



The Dollars and Sense of Decarbonization

World Chemical Forum
12 September 2023



Financing the Chemical Industry's Clean Energy Transition

Mission Possible Partnership and RMI focus on First-of-A-Kind commercial-scale projects, typically at industrial hubs and leveraging incentives, as the key levers for change to deliver both value and impact.



Investment Scale

Transformation requires step change in capital, new partners, new structures



Hubs and Support

Hubs are catalysts for investment, incentives, and industry learning



Case Studies

Successful financing from heavy industry charts path(s) to success



Energy Efficiency

Design and engineering upfront for energy efficiency has outsized returns



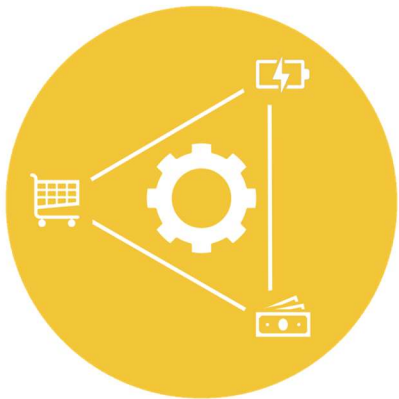
Mission Possible Partnership

We are a movement of climate leaders and companies driving industrial decarbonization across the entire value chain of the world’s highest-emitting heavy industry and transport sectors.

