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CarbonCycle and other profitable strategies for air capture of CO₂

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Smart chemistry for a cooler planet

CarbonCycle and other profitable strategies for air capture of CO₂

ECI CO₂ Summit II: Technologies and Opportunities

Dr. Deane Little, CEO
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Direct air capture of CO₂... can it work?

American Physical Society, 2011: No

“DAC is not currently an economically viable approach to mitigating climate change... it is entirely possible that no DAC concept under discussion today or yet to be invented will actually succeed in practice...”



Direct air capture of CO₂... can it work?

3.04 trillion living trees on Planet Earth: Yes



Criticism of APS Direct Air Capture Report

“The single and seemingly lethal criticism of the report is that the cost of air capture is and will always be too high....

.....Applying the logic of [the APS] study to solar energy, gas turbines or fuel cells would have stopped all these technologies dead in their tracks.”

Klaus Lackner



Bold predictions about the future often go awry

“No one will pay good money to get from Berlin to Potsdam in one hour when he can ride his horse there in one day for free.”

King William of Prussia, on trains, 1864



Mauna Loa Observatory atmospheric CO₂ data

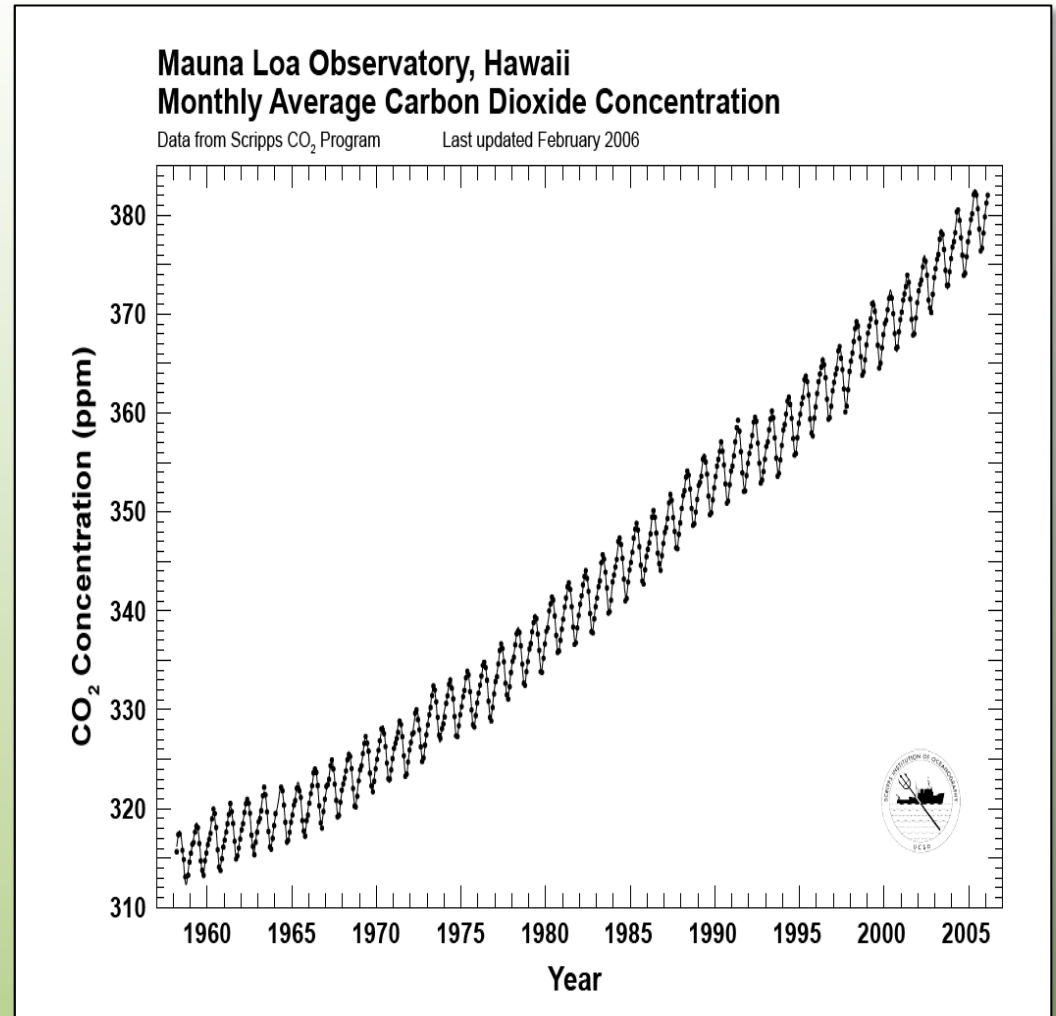
Summer plant growth in the Northern Hemisphere sharply reduces atmospheric CO₂ levels.

