



The Net-Negative CO₂ Baseload Power Initiative

Addressing Climate Change Concerns

Protecting the Baseload Power
Infrastructure

Securing the Economic Future of Coal
Communities

American Coal Council

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Net-Negative CO₂ Baseload Generation Technology

- Established in June, 2021 as a 501(c)(6)
- The Team



Steve Winberg
Chairman & CEO



Ken Humphreys
Treas. & Sec.



Fred Palmer
Senior Consultant

- Our Sponsors
 - CONSOL Energy
 - Peabody
 - PFBC-EET

Situation Assessment

The Facts

- Coal is not the problem – CO₂ is the problem – but coal opponents have demonized coal and the public largely accepts this demonization
- India and China came to coal's defense at COP26. Small word changes matter:
 - “Phase down” not “Phase out”
 - Unabated coal, not all coal
- An Administration change in three years is unlikely to substantially mitigate ESG, shareholder, State and international pressures that work against conventional coal.
- Coal opponents are well-funded, getting “richer”, and view any coal win as a temporary stay of execution.
- The net effect of expanded renewable tax credits, renewable portfolio standards and other renewables incentives are reducing coal plant dispatchability and degrading the investment returns on coal power projects.
- EPA is ramping up its regulatory assault on coal – both production and use.
- Power producers are moving away from coal.
- The coal industry needs to continue its defense, but defending the status quo is not enough.
- Offense is needed – Coal needs to be “For Something”.

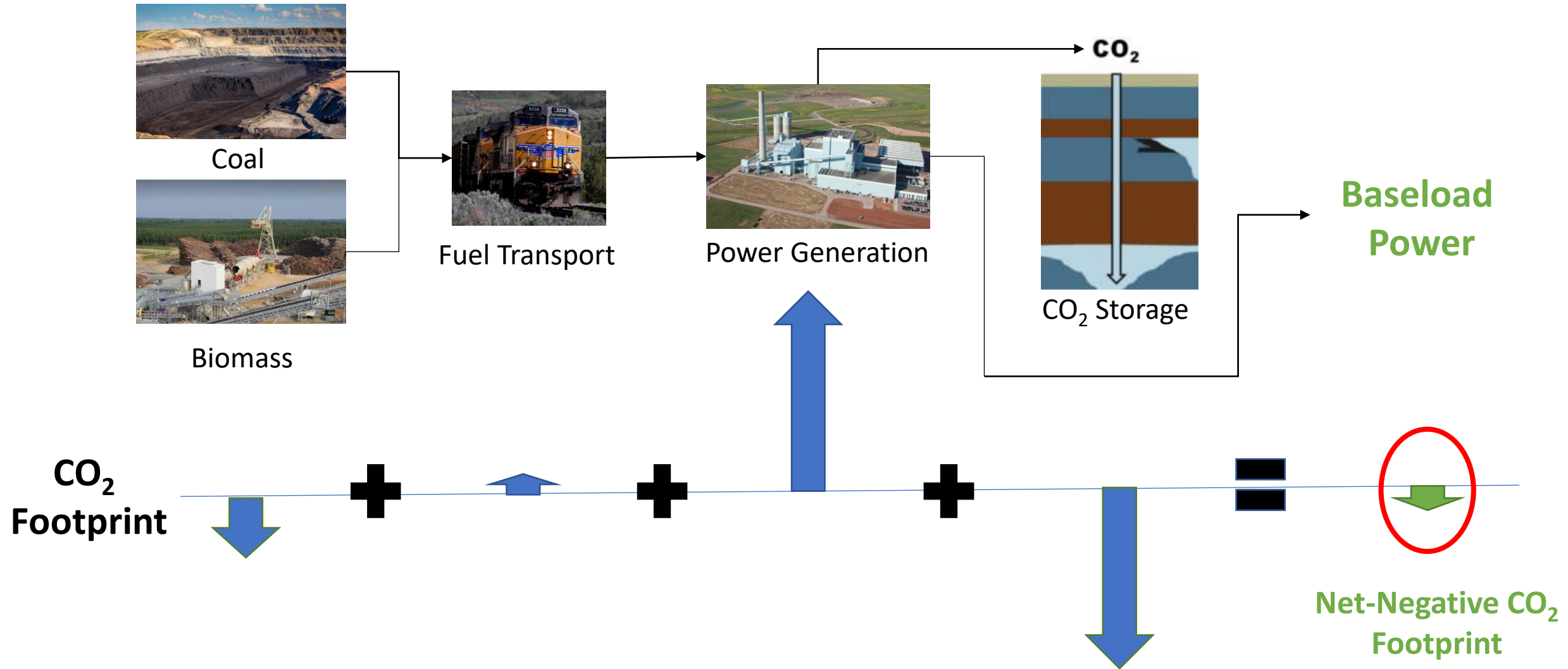
“Something” the Coal Industry Could Be For