Sector Strategies



First Projects



Ecosystem



Founding Partners

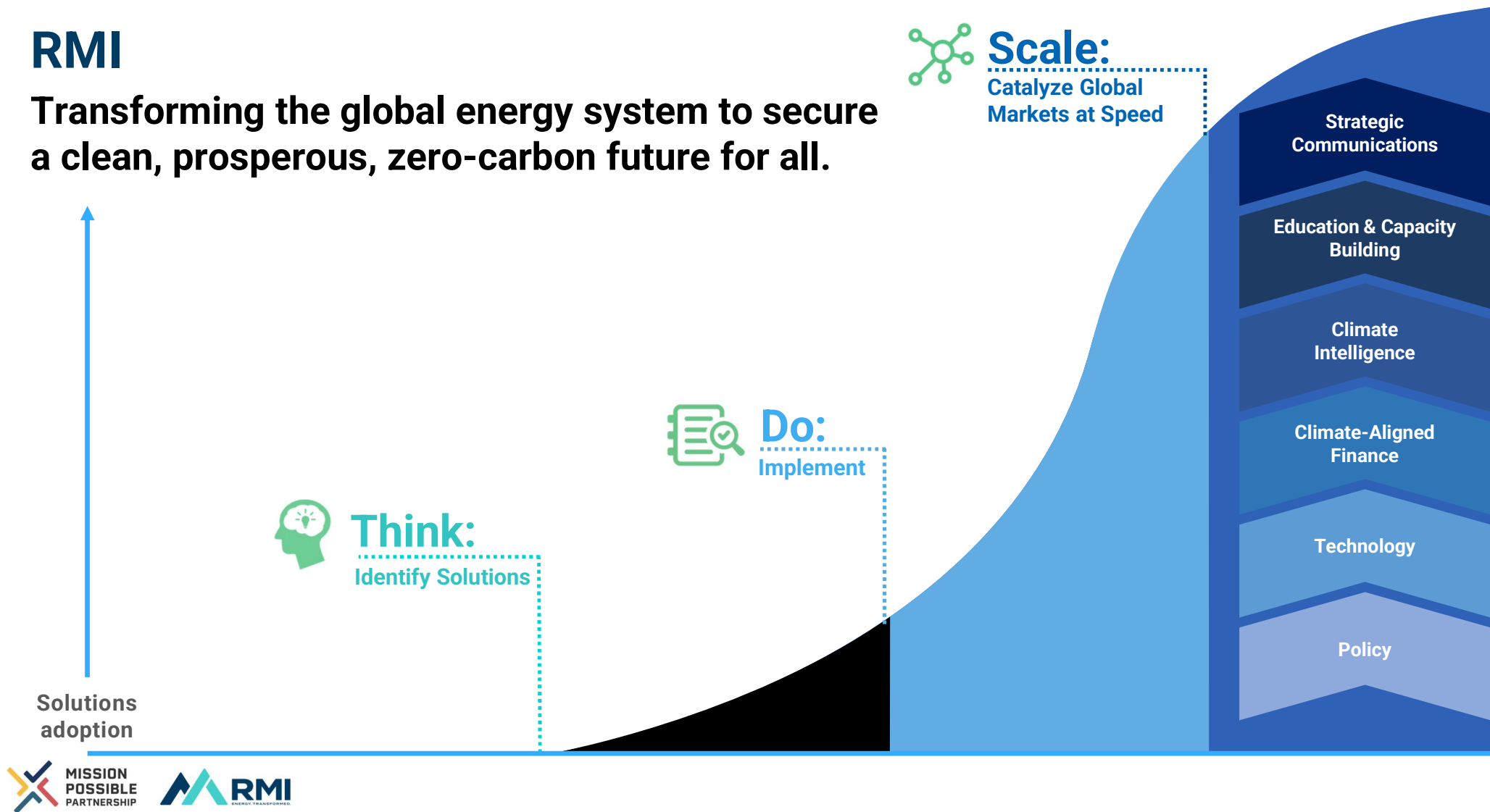


Partners



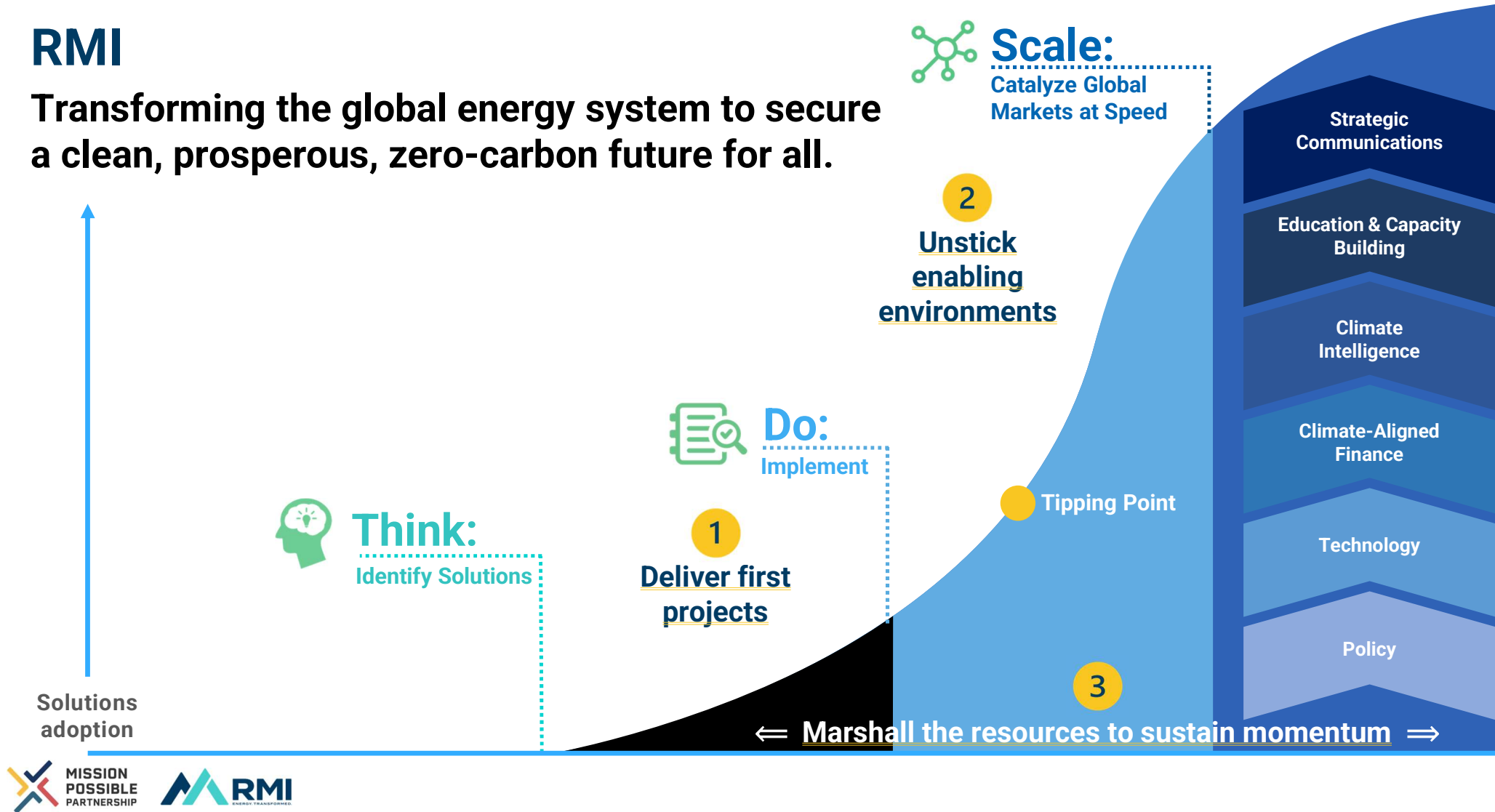
RMI

Transforming the global energy system to secure a clean, prosperous, zero-carbon future for all.