Primary conclusion:

Terrestrial plant growth is strongly carbon negative.

Secondary conclusion:

Oceanic carbon fixation is much smaller?





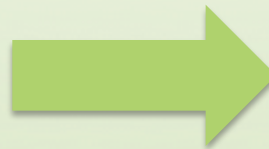
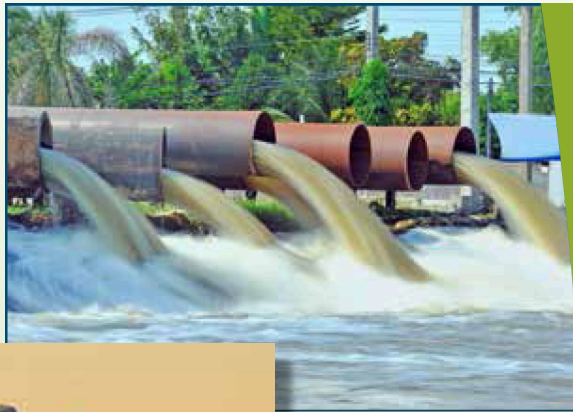
Profitable air capture of CO₂: Agriculture, forestry, eco-tourism, and CO₂ utilization





New Sky CO₂ negative manufacturing

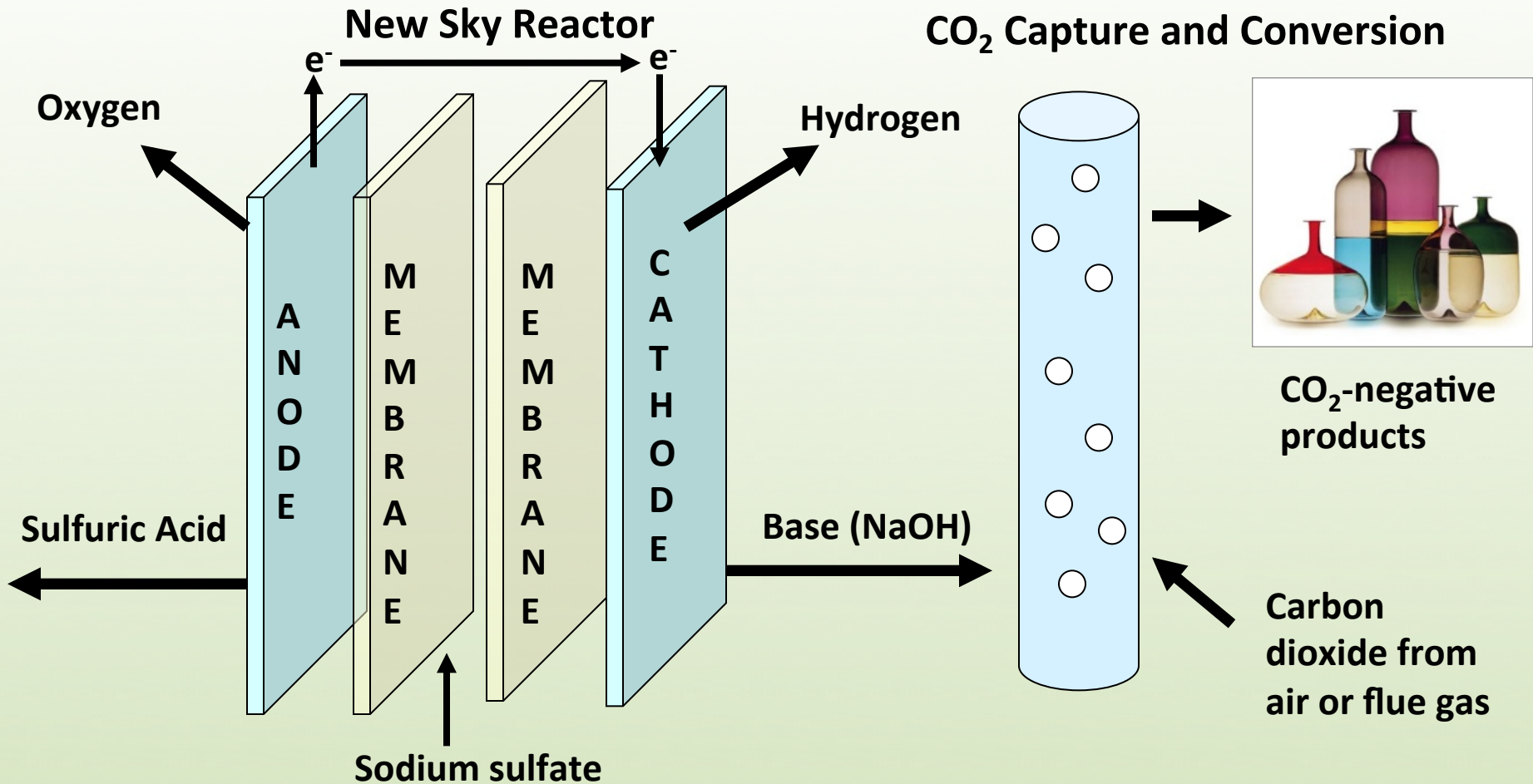
The CarbonCycle Process converts CO₂ and waste saltwater into carbon-negative chemicals and products.





