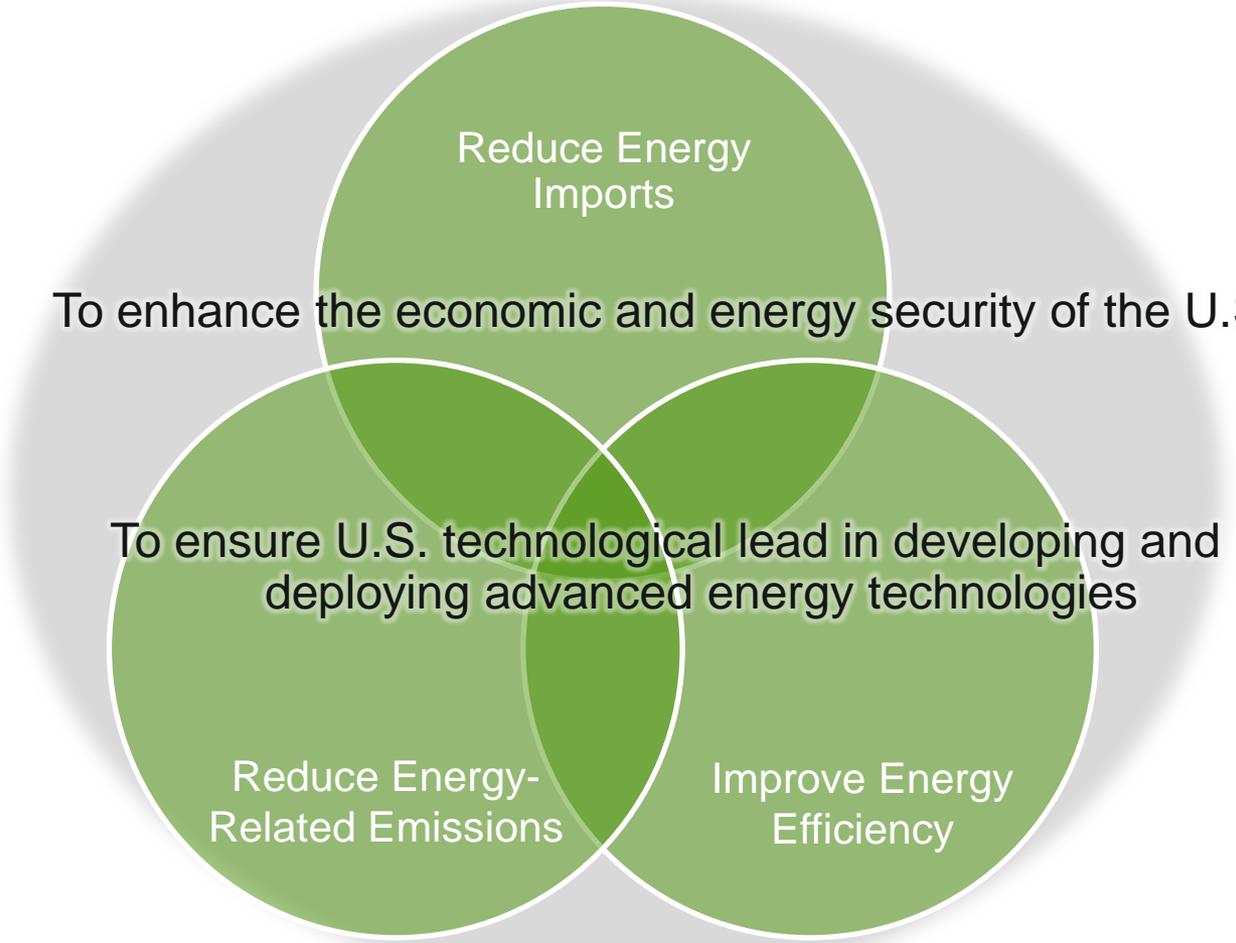