RMI

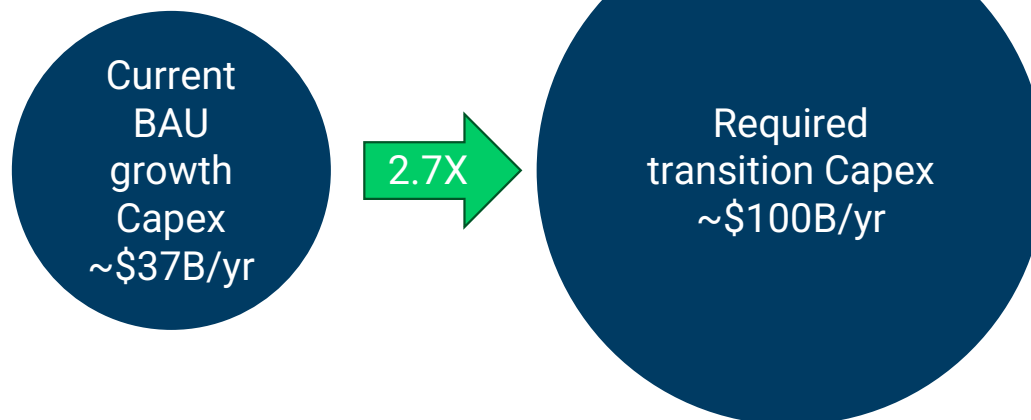
Transforming the global energy system to secure a clean, prosperous, zero-carbon future for all.



Chemicals industry must reconfigure capital allocation AND attract new capital to meet timing and magnitude for energy transition

Current Considerations: focus on value and short-term shareholder return:

- Dividends + Buybacks
- Req'd asset maintenance
- Targeted (few) new projects



Required Considerations: focus on value AND impact with long-term license to operate:

- New partnerships (tech, capital, supply chain)
- Evolved business models
- First-of-a-kind rapidly to nth-of-a-kind projects

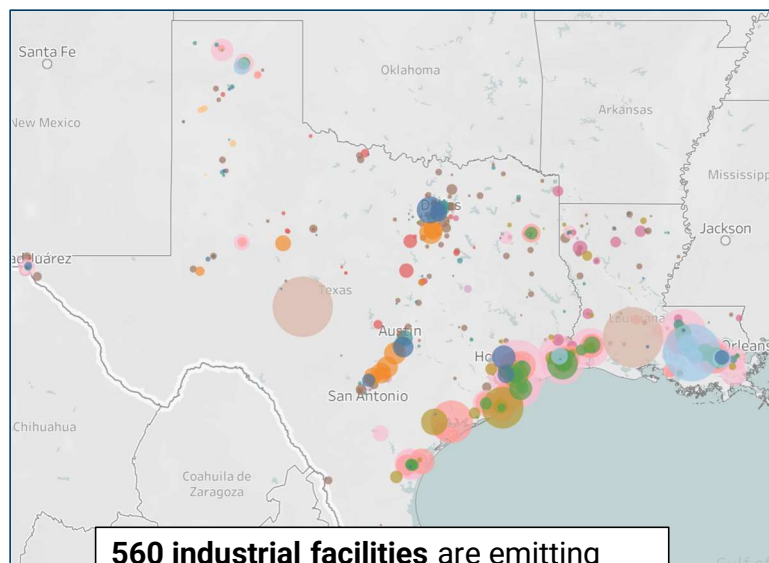
Carrots (grants, loan guarantees, tax incentives) and Sticks (CBAM, C tax, regulation) are motivating the transition and FOAK projects

Most first projects will happen in Hubs to leverage existing infrastructure, transport access, and intellectual capital

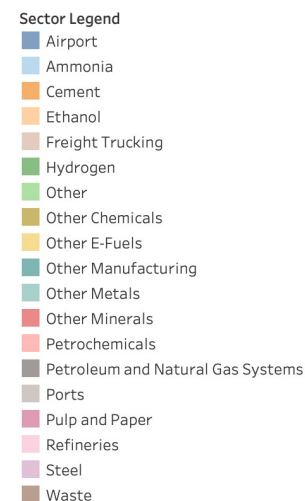


Mission Possible Partnership is starting in Texas/USGC and California to catalyze Industrial Decarbonization

