



# Kieran Furlong

Honorary Fellow, UW-Madison College of Letters & Science  
and CEO of Realta Fusion



**Realta Viable Fusion:**  
**Breakthrough Physics for Clean Energy Generation**







# *REALITY FUSION*

INDUSTRIAL HEAT & POWER FROM FUSION



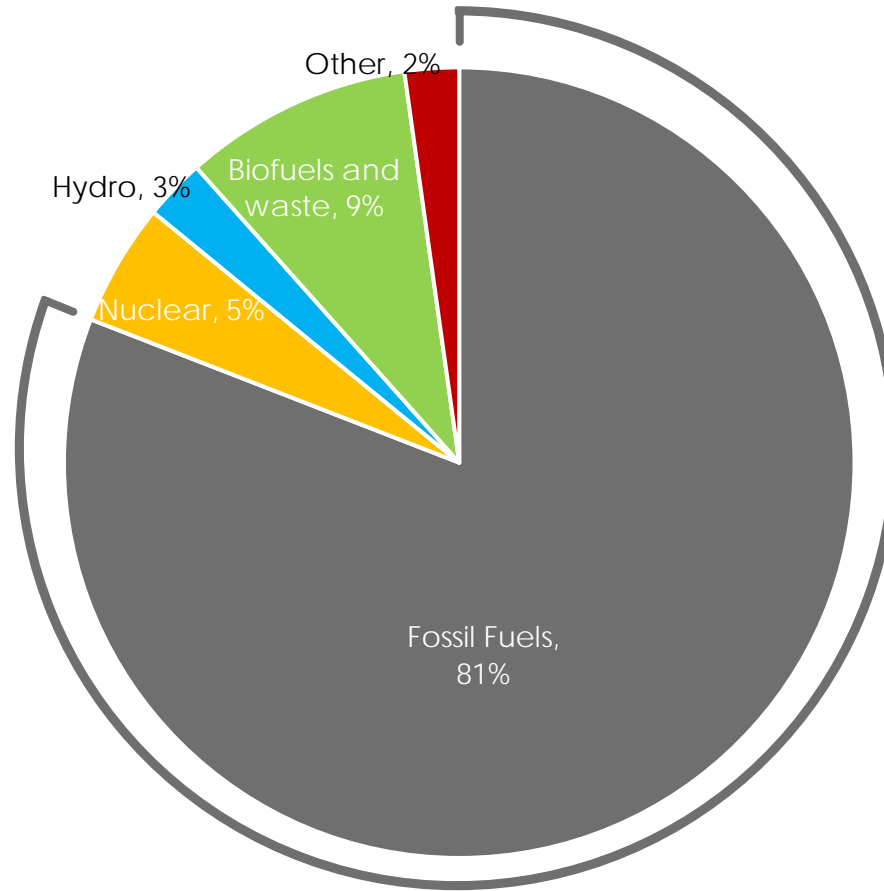


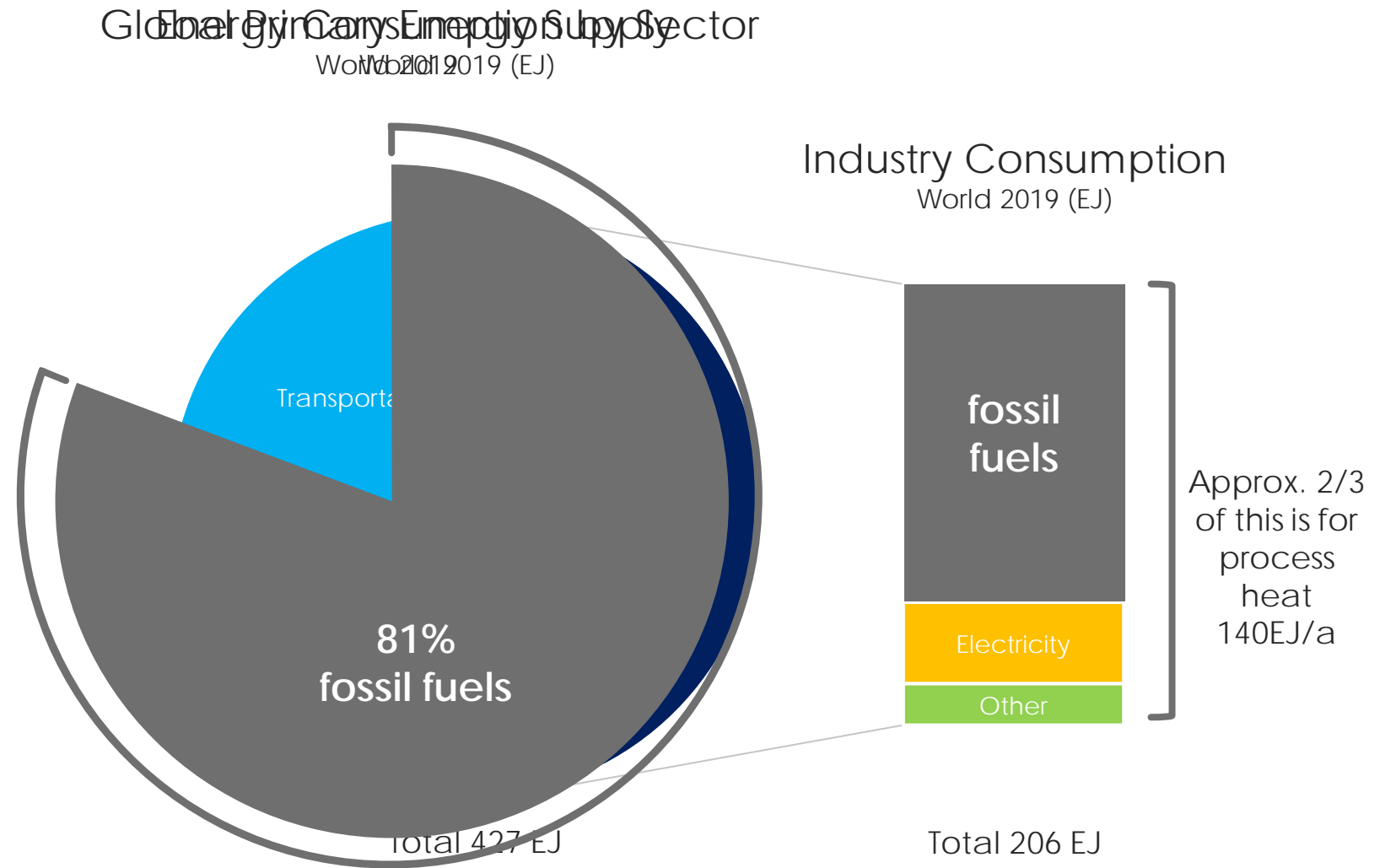


# CLIMATE CHANGE

# Global Primary Energy Supply

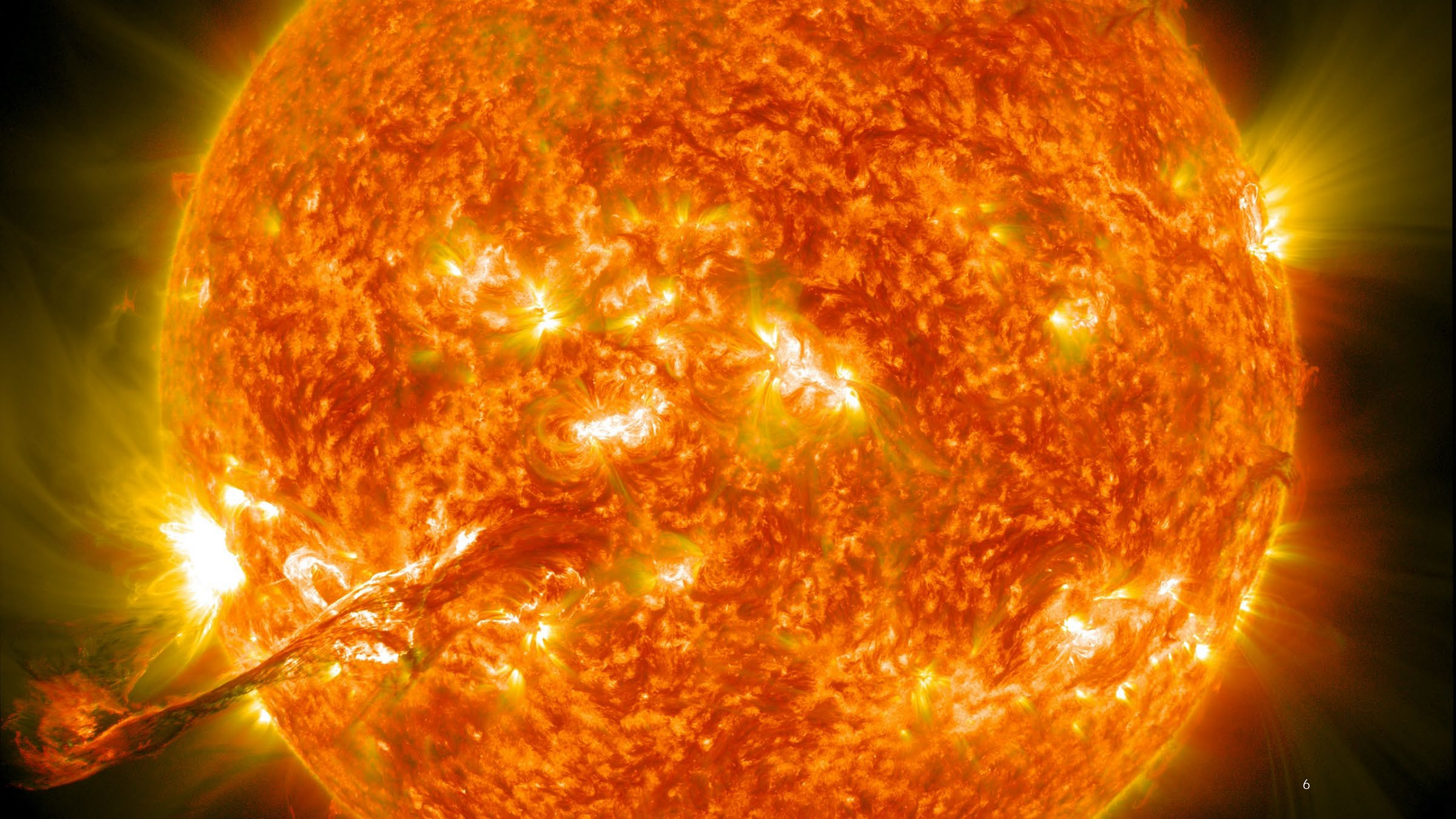
World 2019, 600 EJ





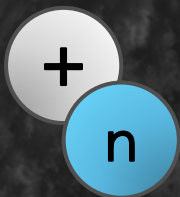
The world needs an **alternative low-carbon source of process heat** to tackle climate change



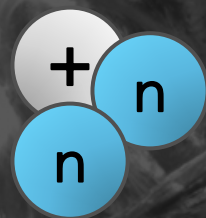
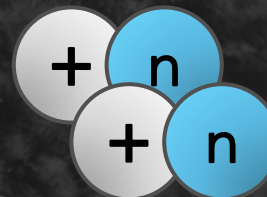