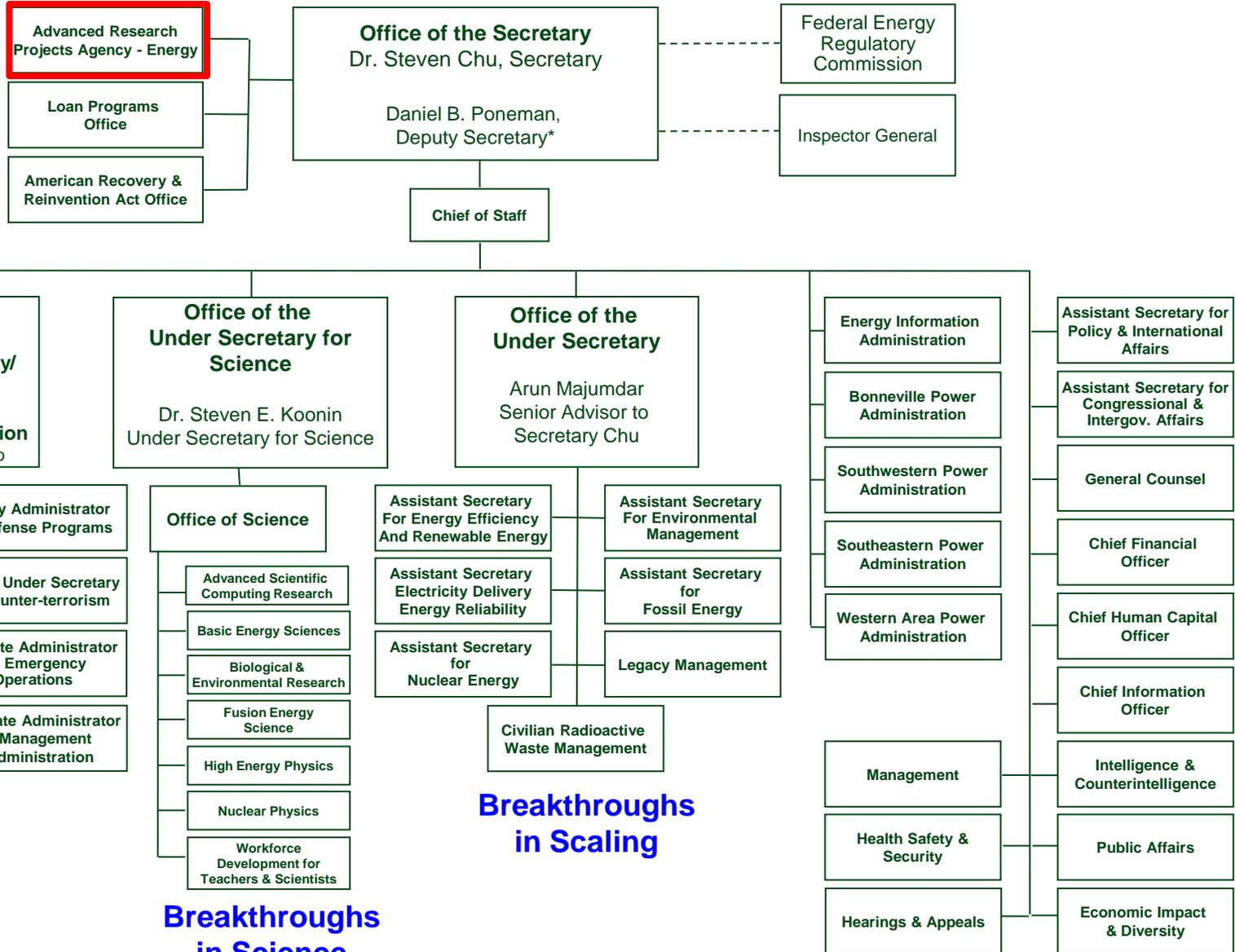