- Positioning the existing coal fleet for the future
 - Need to protect the value of the existing infrastructure
 - Forestall premature coal plant retirements
- Tax Credit Parity – *the 90/90 rule*
 - Generation only qualifies if 90% dispatchable on demand.
 - Generation only qualifies if 90% CO₂ reduction
- 45Q Revisions
- Building a post-2030 future that adds new profit streams and creates societal value, including addressing climate change concerns:
 - Coal-to-Products
 - Coal-derived CO₂-to-Products
 - Net-Negative CO₂ Coal-to-Energy Generation
 - Net-Negative CO₂ Baseload Power Technology
 - Net-Negative CO₂ Hydrogen Technology



Net-Negative CO₂ Baseload Power Technology

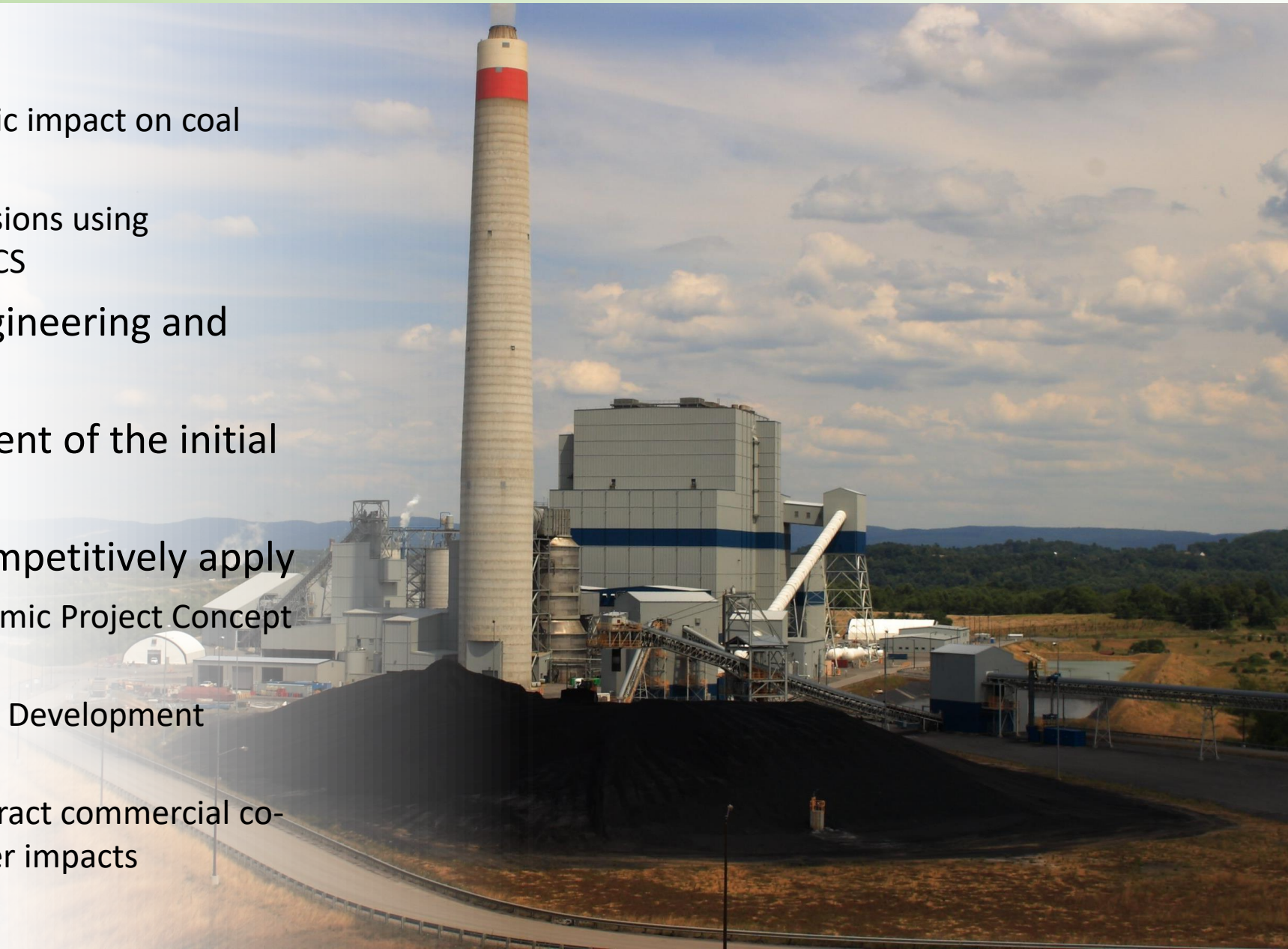
Coal with Biomass Co-firing and CCS



Proposed DOE Net-Negative CO₂ Baseload Power Program

Additional Details

- Qualifying projects:
 - Must have a positive economic impact on coal communities.
 - Must have net-negative emissions using coal/biomass co-firing with CCS
- \$300M for plant-specific engineering and economic studies
- \$30B to cost-share deployment of the initial ~10 net-negative plants
- Power plant owners may competitively apply