CarbonCycle Manufacturing (US Patent 8,227,127)

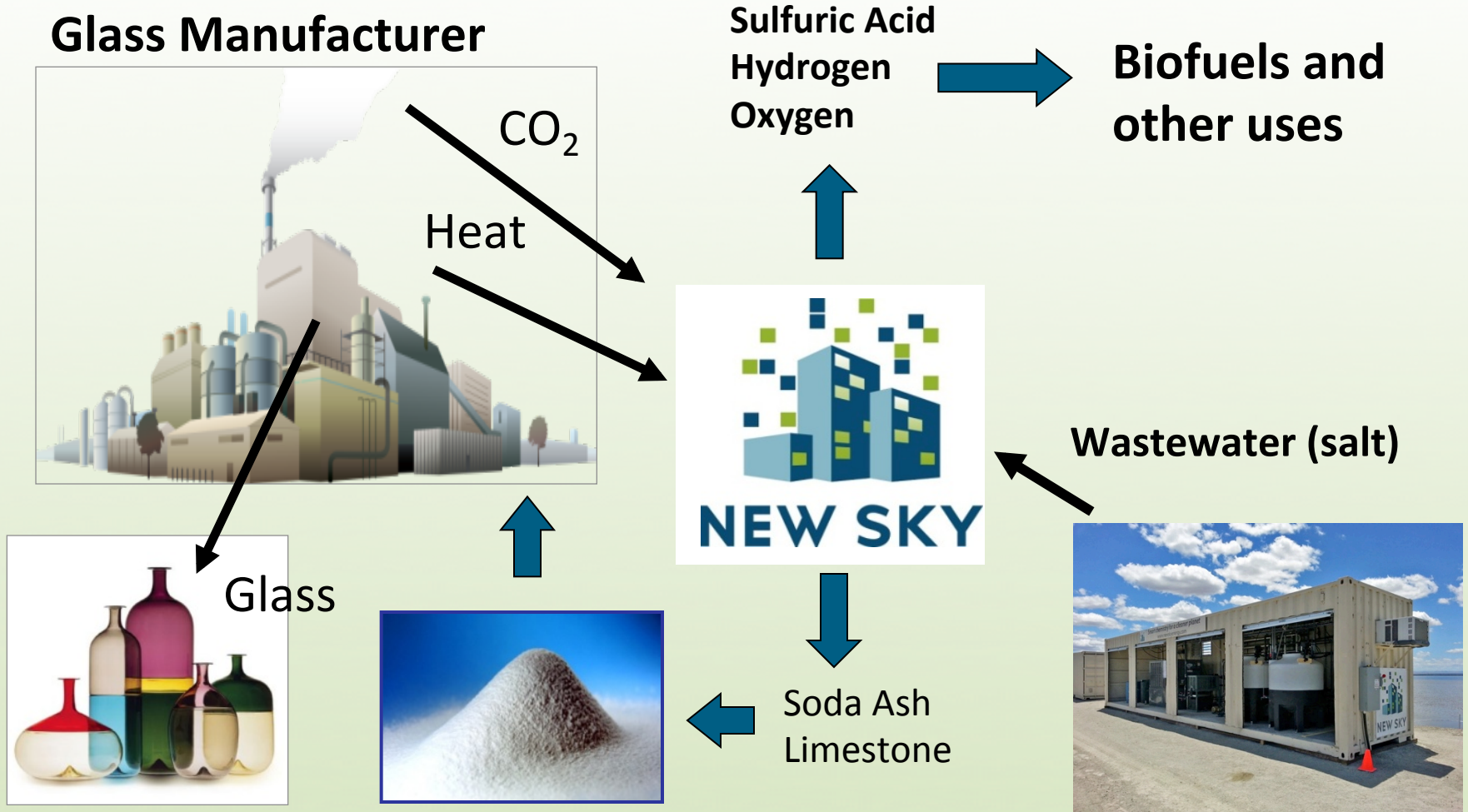
Water splitting + CO₂ capture → CO₂ negative carbonates