# Overview of ARPA-E: A New Paradigm in Energy Research

Arun Majumdar, ARPA-E Director

# ARPA-E's Mission





**Breakthroughs  
in Science**

**Breakthroughs  
in Scaling**

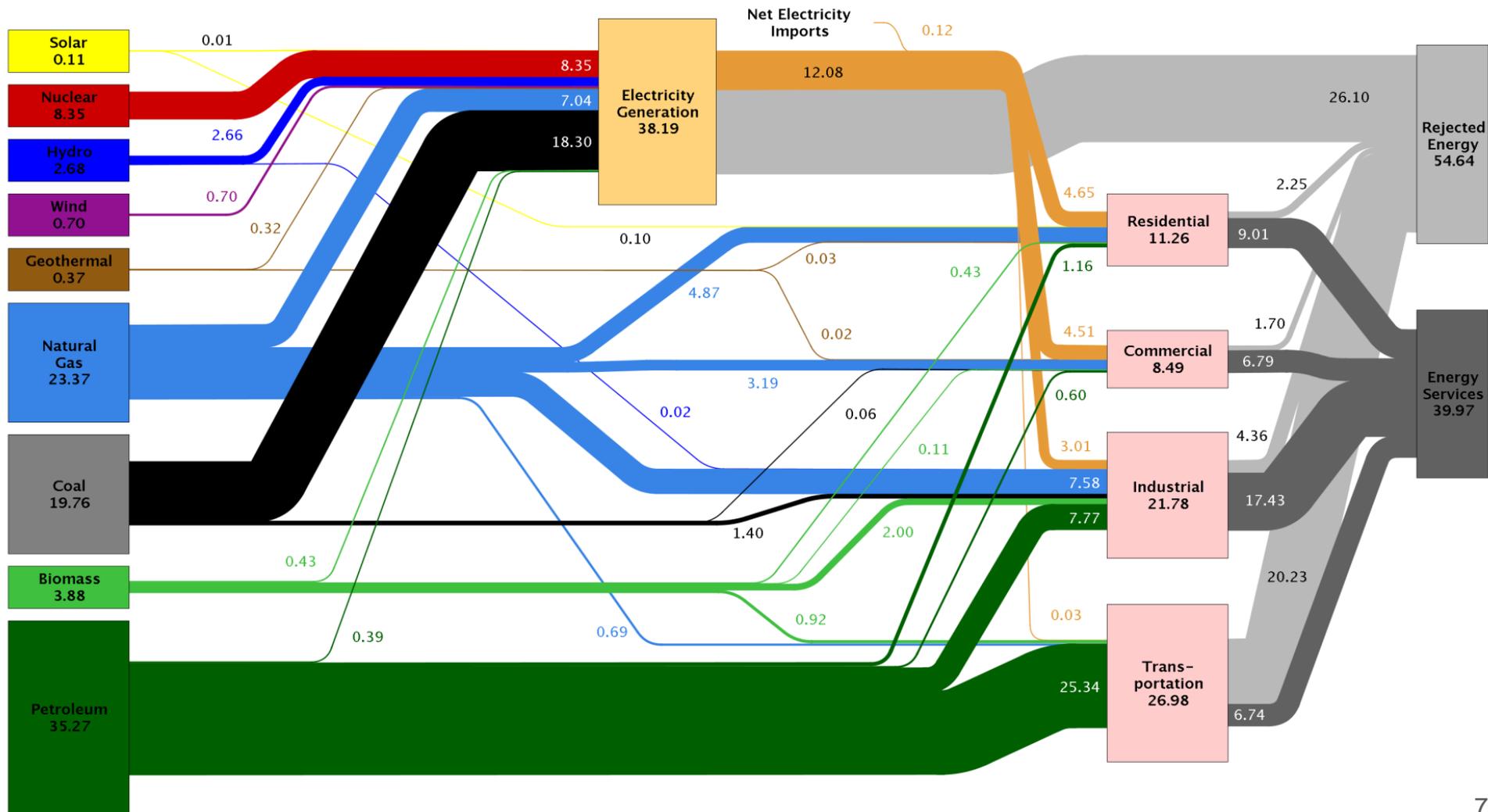


\* The Deputy Secretary also serves as the Chief Operating Officer