 - Grants for engineering/economic Project Concept Studies
 - Cost-share for pre-FID Project Development Activities
 - A package of incentives to attract commercial co-investment and limit ratepayer impacts



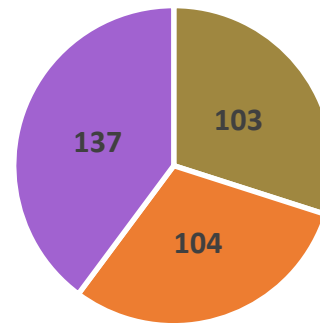
U.S. Biomass Resource

Quantities are Sufficient to Sustainably Support Coal-Biomass Co-Firing

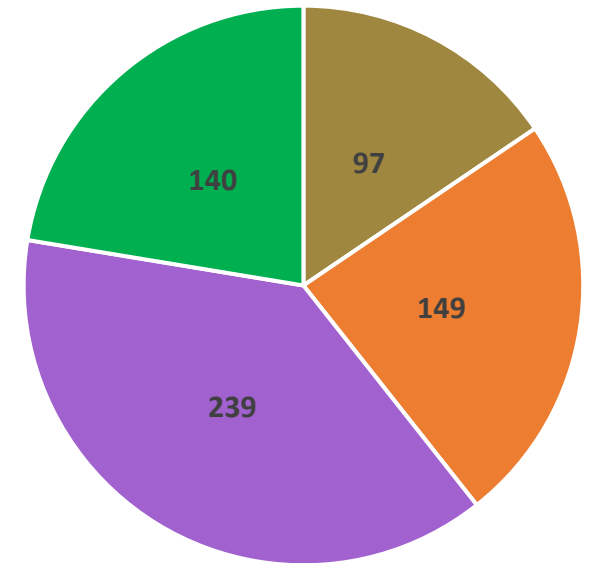
- Existing Coal Generation Infrastructure
 - 212 GW of utility-scale coal plants
 - Transmission, supply chain, and permitting infrastructure for the plants are in place
 - 59 GW (28%) are scheduled to retire by 2035 with many of these plant sites candidates for retrofitting or repowering
- Abundant Domestic Coal Resources
 - World's largest reserves
 - 470-year supply at 2020 consumption rates
- Sustainable Domestic Biomass Resources
 - 20% co-firing of entire existing coal fleet would require 125 millions tons/yr of biomass.
 - The 2030 domestic, available biomass resource is estimated to be 625 million tons.
 - The U.S. is the world's largest exporter of wood fuel pellets with 9 million tons of 2020 exports to fuel international coal plants.

