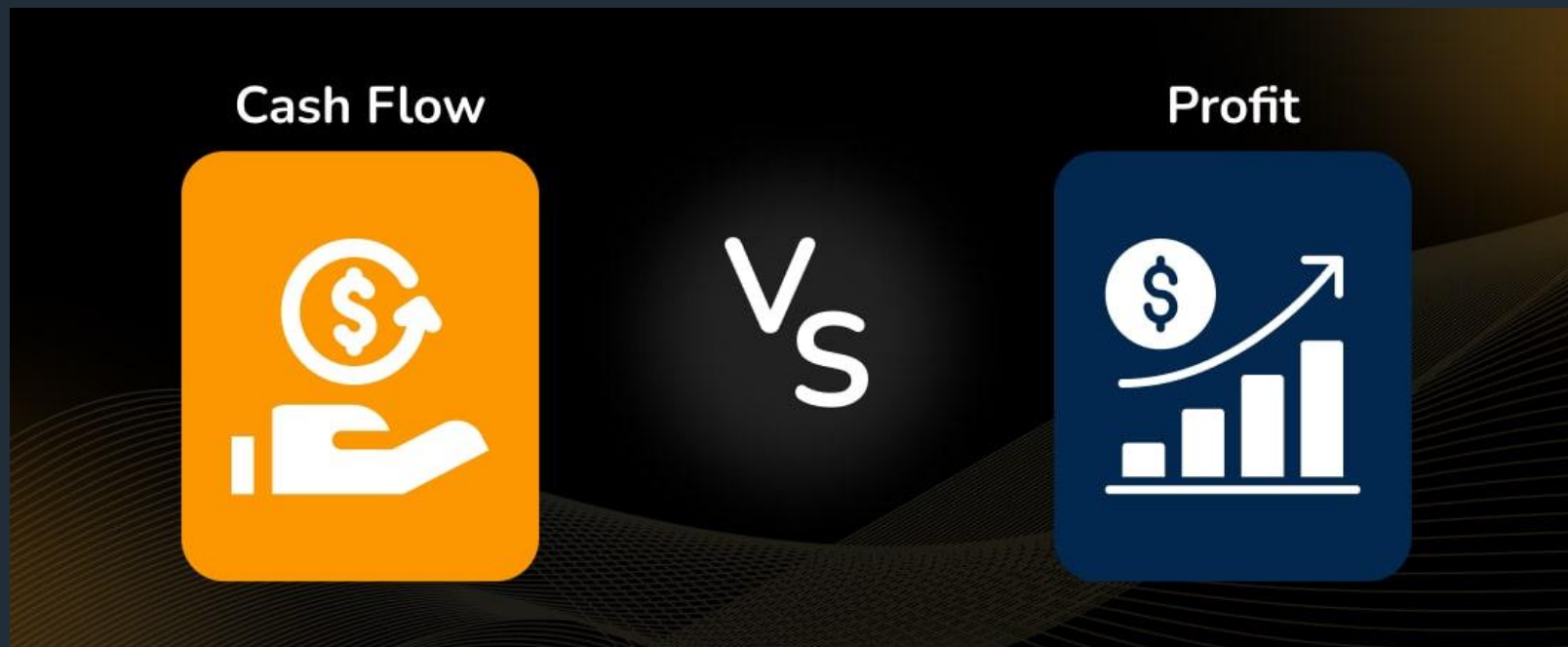
Performance

Worth

Health

CASH FLOW OR PROFIT,

which one is more important?