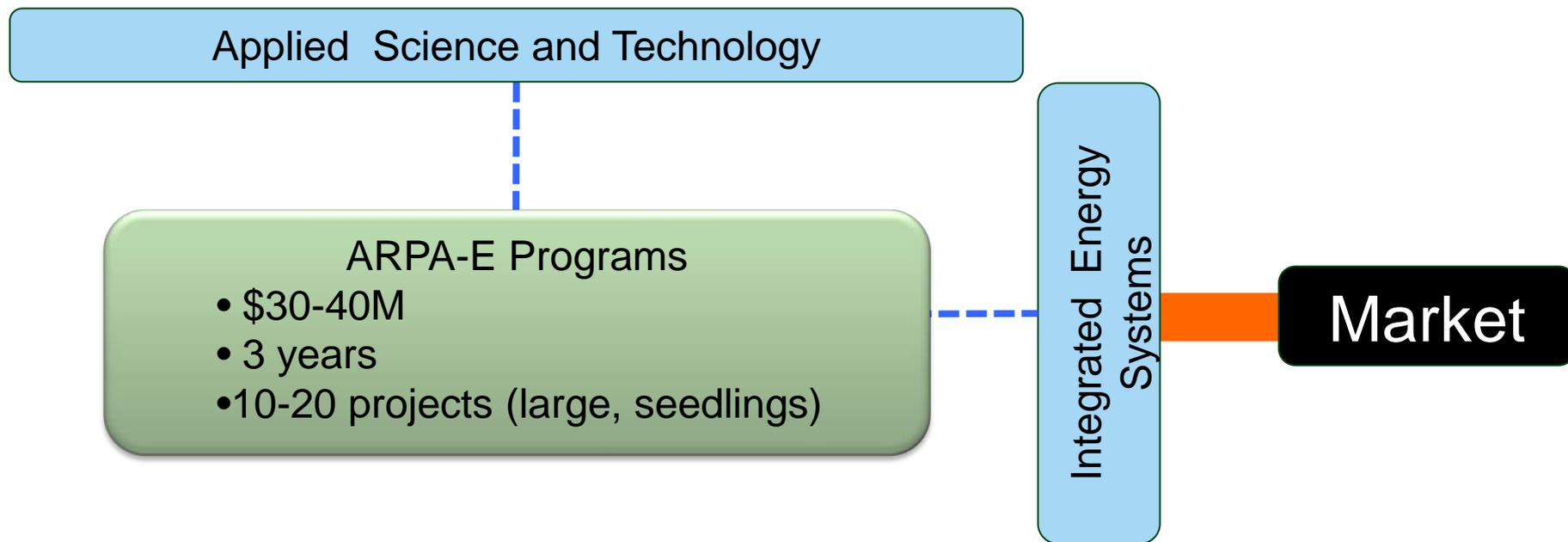
# Rewiring the US Energy Diagram



Estimated U.S. Energy Use in 2009: ~94.6 Quads



# Technology Push – Market Pull



# Photosynthetic Biofuels



Sugarcane



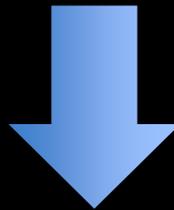
Corn



Algae

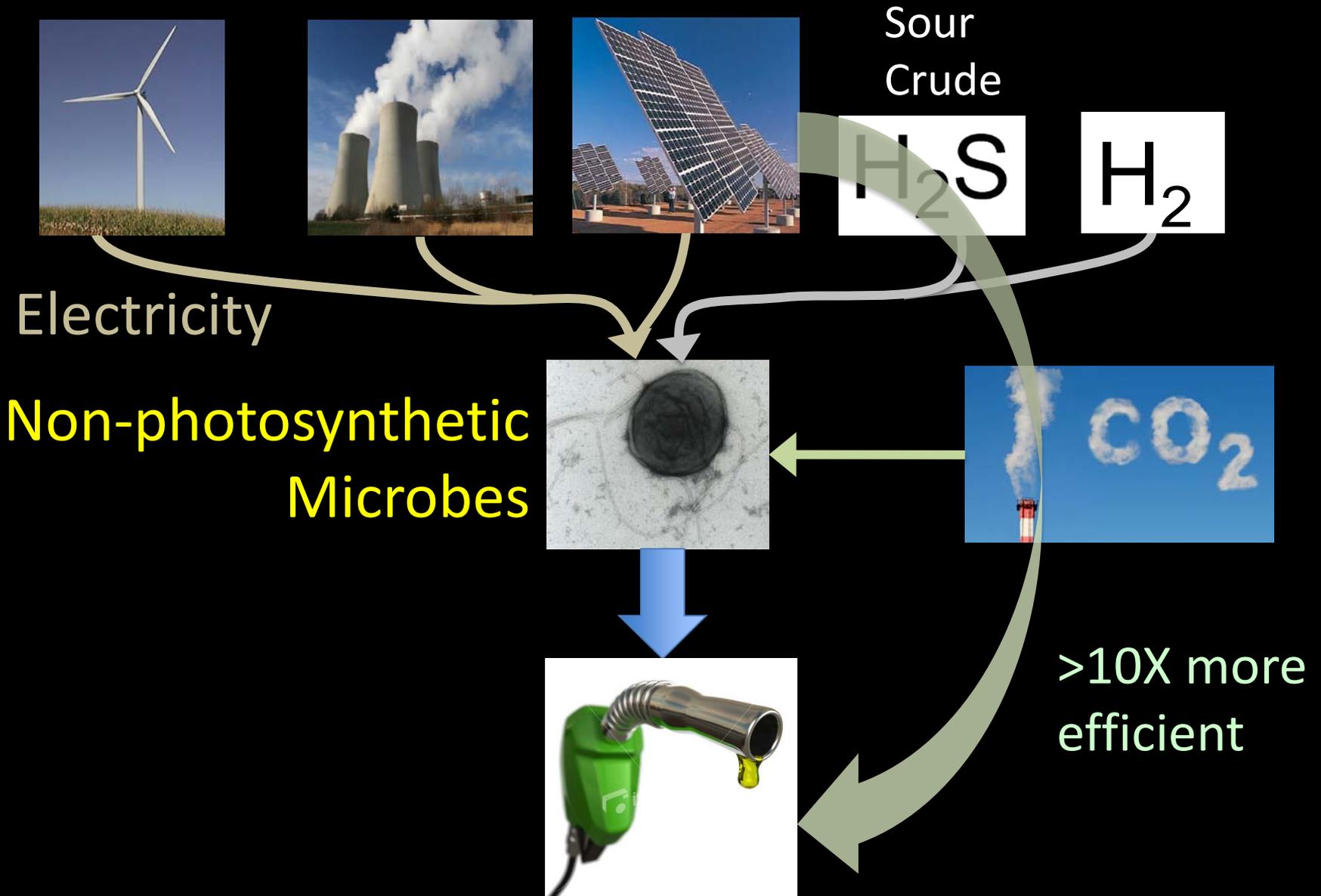


Cellulose



Less than  