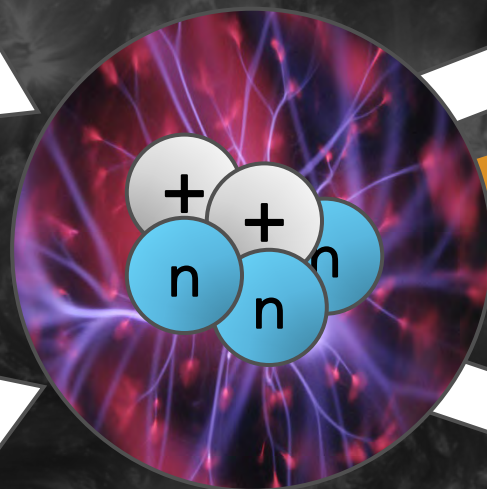
Deuterium



Helium



Tritium



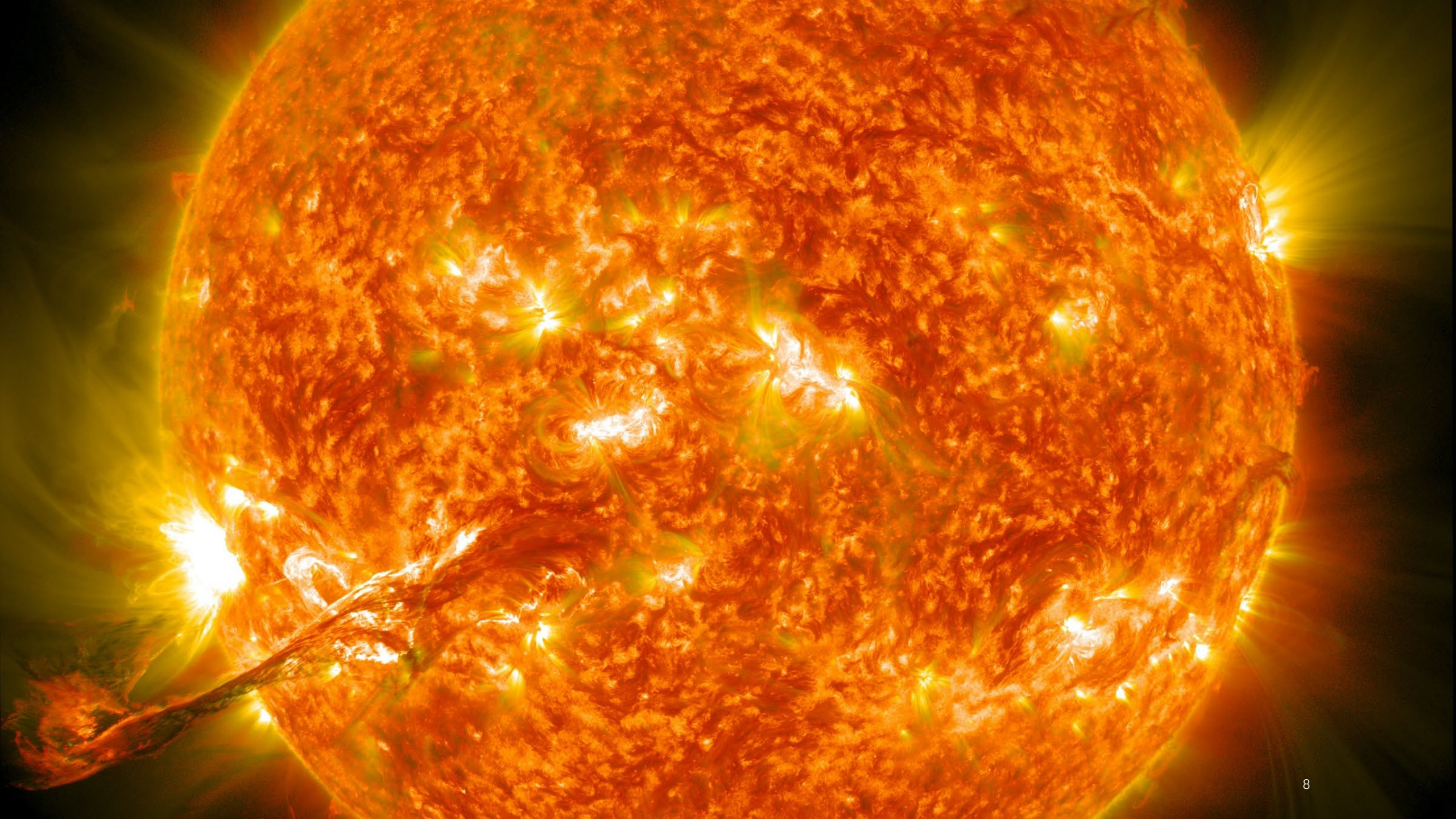
*fusion  
reaction*



Neutron

ENERGY

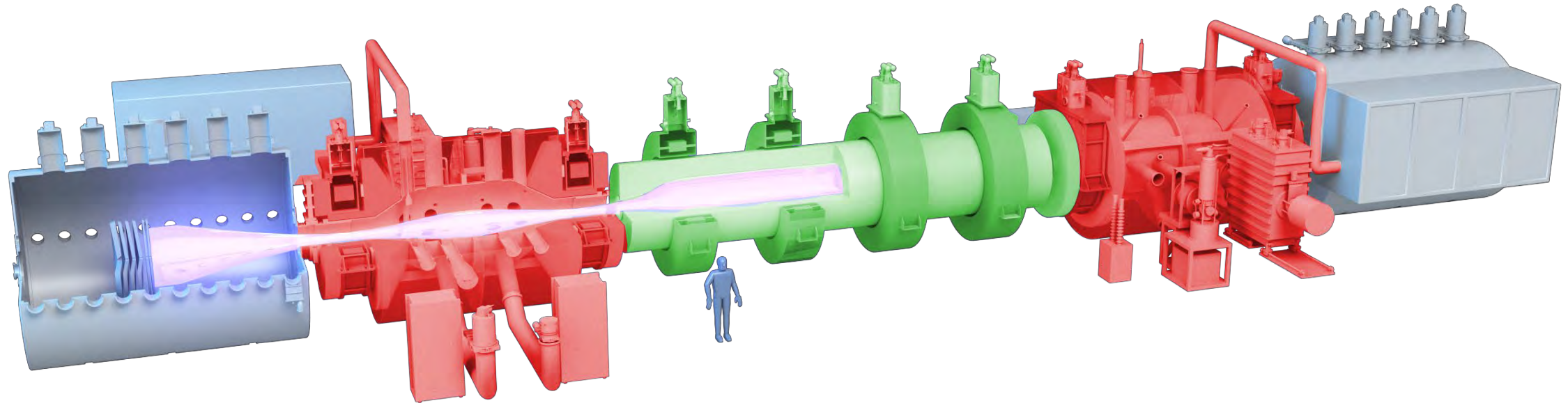






# High-Field Axisymmetric Magnetic Mirror Reactor (HAMMiR)

*The **lowest capital** and **least