NON-LAYMAN'S TERMS

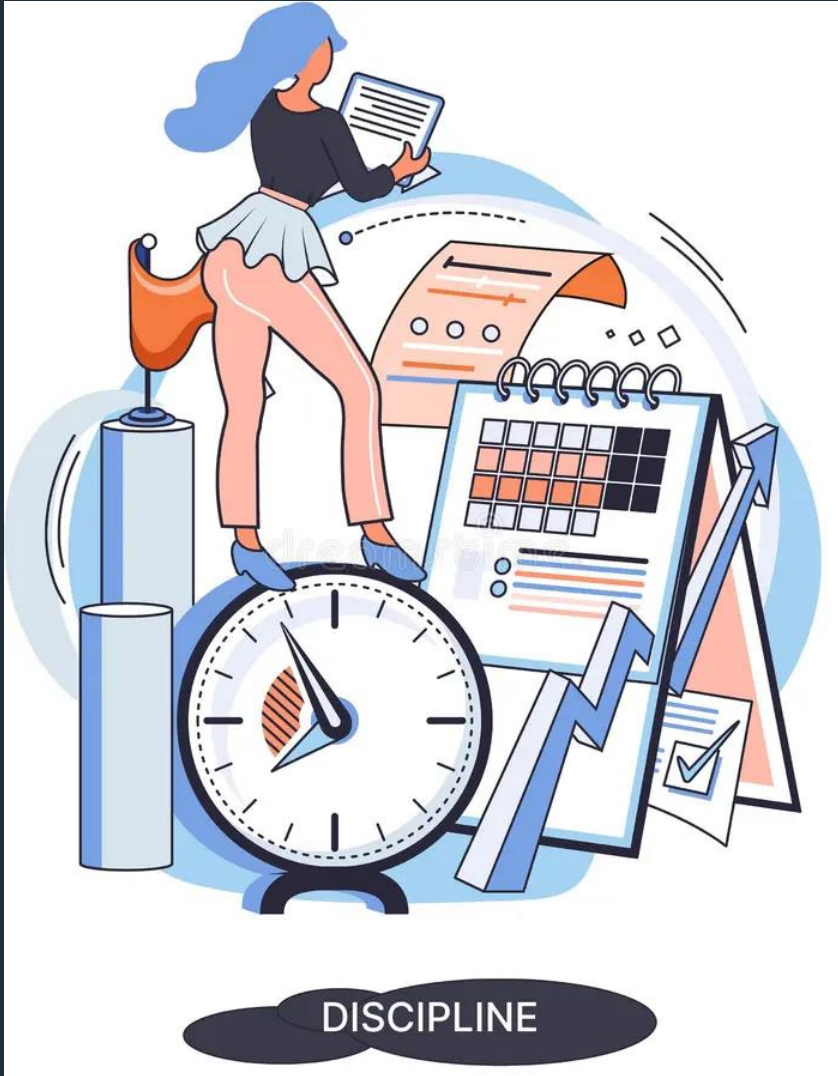


“In financial accounting, a cash flow statement, also known as statement of cash flows,

is a financial statement that shows how changes in balance sheet accounts and income affect cash and cash equivalents,

and breaks the analysis down to operating, investing and financing activities.”

OPERATIONAL CONTROL



Strong financial management improves the control of outcomes

OPERATIONAL CASH FLOW MODEL

1. *Beginning Cash*
2. *Cash In (Revenue, Financing)*
3. *Cash Out (OpEx, CapEx, Interest)*
4. *Ending Cash*
5. **Cash Burn / Gain**

Cash Flow – Summary

TARGET MARKET:	General Notes:											
	Q3 - 2024	Q4 - 2024	Q1 -2025	Q2 - 2025	Q3 - 2025	Q4 - 2025	Q1 -2026	Q2 - 2026	Q3 - 2026	Q4 - 2026	Q1 - 2027	Q2 - 2027
Starting Cash Balance (+/-)	\$0	\$1,160	\$1,090	\$1,010	\$800	\$685	\$670	\$365	\$325	\$375	\$455	\$575
Cash In												
Cash from Sales (+)				+\$50		+\$75		+\$100	+\$200	+\$250	+\$350	+\$500
Cash In Financing Activities (+)	\$1,250											
Cash Out												
COGS (-)	-\$20	-\$20	-\$30	-\$10	-\$40	-\$15	-\$30	-\$40	-\$50	-\$70	-\$80	-\$120
OpEx (-)	-\$50	-\$50	-\$50	-\$50	-\$75	-\$75	-\$75	-\$100	-\$100	-\$100	-\$150	-\$150
Capital Costs (-)	-\$20			-\$200			-\$200					-\$500
Interest (-)												
Cash Burn												
Monthly Cash Flow (+/-)	-\$90	-\$70	-\$80	-\$210	-\$115	-\$15	-\$305	-\$40	+\$50	+\$80	+\$120	-\$270
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To our fellow entrepreneurs...

*Cash Flow model should tell an
interwoven set of stories...*

*about Cash Cycle, When to
Hire, When you Sell...*

Why is the cash flow model
important?

Illuminate Risks

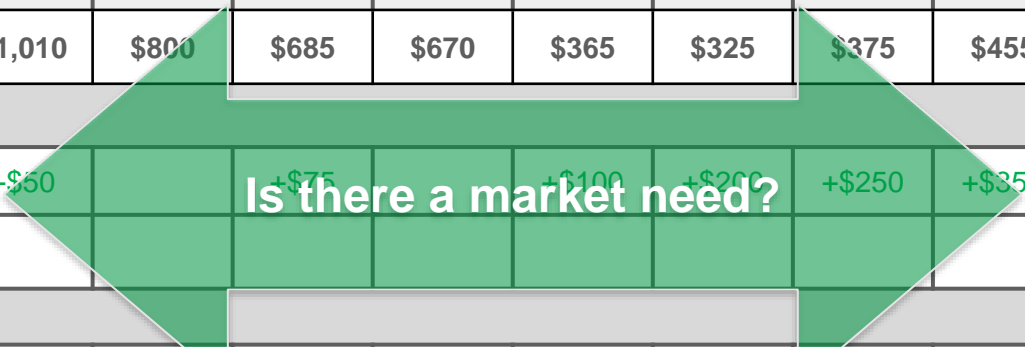
Challenge Milestones

Focus Efforts

Don't Go Broke!