Gulf Coast Industrial Facilities and Emissions



California Industrial Facilities and Emissions

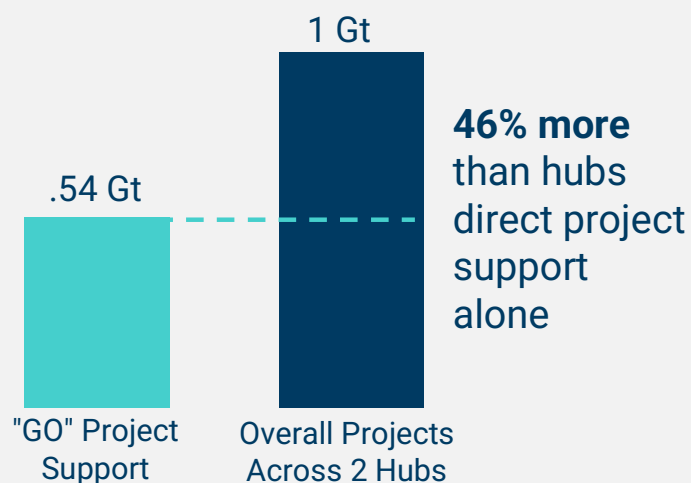


140+ Commercial Scale Industrial Decarbonization Projects in TX and CA alone in feasibility to FID stage; potential for **\$250-500B** of investment

Portfolio of Projects from 2 Hubs (100+ projects) represent \$250B Spend, Unlock \$180B in Federal Incentives, and Reduce 1 GT of CO2e by 2050

Proposed industrial decarbonization projects in CA and TX have the potential to reduce or avoid 1 gigaton of CO2e by 2050

Cumulative Emissions Reduced or Avoided
(2026-2050)



Projects are counting on significant public money in the form of grants, loans, and incentives



140 projects to reach FID in the next 2-3 years



\$250 billion total CapEx*



\$180 billion in federal incentives leveraged (e.g., 45V, 45Q, H2 Hubs)*

Clean Industrial Hubs accelerate progress towards 2030 Targets



Aviation



Shipping



Trucking



Steel



Chemicals



Concrete

Needed by 2030

300

SAF plants globally

200

ships using zero emission fuel

7M

zero emission trucks (hydrogen and electric)

100

(near) zero emission steel plants

60

zero emission ammonia plants

20+

commercial-scale CCUS plants

What we have today

70

operational & in pipeline

0

Ships operational

4,000

electric trucks

1

demonstration plant

2

operational plants

0

operational

What we aim to unlock in US Gulf Coast & California

3-5

SAF plants

5-15

Net zero ships contracted, fuel supply and bunkering secured

1,000+

zero emission trucks

10-15+

H2 fueling/ EV charging stations

1

net zero DRI plant

1-3

first of a kind plants

1-4

net zero plants

Hub Financing Diagnostics Program works with first projects and financial institutions to highlight opportunities and gaps in finance

Highlighted Learnings

Offtake risks varies across projects

Securing feedstock is a risk across projects—especially green electrons

Supply of industrial tax credits needs commensurate market demand

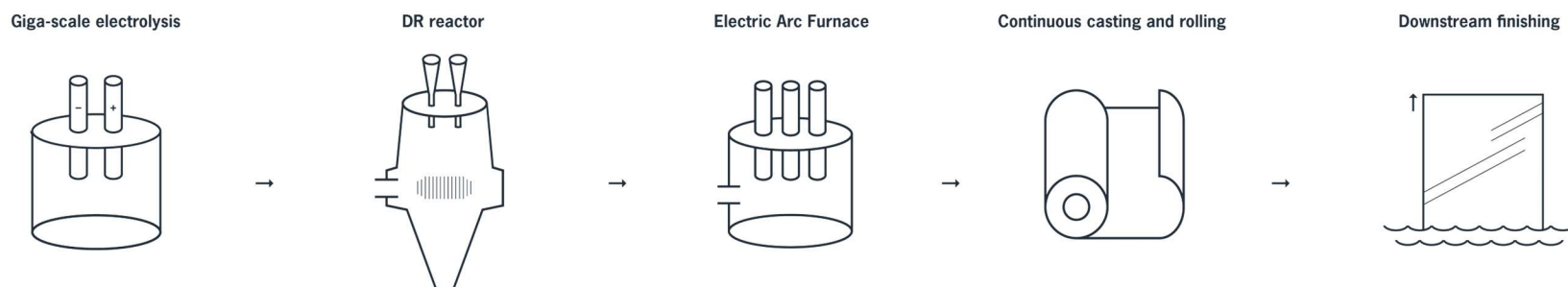
Many technologies have been commercially deployed, just not integrated in this configuration

Next steps:

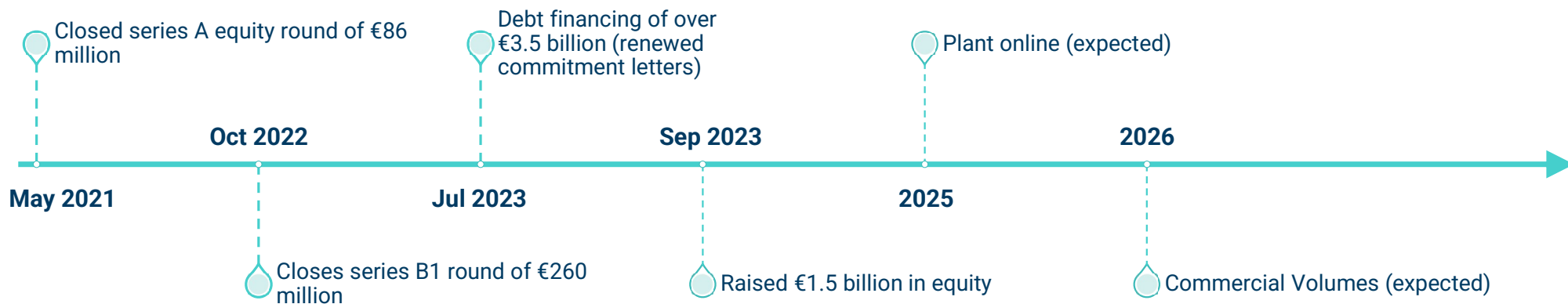
- **Socialize market information (feedstock, renewable gen, offtake, equipment cost curves, tax credits, carbon credits) to improve bankability and confidence of BOTH developers and FIs**
- **Share success stories**

Lessons Learned from H2GS apply across FOAK projects (1 of 2)

H2 Green Steel is building a greenfield, **integrated** plant with giga-scale electrolysis to **produce H2** for direct reduced iron to get 5M tonnes of green steel (**95% less CO2 emissions**) to market by 2030



Financing strategy included **equity, debt, government support**, along with key strategic **feedstock agreements** and **offtake agreements**, resulting in largest private placement in EU this year

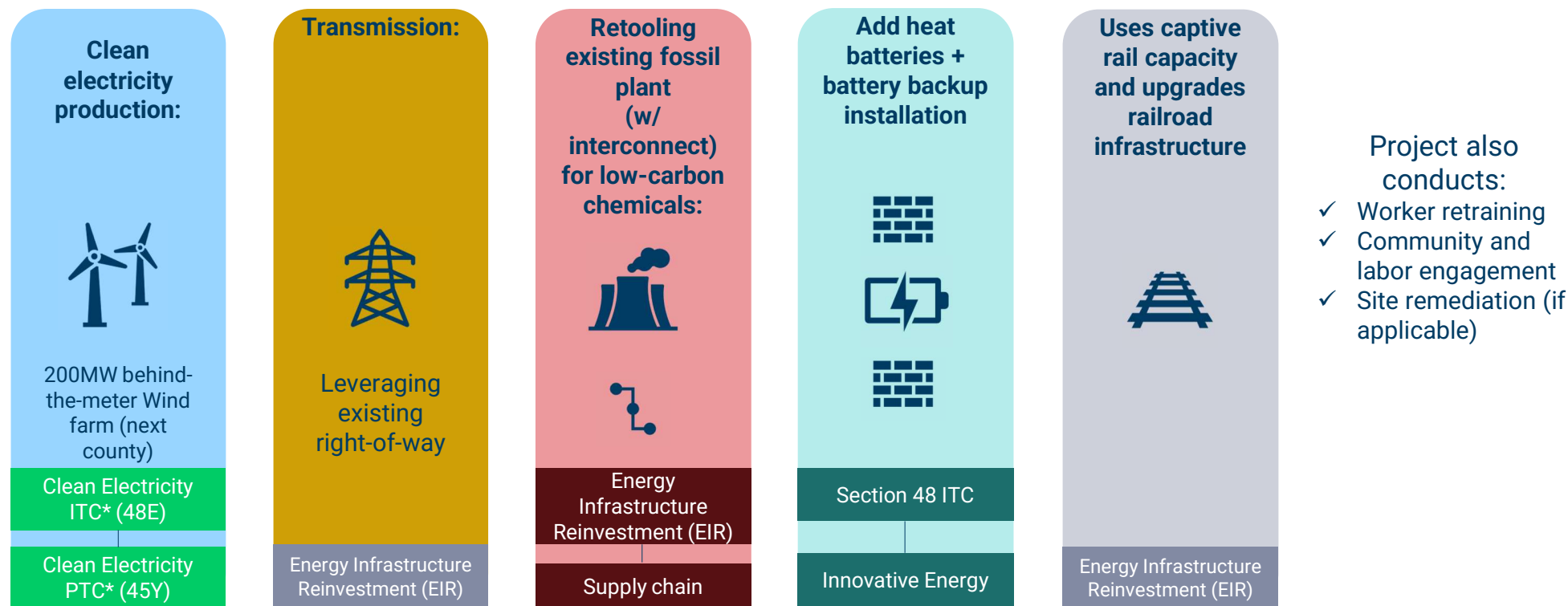


Lessons Learned from H2GS apply across FOAK projects (2 of 2)