complex** fusion reactor suitably scaled for industrial use*



*Initial independent estimate of cost of electrical power < 5¢/kWh*

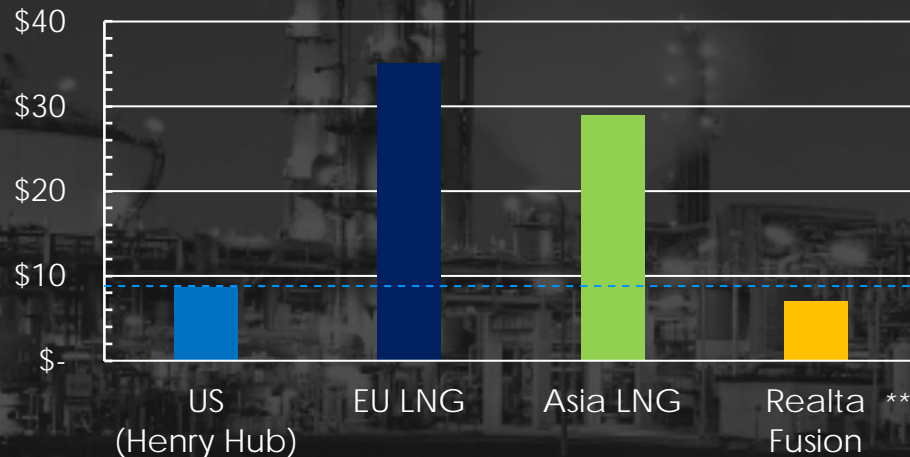


# INITIAL TARGET MARKET(S) – REFINING & PETROCHEMICALS

Process Heat for Chemicals  
~ 10 EJ/a  
(2% global energy)