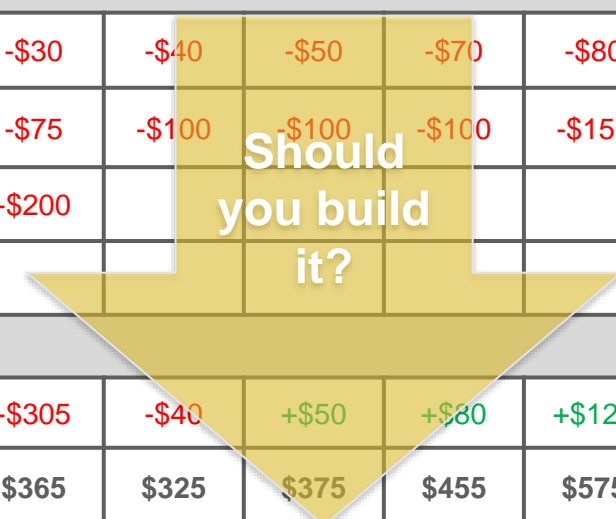
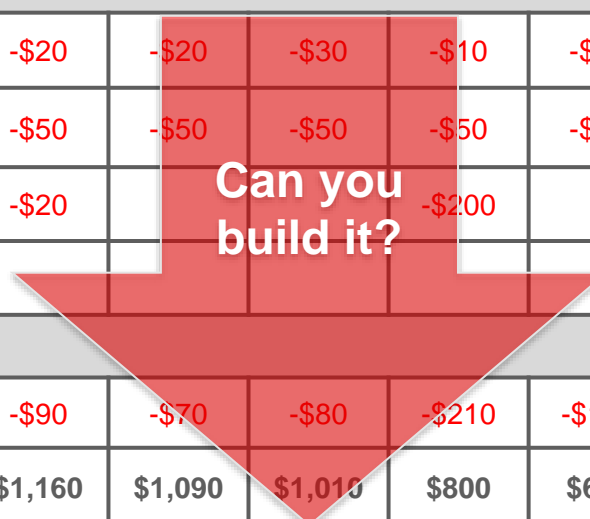
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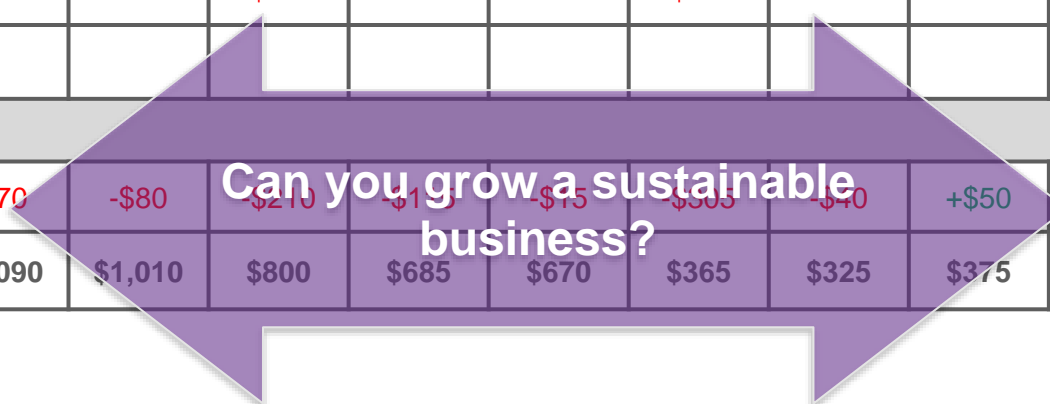
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Interpreting YOUR numbers:

Question 1 from Funders

What is your Burn Rate?

The cash that goes out each period =

Your Burn Rate

Cash Flow – Summary

TARGET MARKET:	General Notes: <i>How does your burn rate change over time?</i>											
	Q3 - 2024	Q4 - 2024	Q1 - 2025	Q2 - 2025	Q3 - 2025	Q4 - 2025	Q1 - 2026	Q2 - 2026	Q3 - 2026	Q4 - 2026	Q1 - 2027	Q2 - 2027
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Interpreting YOUR numbers:

Question 2 from Funders

Do you have enough cash in the bank to sustain operations?

Cash -- *money in the bank!*

Gets more complicated when you have monthly cash flows, accounts receivable, etc.

Cash Flow – Summary

TARGET MARKET:	General Notes:											
	<i>How much cash do you have on hand?</i>											
	Q3 - 2024	Q4 - 2024	Q1 -2025	Q2 - 2025	Q3 - 2025	Q4 - 2025	Q1 -2026	Q2 - 2026	Q3 - 2026	Q4 - 2026	Q1 - 2027	Q2 - 2027
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Interpreting YOUR numbers:


Question 3 from Funders

How much runway do you have?

Runway -- *how long until you go broke*

The shorter the runway, the more desperate, the worse valuations for the startups ... etc.

Cash Flow – Summary

TARGET MARKET:	General Notes:											
	<i>When will you run out of cash?</i>											
	Q3 - 2024	Q4 - 2024	Q1 - 2025	Q2 - 2025	Q3 - 2025	Q4 - 2025	Q1 - 2026	Q2 - 2026	Q3 - 2026	Q4 - 2026	Q1 - 2027	Q2 - 2027
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The J-Curve



TARGET MARKET:	General Notes:											
	Q3 - 2024	Q4 - 2024	Q1 - 2025	Q2 - 2025	Q3 - 2025	Q4 - 2025	Q1 - 2026	Q2 - 2026	Q3 - 2026	Q4 - 2026	Q1 - 2027	Q2 - 2027
Starting Cash Balance (+/-)	\$0	\$1,160	\$1,090	\$1,010	\$800	\$685	\$670	\$365	\$325	\$375	\$455	\$575
Cash In												
Cash from Sales (+)				+\$50	+\$75	+\$100	+\$125	+\$150	+\$250	+\$350	+\$500	
Cash In Financing Activities (+)	\$1,250											
Cash Out												
COGS (-)	-\$20	-\$20	-\$30	-\$10	-\$40	-\$15	-\$30	-\$40	-\$50	-\$70	-\$80	-\$120
OpEx (-)	-\$50	-\$50	-\$50	-\$50	-\$75	-\$75	-\$75	-\$100	-\$100	-\$100	-\$150	-\$150
Capital Costs (-)	-\$20			-\$200			-\$200					-\$500
Interest (-)												
Cash Burn												
Monthly Cash Flow (+/-)	-\$90	-\$70	-\$80	-\$210	-\$115	-\$15	-\$305	-\$40	+\$50	+\$80	+\$120	-\$270
Ending Cash Balance (+/-)	\$1,160	\$1,090	\$1,010	\$800	\$685	\$670	\$365	\$325	\$375	\$455	\$575	\$305