Industrial Example: Glass Manufacturing

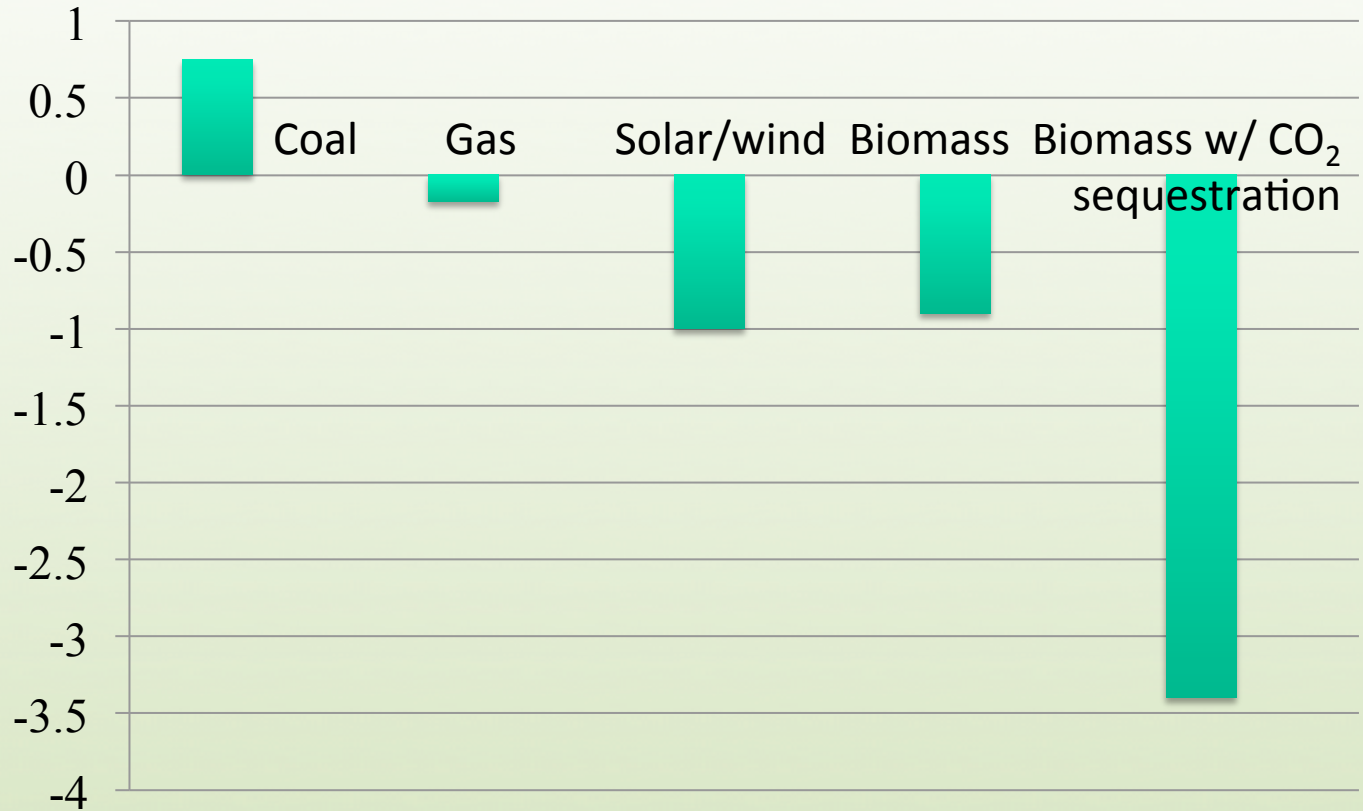
- New Sky CO₂-negative soda ash reduces emissions up to 33%





