

# **Flex Yourself Before You Wreck Yourself**

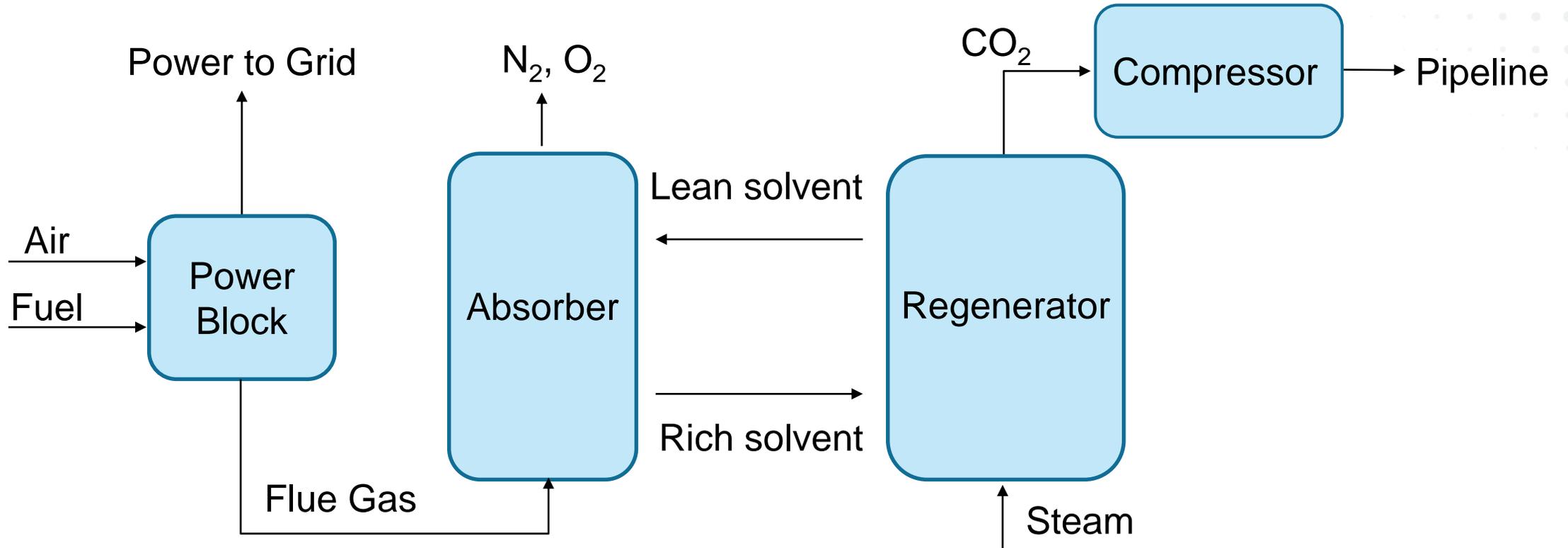
**How flexible carbon capture could support renewable-heavy grids**

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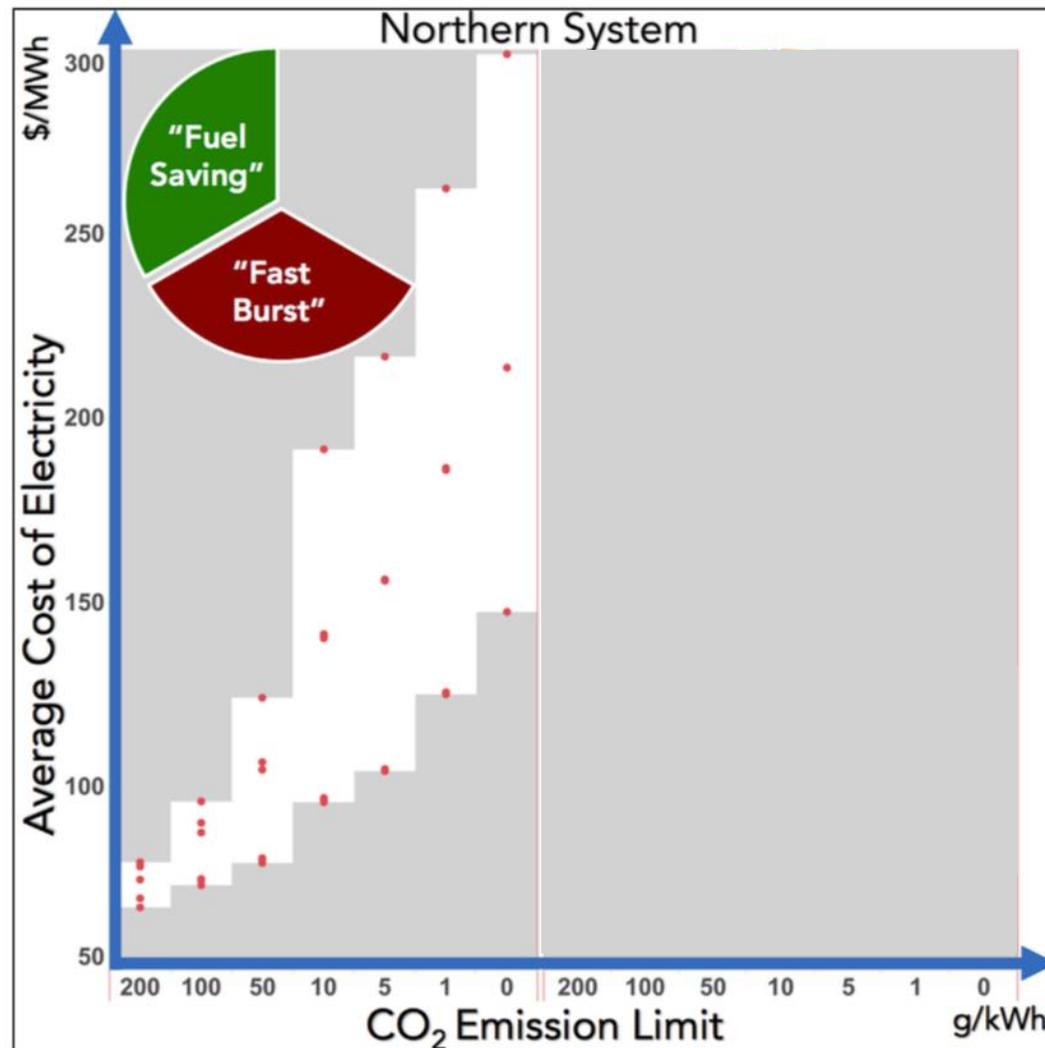
# Capturing CO<sub>2</sub> from a power plant