J-Curve

Breakeven

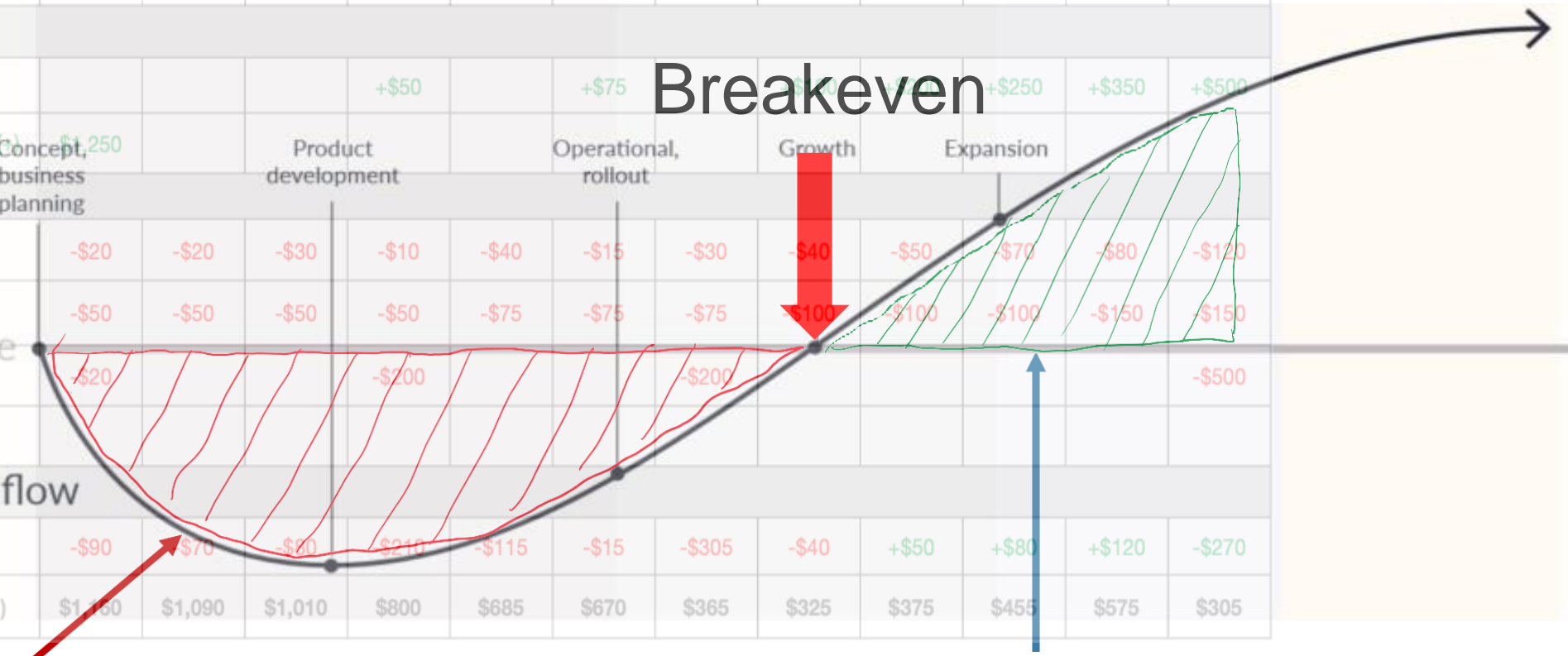
Big Red Numbers

What you need to finance

Worth the risk?