1% efficient

# Electrofuels



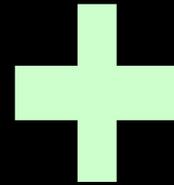


# Batteries for Electrical Energy Storage for Transportation (BEEST)

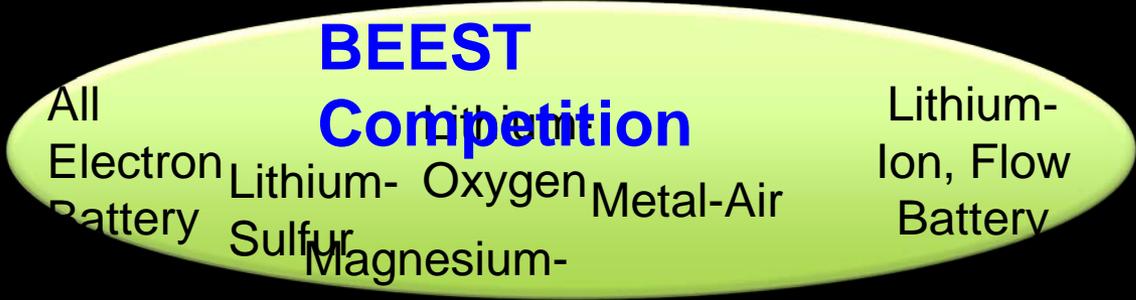
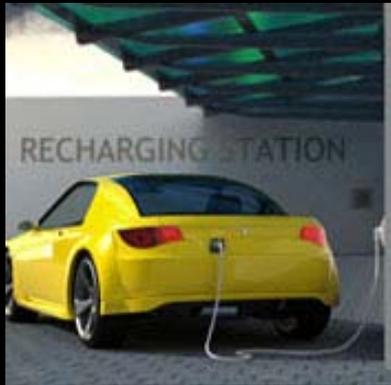
Electric cars with longer range and lower life-cycle cost than gasoline cars