Lesson Learned	Notes
1. Diverse seed equity rounds can work	 - Sourcing equity for FOAK projects may be more challenging, potentially requiring large, diverse, equity investor pools - H2GS >20 investors, including private equity, corporates, impact investors, family offices, and sovereign wealth funds
2. Entice offtakers with equity upside	 - Offtakers w/equity share get an upside to balance downside risk - H2GS secured offtake from Mercedes-Benz and BMW, reputable customers to help banks compensate for tech risk
3. Use export credit agencies (ECAs) and government support	 - Senior debt from public lenders helps de-risk commercial capital - H2GS secured debt from Sweden's ECA and loan guarantees from Sweden's National Debt office and European Investment Bank
4. Build flexibility throughout the deal	 - Prices for power, hydrogen, steel, and carbon fluctuate constantly "Bifurcated" power purchase agreement for hydropower has flexibility with ~50% fixed price and ~50% priced on floating index "Mezzanine" capital of €0.5 billion from Nordic infrastructure fund is junior debt, with more risk and higher rate, but subordinate status
5. Hire banks with relevant climate expertise	 - Sector expertise goes a long way on FOAK transactions, and banks with climate-aligned agreements send positive signal to industry 3 of 5 senior commercial lenders announced by H2GS are founding signatories of the Sustainable STEEL Principles (SSP), a climate-aligned finance agreement for lenders to the steel sector.

Case study: a repurposed, highly electrified chemical plant + infrastructure supported by loans, tax credits, and grants