Time

Cash flow

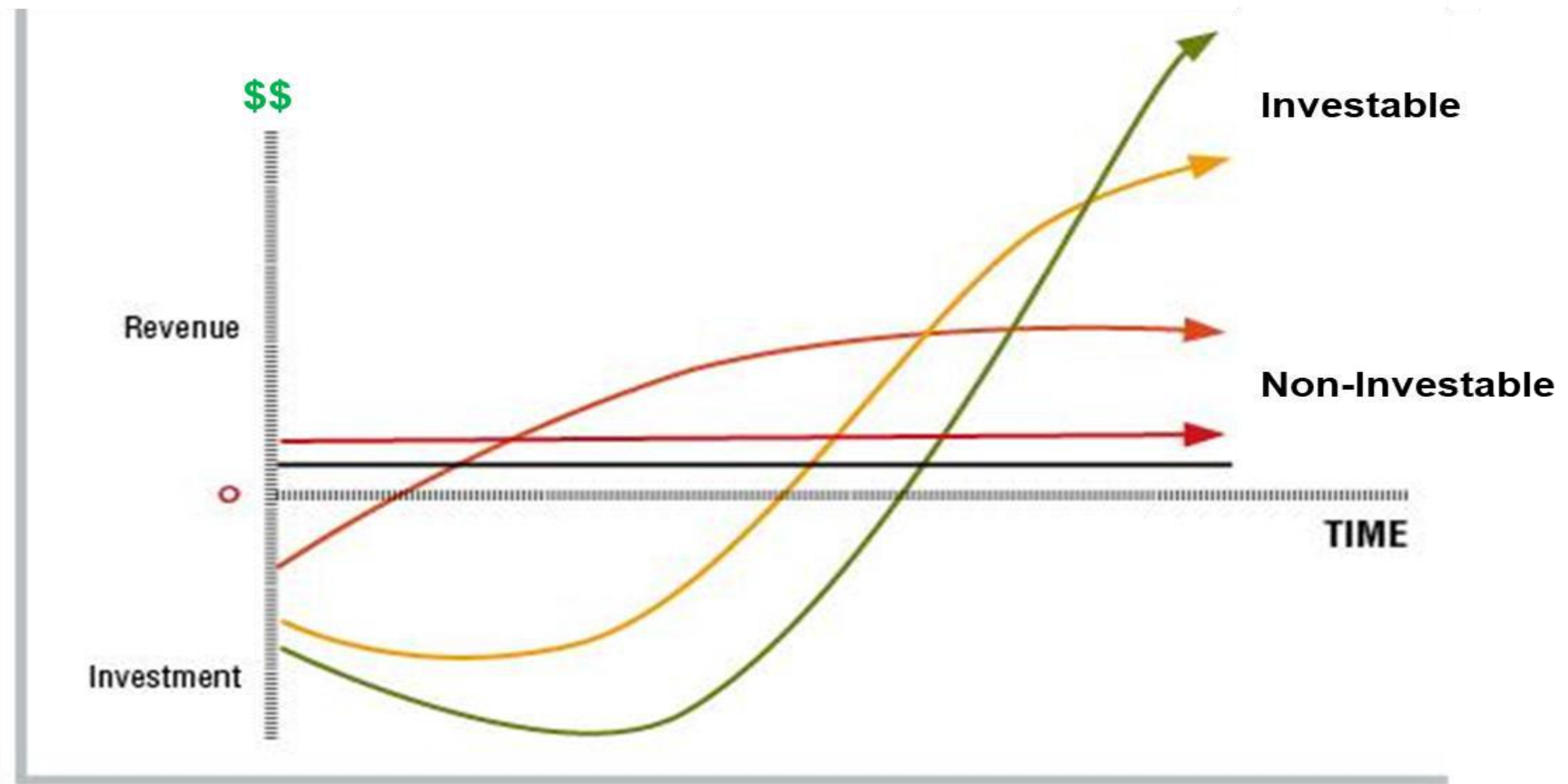


Cash Flow – Summary

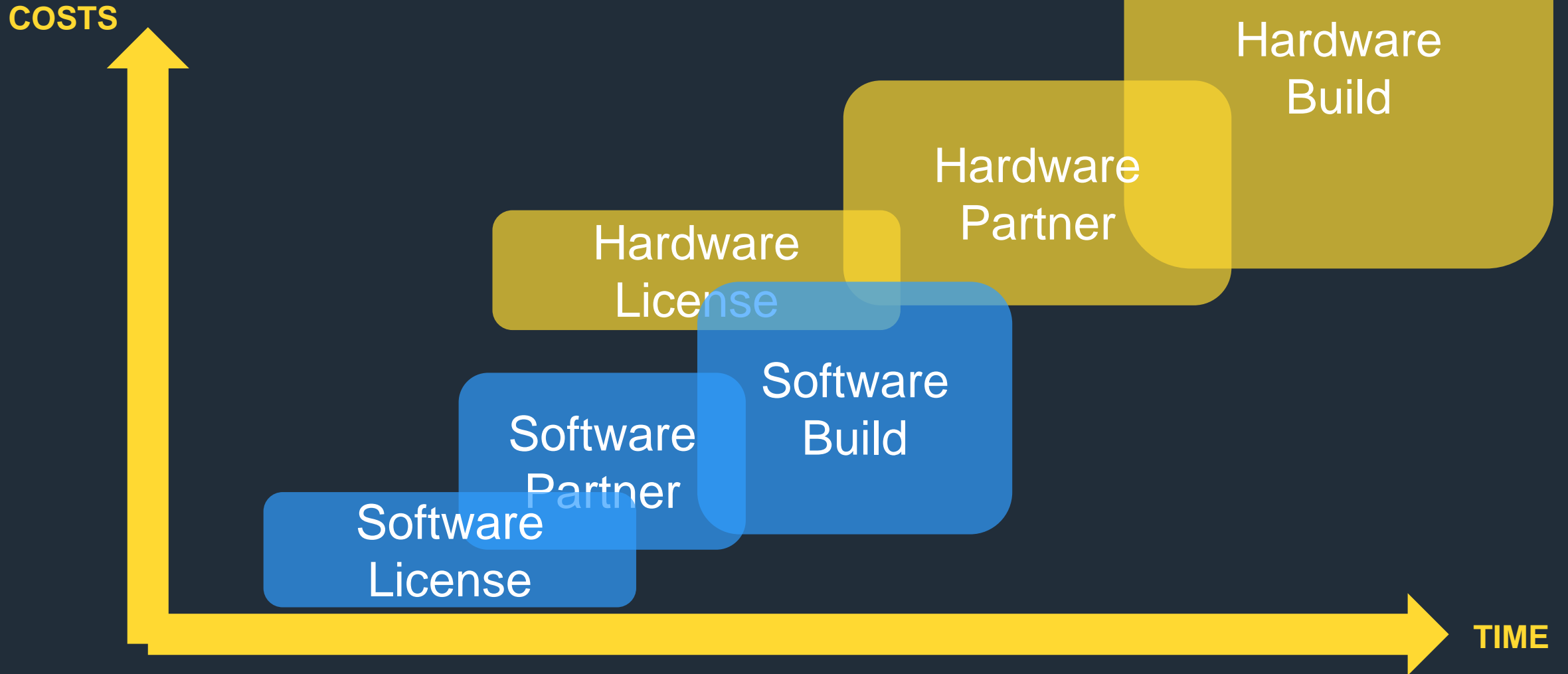
TARGET MARKET:	General Notes:											
	Q3 - 2024	Q4 - 2024	Q1 -2025	Q2 - 2025	Q3 - 2025	Q4 - 2025	Q1 -2026	Q2 - 2026	Q3 - 2026	Q4 - 2026	Q1 - 2027	Q2 - 2027
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OpEx (-)	-\$50	-\$50	-\$50	-\$50	-\$75	-\$75	-\$75	-\$100	-\$100	-\$100	-\$150	-\$150
Capital Costs (-)	-\$20			-\$200			-\$200					-\$500
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Cash Flow – Summary

TARGET MARKET:	General Notes:												
	Q3 - 2024	Q4 - 2024											
Starting Cash Balance (+/-)	\$0	\$1,160											
Cash In													
Cash from Sales (+)													
Cash In Financing Activities (+)	\$1,250												
Cash Out													
COGS (-)	-\$20	-\$20											
OpEx (-)	-\$50	-\$50											
Capital Costs (-)	-\$20												
Interest (-)													
Cash Burn													
Monthly Cash Flow (+/-)	-\$90	-\$70	-\$80	-\$210	-\$115	-\$115	-\$40	+\$350	+\$80	+\$120	-\$270		
Ending Cash Balance (+/-)	\$1,160	\$1,090	\$1,010	\$800	\$685	\$670	\$365	\$325	\$375	\$455	\$575	\$305	





















Build / Partner / License?