**Dispatchable low-carbon power**

**Expensive**

# Reducing the cost of deep decarbonization



## Technology examples

- Solar, wind
- Storage, demand response
- Nuclear, CCS, geothermal

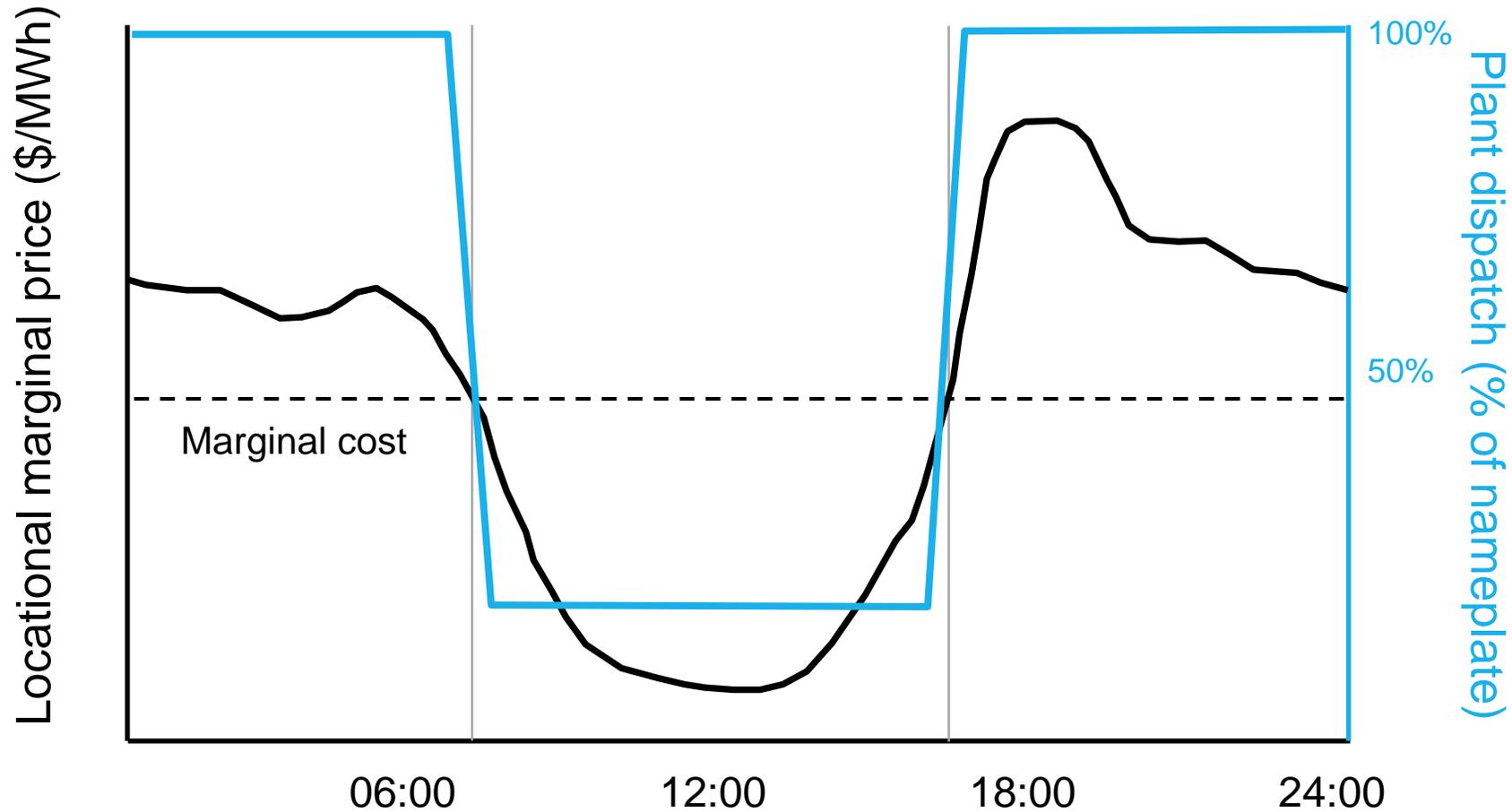
“Firm low-carbon” resources like CCS and nuclear lower the cost of deep decarbonization by 10-62%