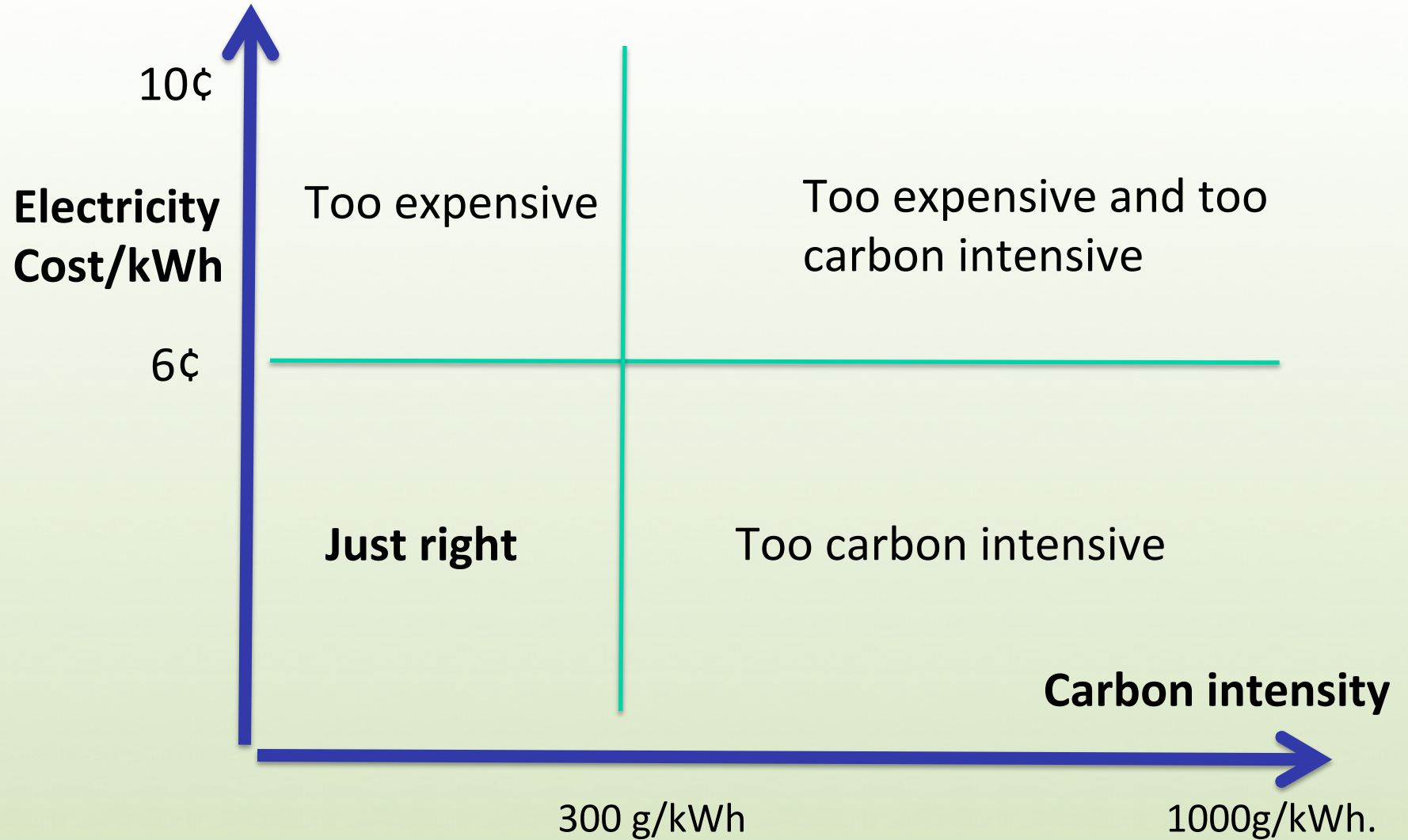
New Sky carbon negativity with different energy sources