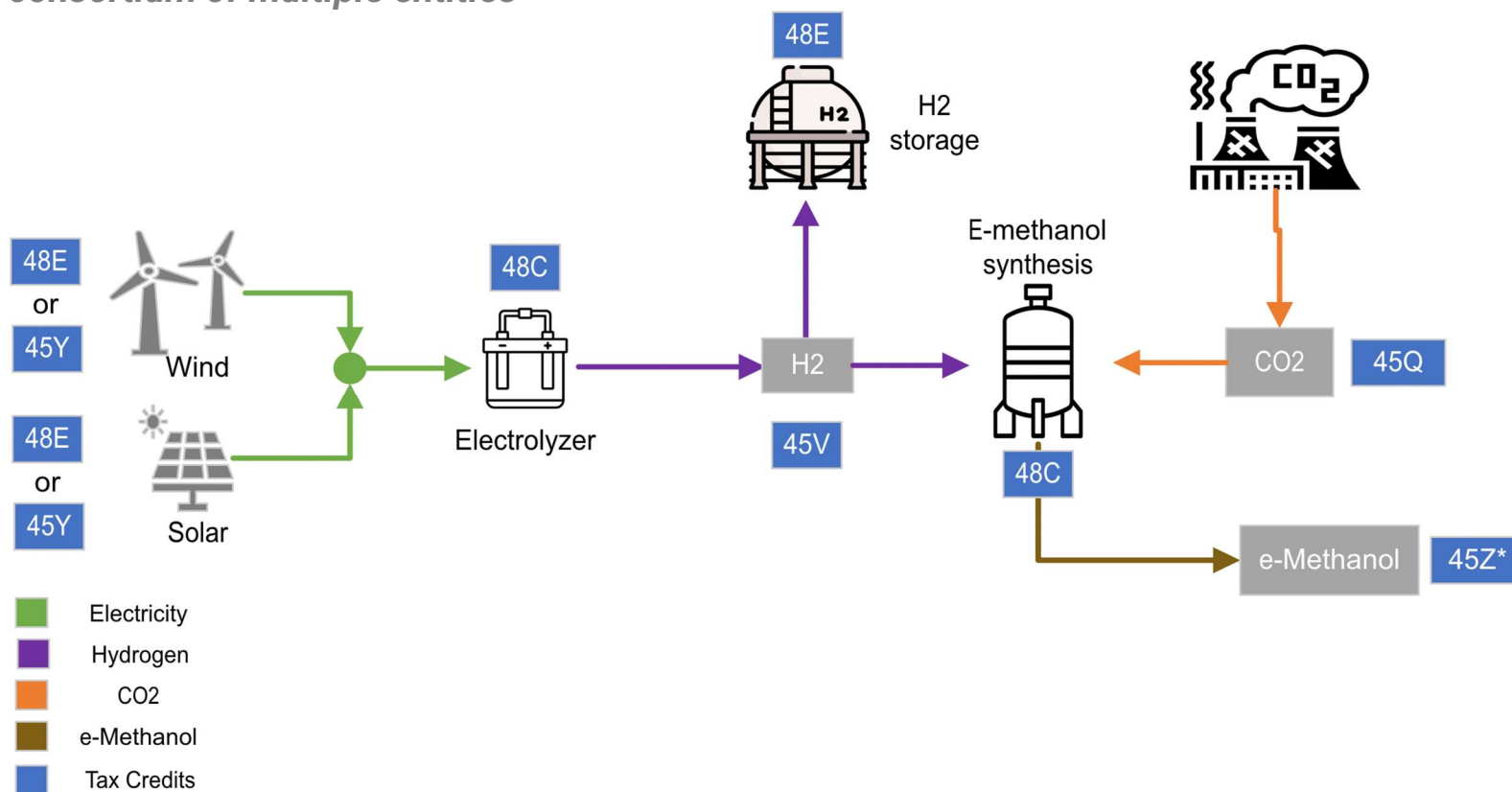
Assumes consortium of multiple entities



*Meets energy community, domestic content, and prevailing wage + apprenticeship bonuses

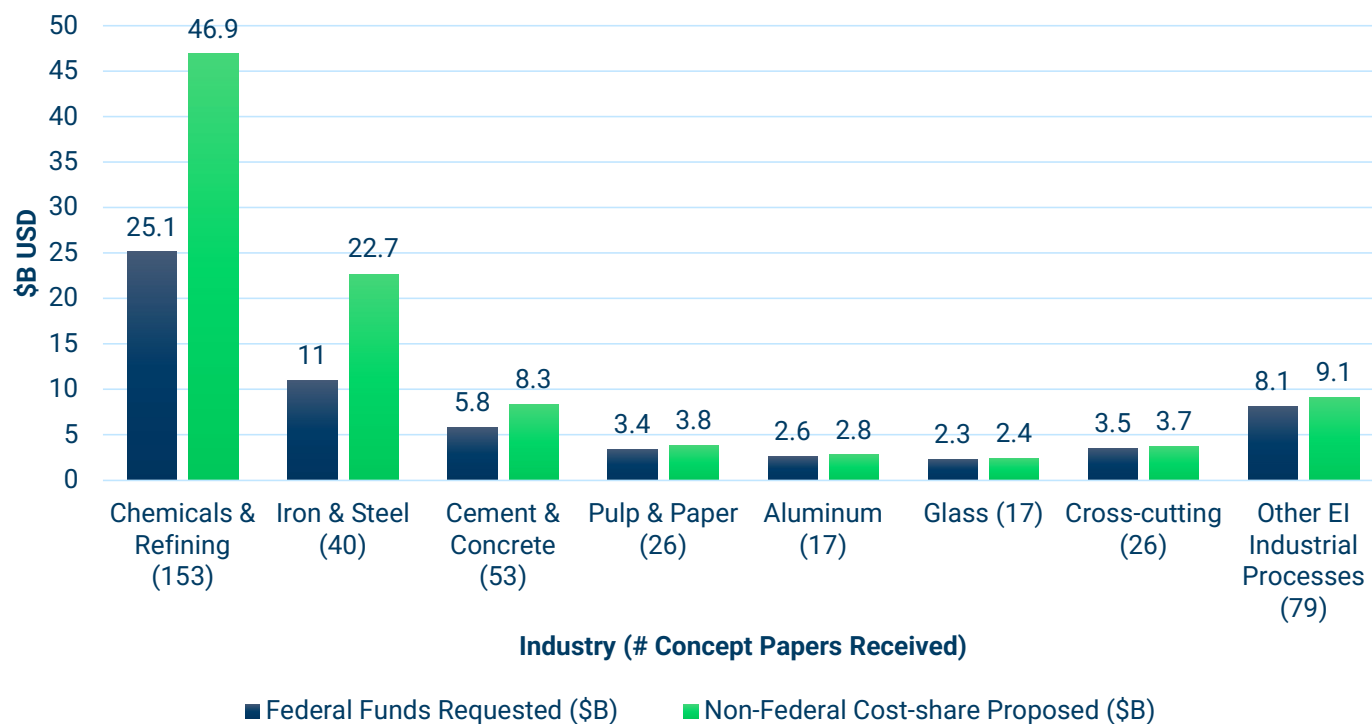
Case Study: how tax credits interlock along the supply chain for a hypothetical e-methanol project

Assumes consortium of multiple entities



Chemicals & Refining leading sector applying for US DOE OCED \$6B Industrial Decarbonization Federal Grant Program

411 Concept Papers submitted → 131 “encouraged” for Full Application → ~65 awards in 2023



CASE STUDY

RMI co-founded SABA, a historic, first-of-its-kind, buyer's initiative to aggregate demand for and scale investment in high-integrity Sustainable Aviation Fuel (SAF)

SABA

SUSTAINABLE AVIATION BUYERS ALLIANCE

The Sustainable Aviation Buyers Alliance (SABA) is committed to accelerating the path to net zero air transport by driving investment in high quality SAF, catalyzing new SAF production and technological innovation, and supporting member engagement in SAF policymaking.