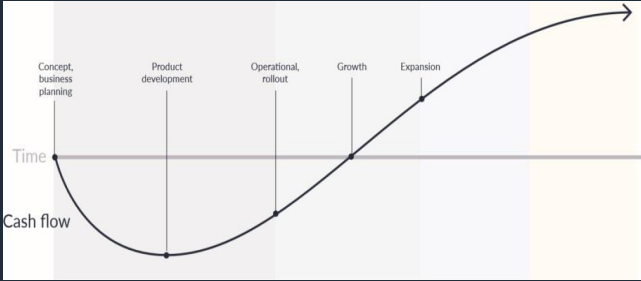



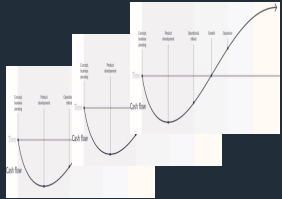







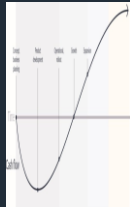



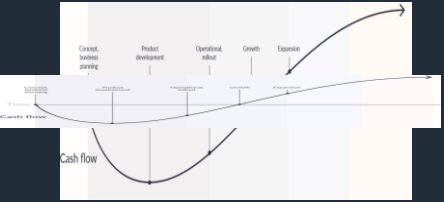



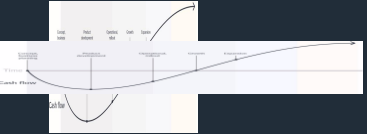
SCENARIOS

	Hardware Products	Software Products
Build		
Partner		
License		

SCENARIOS

	Hardware Products	Software Products
Build	TIME  COST  REVENUE 	TIME  COST  REVENUE 
Partner	TIME  COST  REVENUE 	TIME  COST  REVENUE 
License	TIME  COST  REVENUE 	TIME  COST  REVENUE 

SCENARIOS

	Hardware Products	Software Products
Build	<p>TIME </p> <p>COST </p> <p>REVENUE </p> 	<p>TIME </p> <p>COST </p> <p>REVENUE </p> 
Partner	<p>TIME </p> <p>COST </p> <p>REVENUE </p> 	<p>TIME </p> <p>COST </p> <p>REVENUE </p> 
License	<p>TIME </p> <p>COST </p> <p>REVENUE </p> 	<p>TIME </p> <p>COST </p> <p>REVENUE </p> 

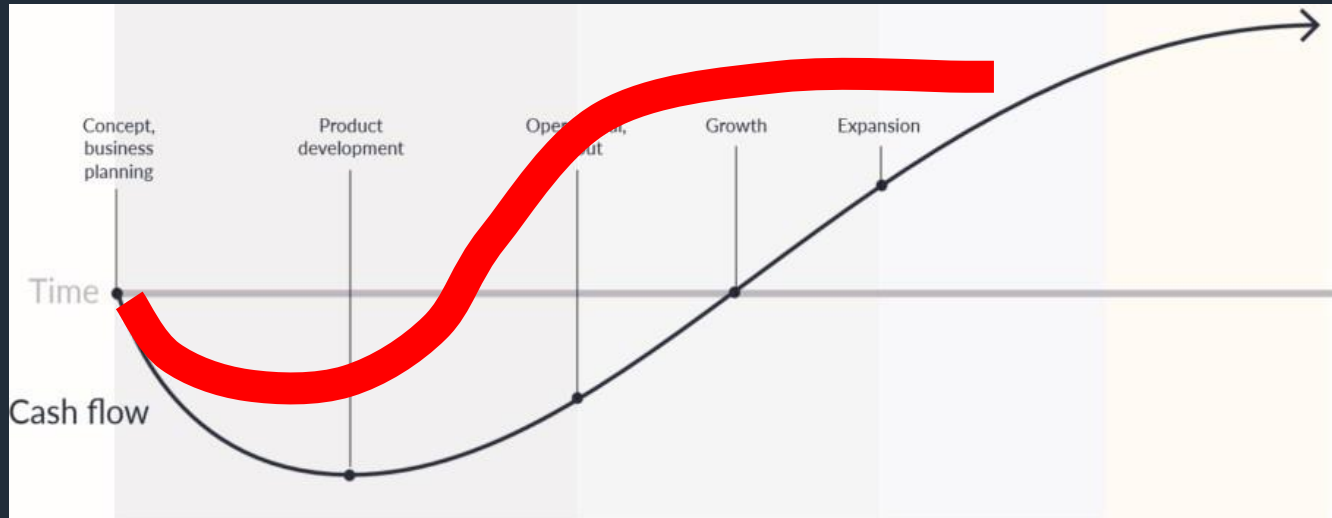
Hardware Build - Green AC Unit



Implications:

1. Longer Product Development
2. Physical Distribution
3. Build Channel / Sales Team
4. Significant capital costs
5. Labor expenses
6. Sourcing materials /Supply chain

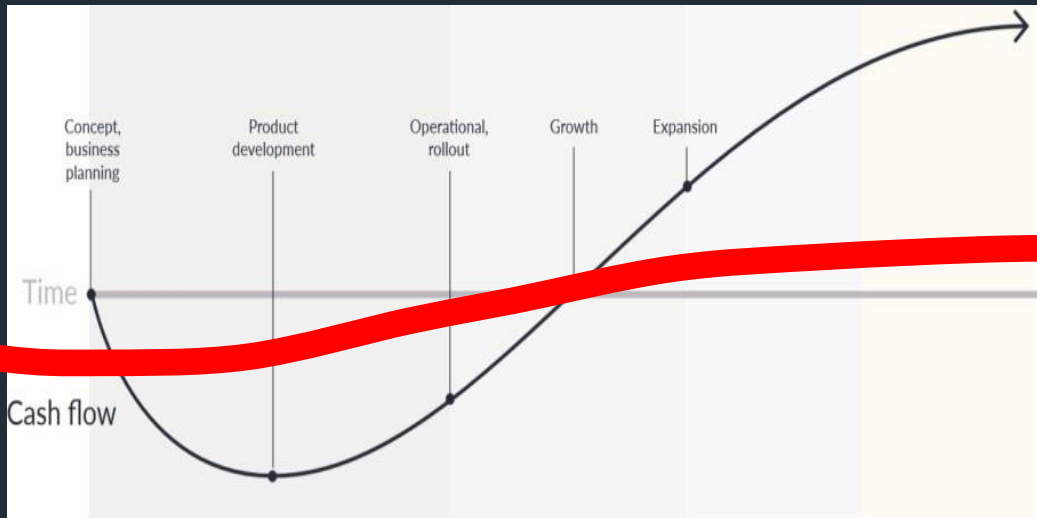
Software Partner - Wind Turbulence Modeling w/ Power Generator Prediction



Implications:

1. Faster and cheaper development
2. Virtual Channel to Market
3. Limited capital costs
4. Revenue Generation Quickly
5. Avoid direct sales team expense
6. 2nd Level Support Team

Hardware License - Battery Materials



Implications:

1. Reduced Product development
2. Reduced capital requirements
3. Dependent on other's success
4. Loss of control (revenue, product development, competitive response)
5. No sales / channel development

Cash Flow – Summary

TARGET MARKET:	General Notes: <i>You need to live in the spreadsheet</i>											
	Q3 - 2024	Q4 - 2024	Q1 -2025	Q2 - 2025	Q3 - 2025	Q4 - 2025	Q1 -2026	Q2 - 2026	Q3 - 2026	Q4 - 2026	Q1 - 2027	Q2 - 2027
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Ending Cash Balance (+/-)	\$1,160	\$1,090	\$1,010	\$800	\$685	\$670	\$365	\$325	\$375	\$455	\$575	\$305

The logo consists of three overlapping, curved, light blue shapes that resemble a stylized 'C' or a crescent moon, positioned to the left of the text.

Phase Shift II

Prioritize Cash Flow to:

- Generate revenue
- Scale manufacturing
- Hire and Partner effectively
- Raise funding, as needed

Phase II Panel Q&A



Joe McCrink
KVA Stainless



Kimberly White
Coreform



Greg Yeric
Cerfe Labs

THANK YOU!!!



***Michael Delgado, Director
Rhodium Group | Energy & Climate***



***Max Green and Tom Teynor
DOE SBIR Phase Shift 2 Coaches & Curriculum Developers***



***Several Phase Shift II Awardee Participants!
Joe McCrick | KVA Stainless
Kimberly White | Coreform
Greg Yeric | Cerf Labs***