Biomass Resource Available for New Uses

2017 Actual
344 Million DT/yr



2030 Estimated
625 Million DT/yr

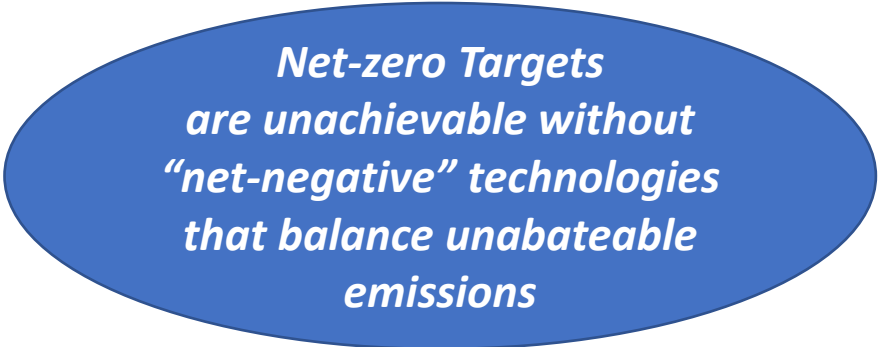


■ Forest Residues ■ Agricultural Residues ■ Wastes ■ Energy Crops

Why Pursue Net-Negative CO₂ Baseload Power

Avoids Stranding Existing Assets and Abandoning Coal Communities

- Aggressive Administration Targets
 - 2030 - 50% economy-wide reduction of U.S. GHG
 - 2035 - Net-zero emissions across the electricity sector
 - 2050 - Economy-wide net-zero GHG emissions
- Impact of these targets is premature coal plant retirements
 - Strands valuable infrastructure
 - Economically hollows-out coal and power plant communities
 - Reduces electricity reliability
 - Increases electricity costs, impacting manufacturing jobs and households
- Net-negative technology would
 - Significantly mitigate these impacts
 - Support grid reliability with carbon-negative baseload power
 - Create hydrogen co-product production opportunities
 - Ready the technology for export, which creates U.S. manufacturing opportunities
 - Support U.S. allies that have stated policies to continue the use of coal (e.g., India and Japan)
 - Demonstrate U.S. leadership on pragmatic approaches to address climate change



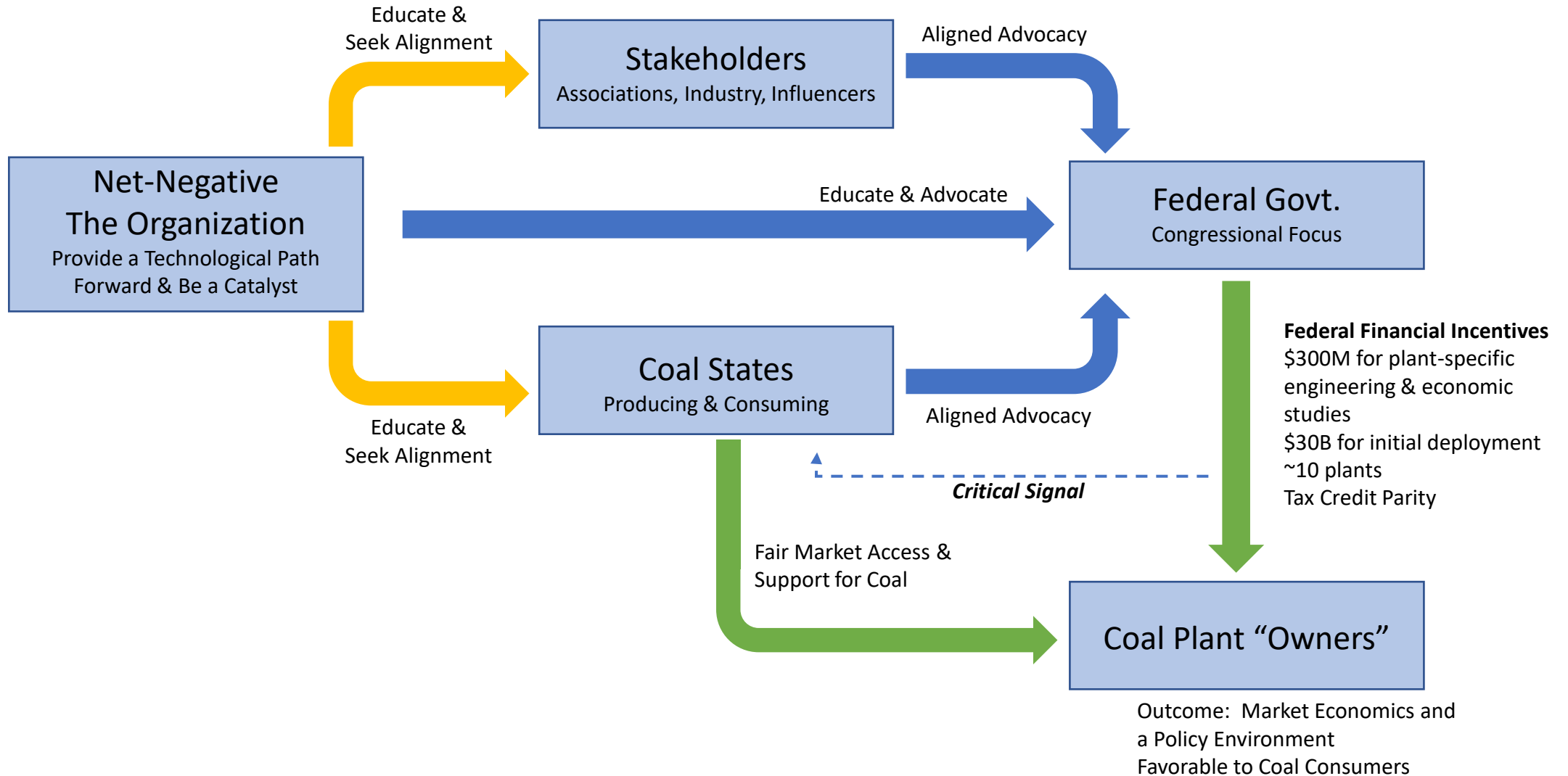
*Net-zero Targets
are unachievable without
“net-negative” technologies
that balance unabateable
emissions*