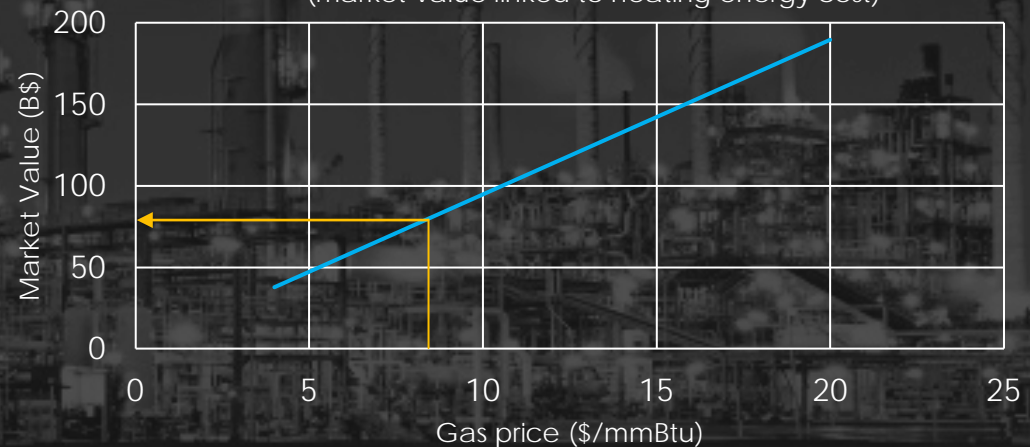
$$\text{TAM} = \$76\text{B}^*$$

Relative Energy Prices - Natural Gas  
(USD/mmBTU)



*\*\*Based on independent estimate of cost of energy at commercial scale*

Process Energy for Primary Chemical Production  
(market value linked to heating energy cost)



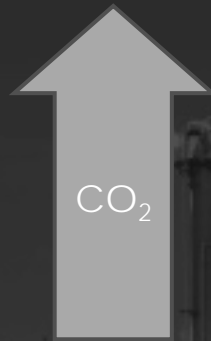
*\* with natural gas @\$8/mmBTU*



# INITIAL TARGET MARKET(S) – REFINING & PETROCHEMICALS

## GREEN-HOUSE GASES

Chemicals Emissions  
~ 1 GtCO<sub>2</sub>/a  
(3% global GHG)