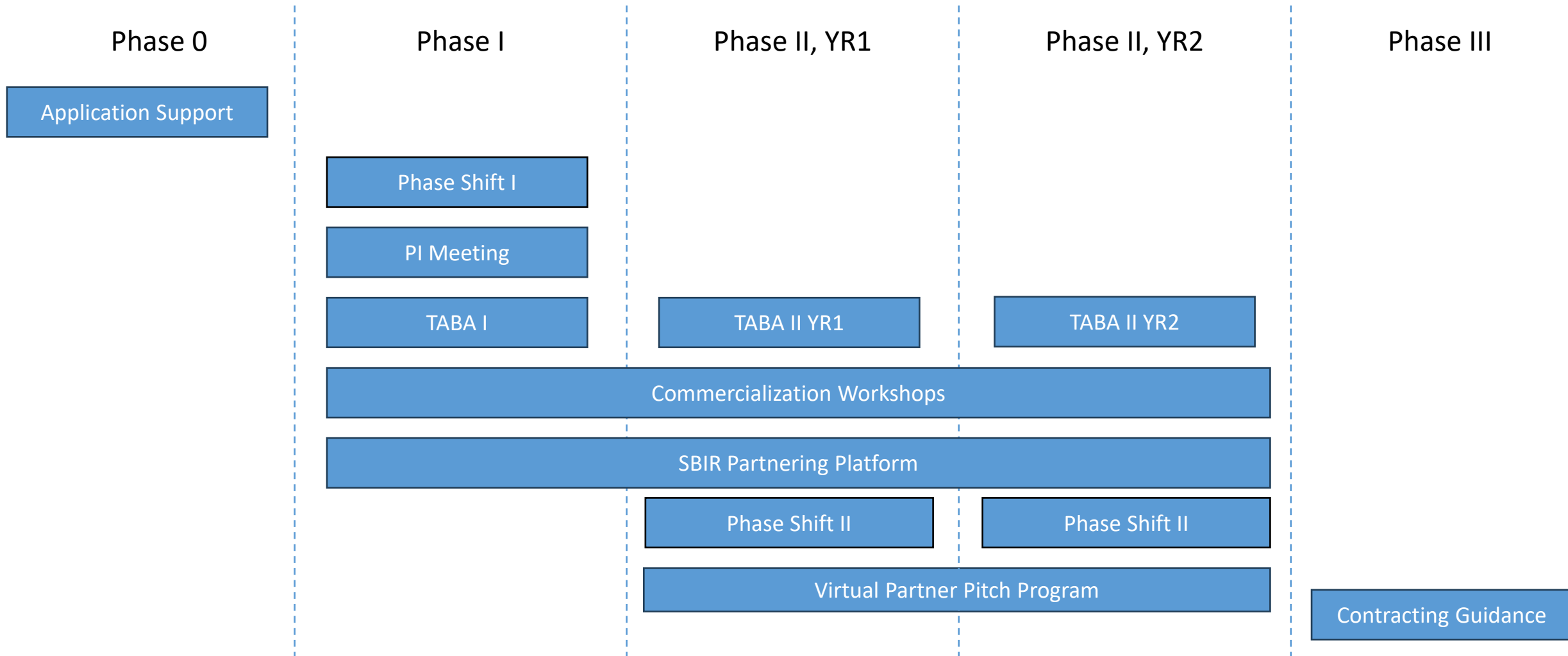
U.S. DEPARTMENT OF
ENERGY

Office of SBIR/STTR
Programs



Commercialization is hard!
BUT...there are resources...

DOE Commercialization Resources



DOE Commercialization Resources



- **Commercialization Training** for Awardees (optional)
 - **TABA** – additional funds provided; DOE selected vendor program in Phase I or use own third-party vendor; **MUST** use third-party vendor in Phase II
 - **Phase Shift I** – customer discovery
 - **Phase Shift II** – deeper dive on financial models, cash flow and customer sales cycles
- **Virtual Quarterly Commercialization Workshops** focus on topics that are typical areas of weakness; [recordings and FY24 schedule posted](#):
 - FY22 Q4 - **Commercialization and the Power of Partnering**
 - FY23 Q1 - **Preparing to Pitch**
 - FY23 Q2 - **Financial Modeling**
 - FY23 Q3 - **Navigating Phase III Contracting**
 - FY23 Q4 – **Licensing**
 - FY24 Q1 – **Preparing to Manufacture**



SBIR Partnering Platform

- A **public facing, self-supporting searchable database**; developed in collaboration with [OmniSync](#) (Phase III award); launched in **October 2023**
- Objective: provide a repository where SBIR/STTR applicants/awardees (**INNOVATORS**) can find potential partners (**PARTNERS**) and partners can access 1500+ vetted technologies
 - *PARTNERS/INNOVATORS register independently*
 - *Keyword and AI searching; myriad of filtering options*
 - *Bookmark favorites; **Confidential messaging***
 - ***Community pages** to announce events, non-SBIR funding, network*
 - *Newsfeed for applicable industry/stakeholder news*
 - **NEW** market resource tool for INNOVATORS (coming soon – late July 2024!)



<https://www.sbirpartnering.com/>





Awardees can find funding opportunities & partners




My Dashboard

Features


Messages
View your conversations, reply to messages and send new messages to partners.
[Chat >](#)


Search
Search for partners and funding opportunities with keyword or AI-assisted recommendations.
[Partners >](#) [Funding >](#)


My Profile
Edit your personal information and organization details, add technologies, or update your password.
[Edit >](#)

Your Saves

Manage, export, or set notifications for your saved SBIR awards here. Select an item to view additional details.



Awardees search based on their unique needs



My Dashboard / Partner Search

Keyword Search AI-Powered

Partner Search *i* Search by keyword

Service Category (1) Clear All

View By State Partner Role Service Category Show 20 of 569 partners < 1 2 3 4 n

Southwest Research
San Antonio, TX

Description
SwRI, headquartered in San Antonio, Texas, is a nonprofit, applied research and development organization serving industrial and government clients. SwRI consists of nine research centers in physical sciences.

Energy Advanced Materials
Advanced Instrumentation Artificial Intelligence

Corporate Venture 11
Incubator Accelerator 9
Industry Stakeholder 18
Investor 20
Provider 480

Commercialization Services 27
Engineering Design 160
Industry Stakeholder 1
Manufacturing 150
Technical 2

Transportation Advanced Computing

View Details

Aon – Intellectual Property Solutions
New York, NY <https://www.aon.com/>



Network with other INNOVATORS and Follow Relevant News...



Dashboard Community Search Logout

My Dashboard

Community News Feed

Features

My Dashboard / Community

Create Post

Close X

Create Post

Select at least one subject tag

Title

Give your post a title (250-character max)

Post

Provide details regarding your announcement or event (5000-character max)

Post

- Looking for a Mentor
- Looking for a SME
- Looking to collaborate/subcontract on a particular topic and/or project
- Phase II Diversity Supplement engagement
- Other

the social feed to

Admin announcements

11

Carol R.

SBIR Partnering Platform Stats



Total Users

Refresh

Total Users

709

Partner Users

313

Innovator Users

396

Connections

Refresh

User Conversations

124

Successful Connections

32



Carol Rabke, Ph.D.

Tech to Market (T2M) Advisor - Partnering

carol.rabke@science.doe.gov

585.576.7981



Dave McCarthy

Tech to Market (T2M) Advisor – Commercialization Programming

dave.mccarthy@science.doe.gov