Tax Credit Parity – the 90/90 rule

- Investment and Production Tax Credits (ITCs and PTCs)
 - Incentivize low-carbon, reliable power
 - Minimum dispatchability requirement (e.g., 90%)
 - Nuclear, Renewable, CCS-enabled fossil plants, and Net-Negative fossil plants can all meet a dispatchability requirement either stand-alone or with battery/low-carbon power back-up
 - Zero-carbon emitting plants would be eligible for a Base PTC.
 - CCS-enabled fossil plants with <100% capture would be eligible for a reduced PTC.
 - Net-Negative plants, effectively with >100% capture would be eligible for an increased PTC.
- 45Q Carbon Capture & Storage Tax Credit
 - Amount should be indifferent to the carbon capture technology employed (e.g., amine capture, ammonia-based capture, or direct air capture). The result “tons captured” not the technology type should be incentivized.

Approach

Creating a Favorable Investment Environment for Coal During an Economy-Wide Transition Toward Net-Zero



Required Federal Actions

Enabling Deployment of Net-Negative CO₂ Baseload Power Technology

Policy commitment to facilitate deployment of net-negative CO₂ baseload power, including:

- Enactment of The Net-Negative Baseload Power Act (H.R. 4891), which
 - Establishes a Net-Negative Baseload Power Program at DOE
 - Authorizes \$300M in immediately available grant funding for engineering and economic studies at existing coal power plants sites
 - Provides DOE with new management tools and directs the acceleration of projects that will reduce the carbon footprint of the existing coal fleet with Net-Negative Technology (CCS and biomass co-firing)
- Appropriating the \$300M in grant funding.
- Providing ~\$30B in funding for the DOE Net-Negative Baseload Power Program for cost-shared retrofits/repowering of a first tranche of plants
 - Accelerates the reduction of the coal fleet's carbon footprint
 - Protects grid reliability and coal communities
- Tax Credit Parity – *the 90/90 rule*
- *45Q Revisions*

Required Industry Actions – Both Defense and Offense

Defense

- Protect the existing, but declining, power generation market
 - Largely a Federal/State litigation effort to slow coal plant retirements
 - Litigation can slow, but will not stop retirements – the fleet is getting old and tired, and power producers are hesitant to invest in these plants

Offense

- Support Tax Credit Parity and 45Q revisions - Federal
- Secure a Senate companion bill to H.R. 4891 - Federal
 - Secure \$300M to begin conceptual engineering/economic studies at existing power plants (lobbying action)
- Develop analyses to support public debate – Federal and State
 - Cost of repowering with Net-Negative technology vs. an “all renewable” strategy
 - Value of utilizing existing infrastructure vs. building new renewable infrastructure
 - CO₂ reduction potential under various CCUS & Net-Negative technology deployment scenarios
- Need coal industry support to expand our educational efforts at the Federal and State level to establish Net-Negative Technology as a necessary tool to decarbonize the World.

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