# TEAM



**CARY FOREST, PHD**

PLASMA PHYSICS

U.WISCONSIN PROFESSOR

PRINCETON PHD



**JAY ANDERSON, PHD**

PLASMA HEATING AND STABILITY

U.WISCONSIN SCIENTIST PHD



**KIERAN FURLONG, MBA**

CHEMICAL INDUSTRY, START-UPS & VC

CHEMICAL ENGINEER STANFORD MBA



**BEN LINDLEY, PHD**

BLANKET DESIGN

U.WISCONSIN PROFESSOR

CAMBRIDGE U. PHD



**OLIVER SCHMITZ, PHD**

PLASMA FACING COMPONENTS

U.WISCONSIN PROFESSOR

HH U. DUESSELDORF PHD





2020

2024

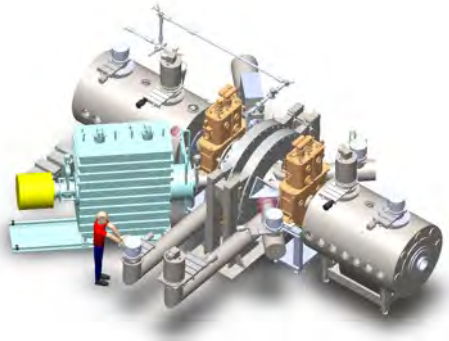
2028

2032

2036

WHAM 1.0

\$12M



- Demonstrate magnets

WHAM++ (dd) short pulse

\$80M

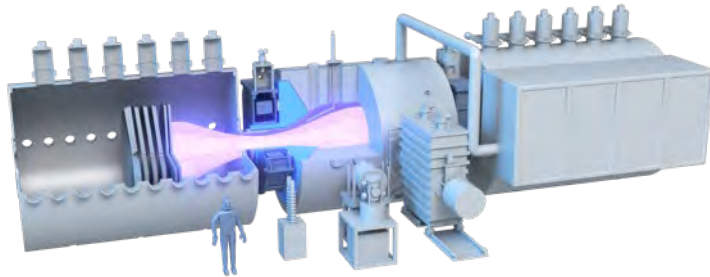
WHAM++ (dt) steady-state

WHAM++ high  $B_p$  (go/no-go) \$220M

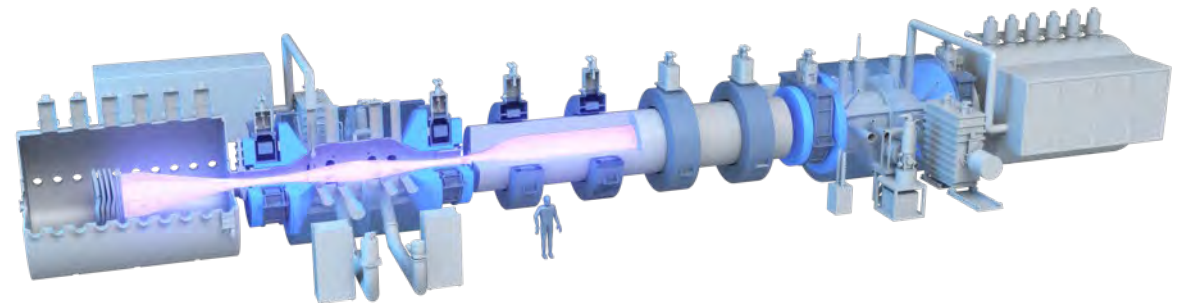
HAMMiR (2 x WHAM++, central cell) \$350M

Industrial Heat &amp; Power

Initial independent estimated cost of thermal energy <\$7/mmBtu



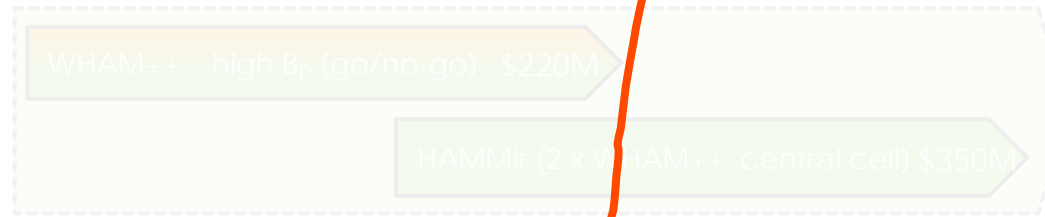
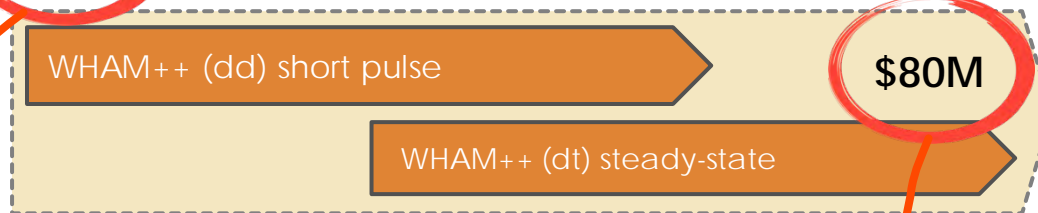
- DT steady-state operation



- Full reactor,  $Q > 10$ , ~300 MW<sub>t</sub>

# Path to Commercial Scale





Funded

• HTS



Q~1 in steady-state

Require \$80M-\$100M  
over next 36 months

Planning first private  
capital raise later this year

• Q>10, ~300 MW<sub>t</sub>

# Path to Commercial Scale





***REALITY  
FUSION***

INDUSTRIAL HEAT & POWER FROM FUSION