FOUNDING CUSTOMERS

BANK OF AMERICA

JPMORGAN CHASE & CO.

BCG

BOEING

Deloitte.

McKinsey
& Company

Meta

Microsoft

NETFLIX

salesforce

FOUNDING AVIATORS

Alaska
AIRLINES

amazon

jetBlue

UNITED
AIRLINES



A joint initiative of



With expert support from



Investing in design and upfront engineering pays in reduced Capex and reduced Opex, making overall financing more attractive (1 of 2)

- Redesign thermal oil circuits at manufacturing facility: smaller pumps, less friction, big savings
- Simple payback in 6 weeks on a plant that will operate for decades



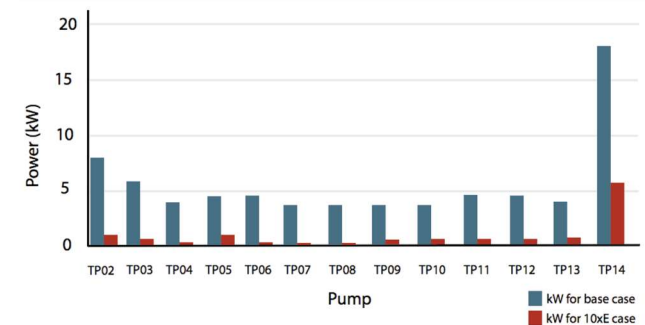
Thin
Long
Crooked



Fat
Short
Straight

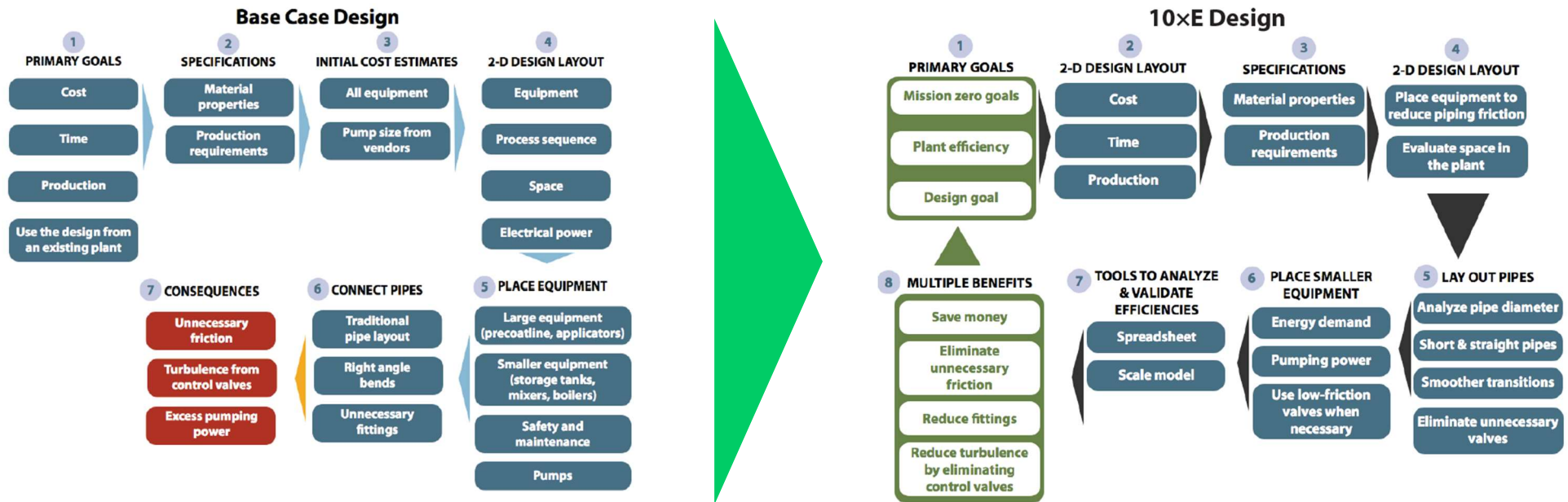


	Before (kWh/yr)	After (kWh/yr)	Energy savings	Opex savings (\$ / year)	Capex (\$ one time)	Simple payback (weeks)
Electricity for 13 thermal oil pumps	444,450	77,505	83%	\$55,042	\$3,300	
Electricity for heating thermal oil	878,736	291,170	67%	\$88,153	\$15,540	
Totals	1,323,186	368,675	72%	\$143,195	\$18,840	6



Investing in design and upfront engineering pays in reduced Capex and reduced Opex, making overall financing more attractive (2 of 2)

- Beyond pipes and pumps: design process applies to full plants (refinery, LNG, chip fabs, etc.)
- FOAK plants can place net zero goals and efficiency as primary goals



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Thank You!

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