# A look back at 1977, when CCS was first envisioned





# CCS was never designed with renewables in mind



# Flexible CCS could take a range of forms

## Redesign current processes

- ▶ Solvents
- ▶ Sorbents
- ▶ Membranes
- ▶ Oxycombustion
- ▶ Cryogenic

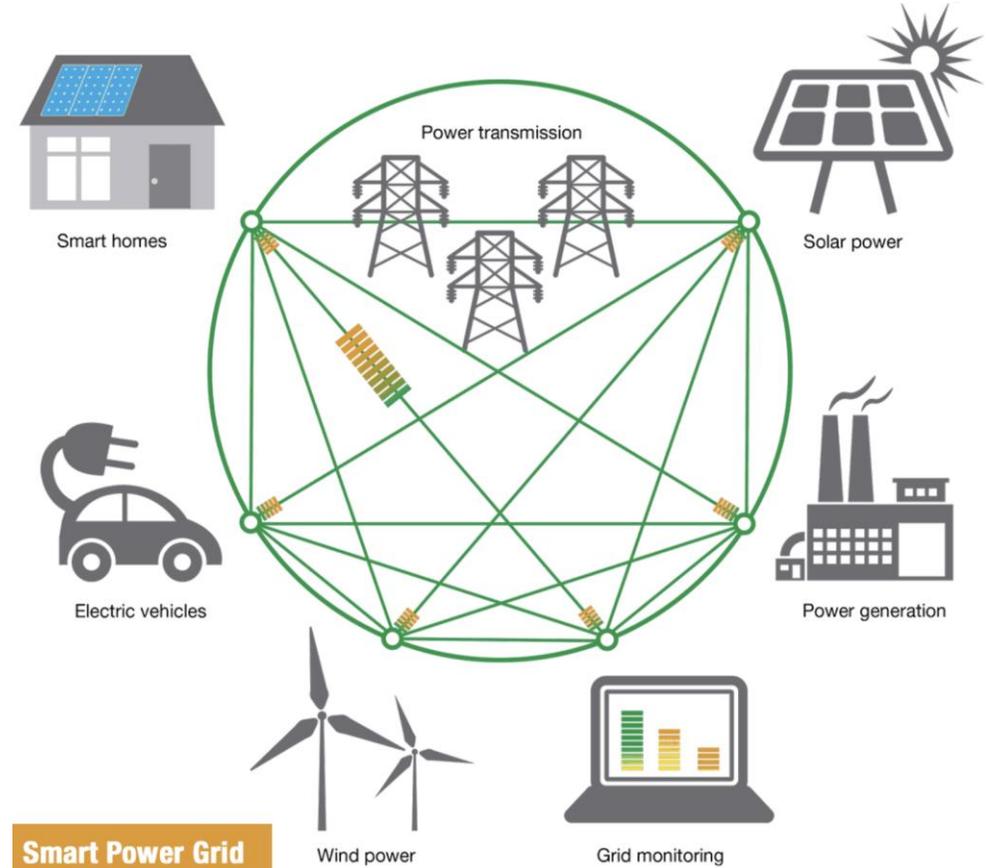
## Integrate storage

- ▶ Thermal
- ▶ Liquid air
- ▶ Liquid oxygen
- ▶ CO<sub>2</sub> capture medium

## Add valuable services

- ▶ Remove CO<sub>2</sub> from the atmosphere (integrate with direct air capture)

# Communities need to come together



CO<sub>2</sub> separations technology

Storage

Plant dispatch

Model predictive controls

Co-optimization

Direct air capture

Dynamic modeling

controls

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Webinar: <https://www.youtube.com/watch?v=Rxl-xzTJ7aU>

Office Hours: Tomorrow, July 9 from 8-9 am outside this room

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