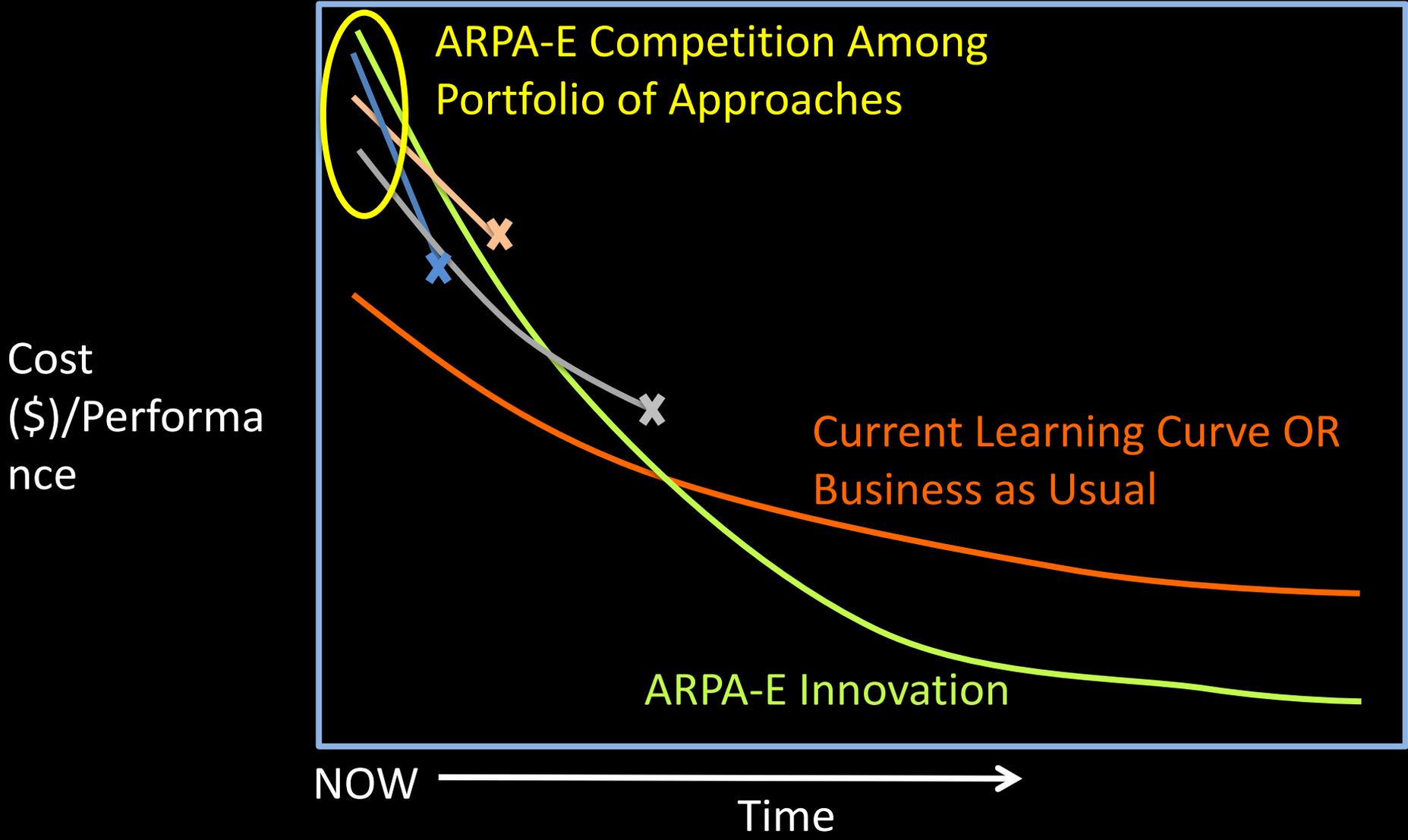
## BEEST Targets

2X increase in energy density



3X reduction in cost





# What is an ARPA-E Project?



## IMPACT

If successful, project could have:

- High impact on ARPA-E mission areas
- Large commercial application

## BREAKTHROUGH TECHNOLOGY

Technologies that:

- Do not exist in today's energy market
  - Are not just incremental improvements; could make today's technologies obsolete

## ADDITIONALITY

- Difficult to move forward without ARPA-E funding
- But able to attract cost share and follow-on funding
- Not already being researched or funded by others

## PEOPLE

- Best-in-class people
- Teams with both scientists and engineers
- Brings new people, talent and skill sets to energy R&D