Net CO₂
(tons) per
ton of CO₂
mineralized



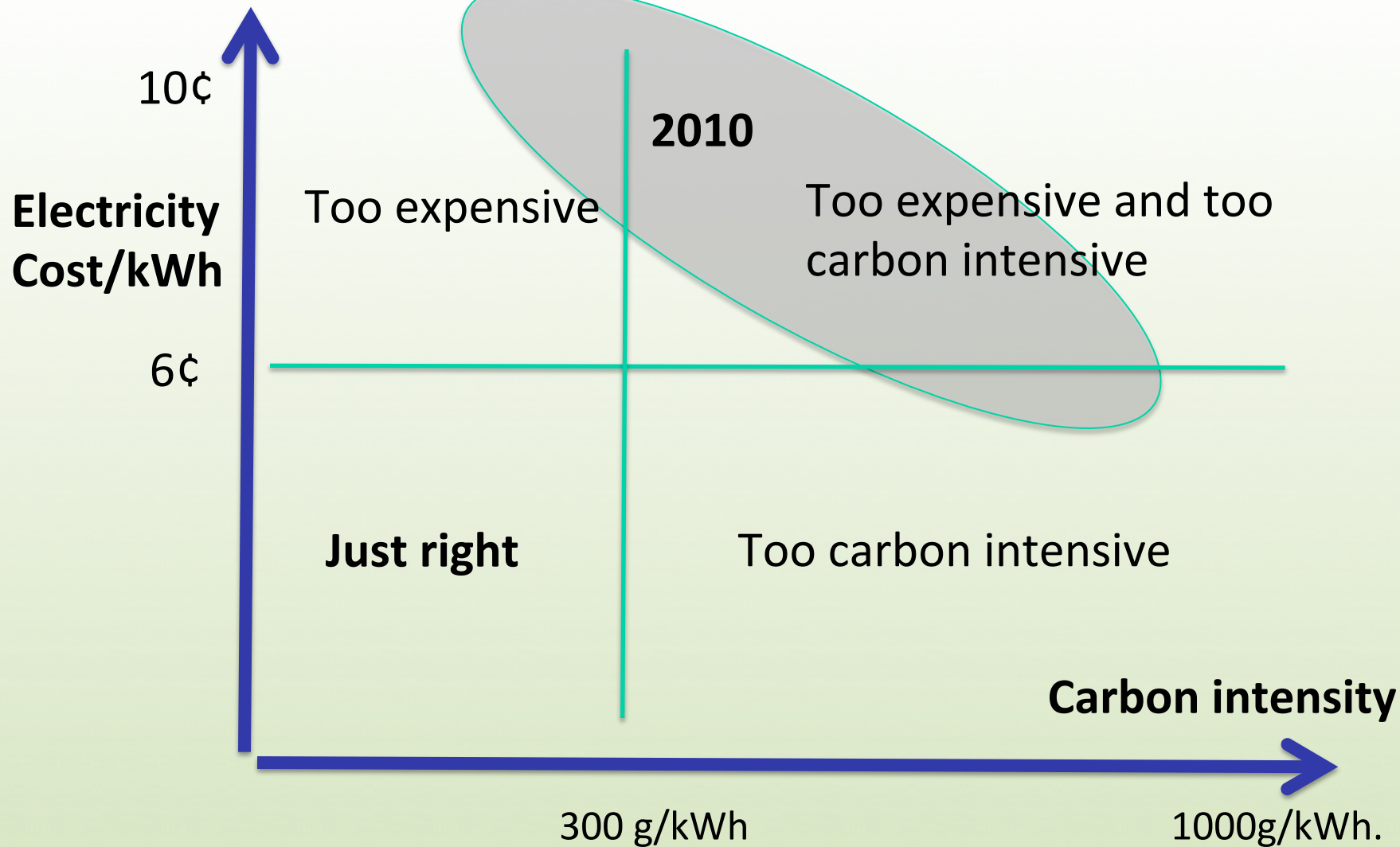


NEW SKY



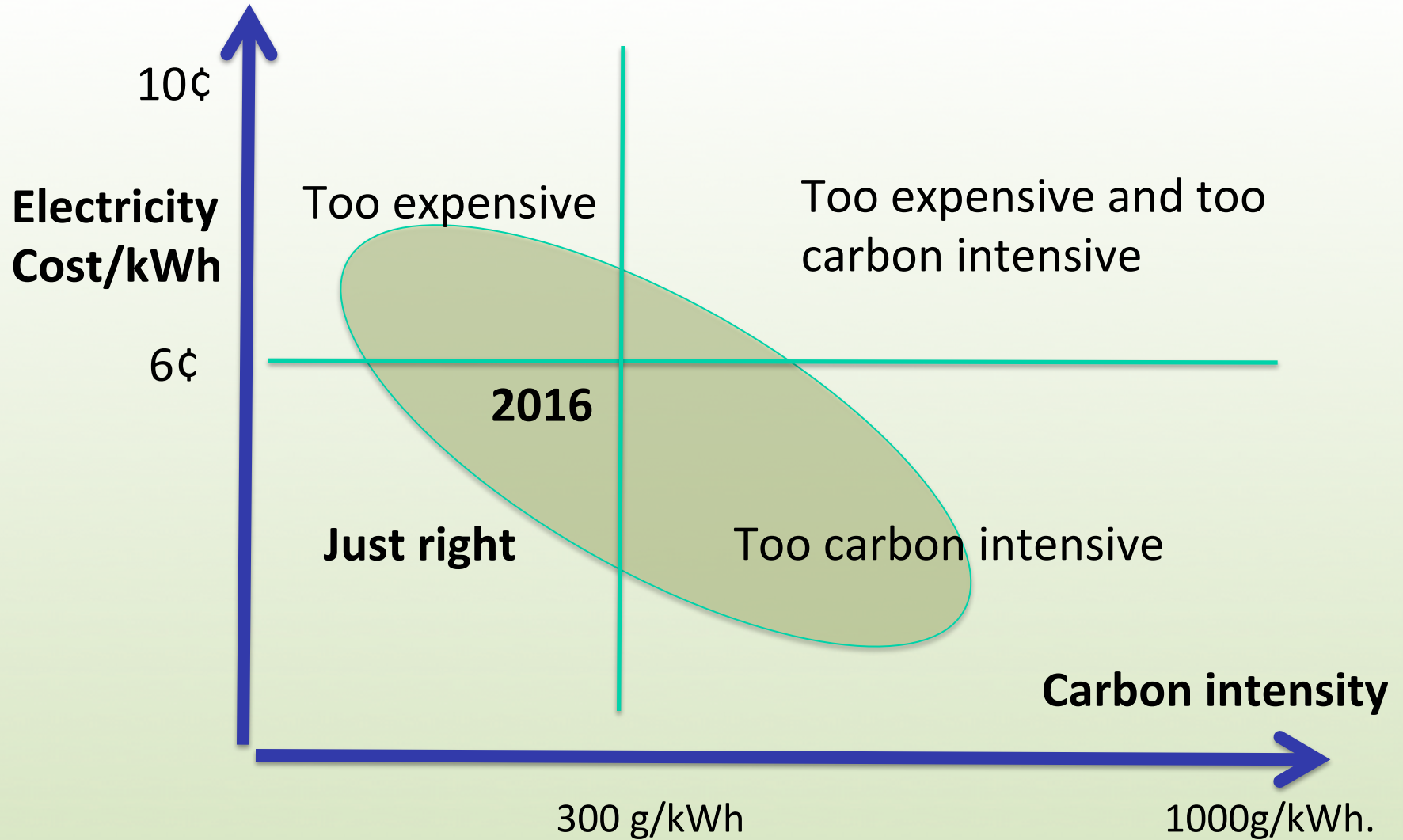


NEW SKY

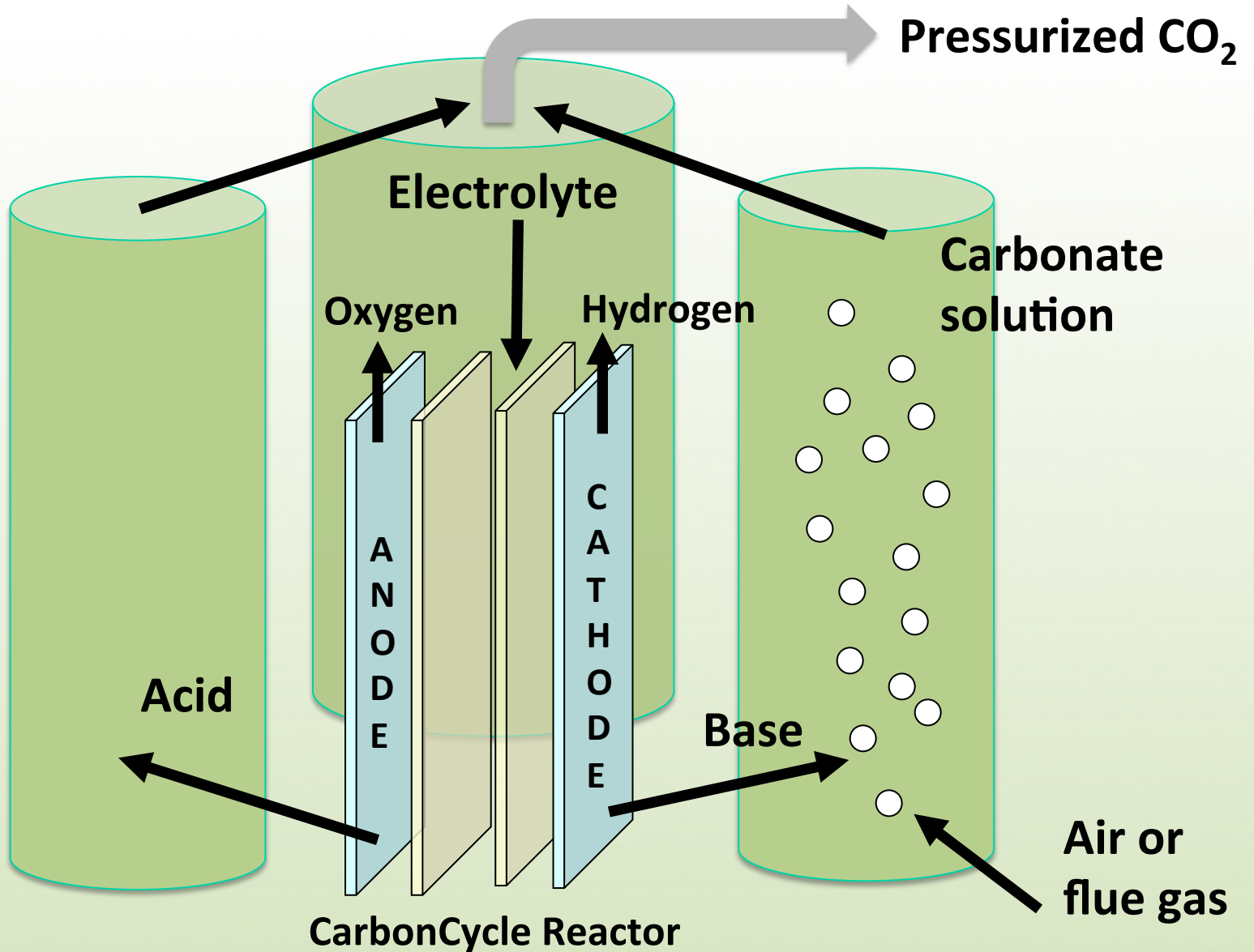




NEW SKY



CO₂ negative hydrogen + compressed CO₂





NEW SKY

New Sky Team

Deane Little
Philip Michael
Joe Kosmoski
Joe Lavelle
Margarite Parker
Tara Yoder
Adam Kortan
Jordan Matthews
Michael Schwener
Susan Folliott
Matt Koch
Chris Burk
Jason Barton
Brock Forbes
JunSu Han
Mitch Minton

Smart chemistry for a cleaner planet

Awards

\$500K CCEMC Grant
SXSW Eco Showcase
Imagine H2O Prize
Cleantech Open



**Commercially proven
technologies**

Project Partners

CCEMC/Alberta
Saint-Gobain
Owens-Illinois
North Shore Energy
Los Angeles County
Avery Brewing



Summary

- **Profitable air capture of CO₂ is a reality today**
- **Air capture of CO₂ is the ONLY process shown to reduce atmospheric CO₂ levels annually**
- **Agriculture, forestry, eco-tourism and reforestation are viable air capture strategies, as are some forms of CO₂ capture and utilization**
- **New Sky's CarbonCycle Process captures CO₂ from the air or flue gas, producing carbon negative materials, sulfuric acid and hydrogen**



Carbonates: durable CO₂ negative building materials since 3000 BC





Thank you.



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