

# **2021 PCMIA/SME Pittsburgh Section Joint Mining**

## ***“Net-Negative CO2 Baseload Coal Power Technology”***

**By**

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# The American Coal Industry

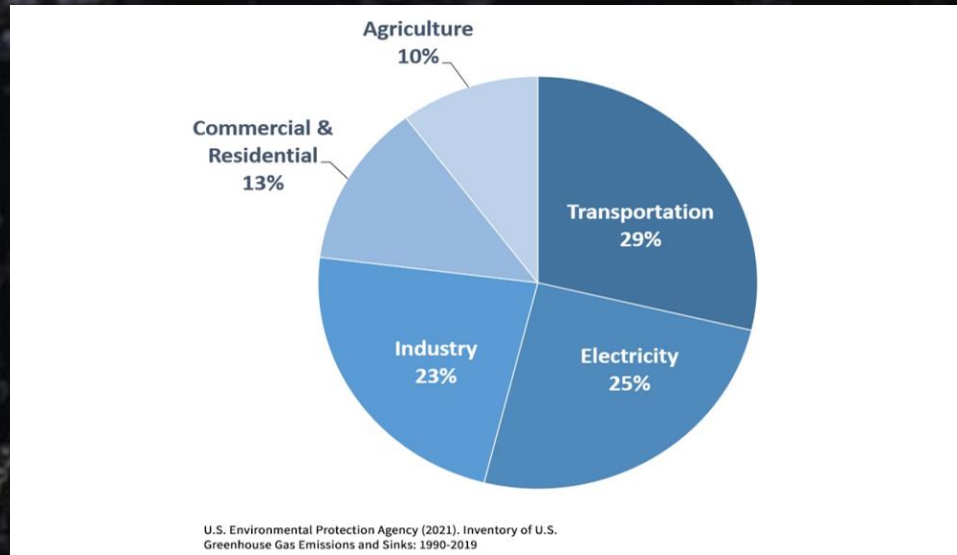


Longwall Mining

- Production has fallen from 1.2 billion tons in 2008 to 535 million tons in 2020
- Metallurgical coal will see great demand from the Infrastructure Bill
- New developments in coal-to-products are encouraging
- Greatest challenge is faced by coal for electricity generation



# Biden Administration Climate Goals



EPA - U.S. GHG Emissions and Sinks, 1990-2019

- A 50-52% economy-wide reduction of U.S. GHG by 2030
- Net-zero emissions across the electricity sector by 2035
- Biggest threat is for coal for electricity generation

# Major Implications of These Climate Goals

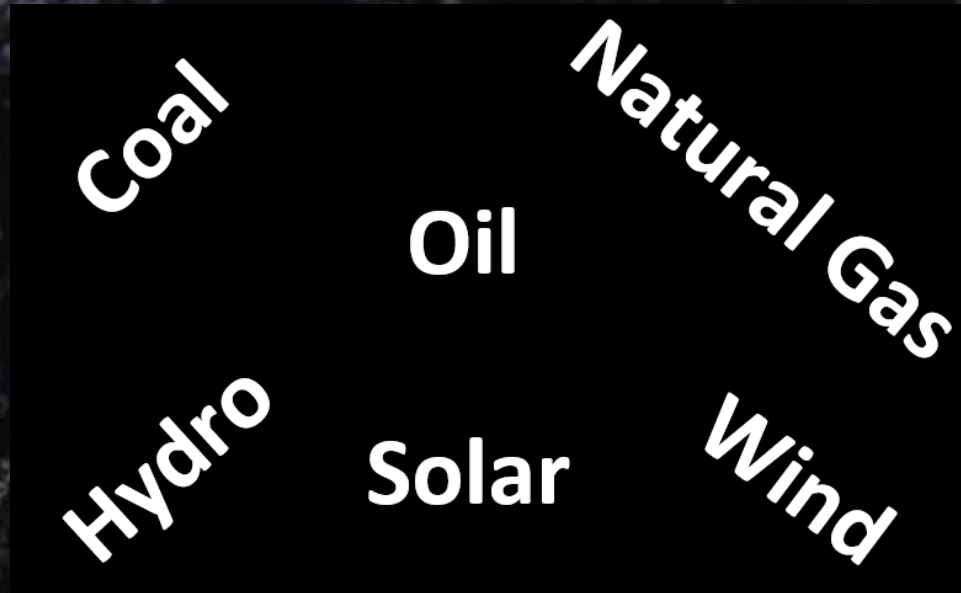


President Joe Biden

- Whether we agree or not, climate change concerns must be addressed
- Electrification of the economy needed at an unprecedented scale
- Substantially increased demand for net-zero baseload power
- No way to achieve these goals without “net-negative” technologies



# The “All-of-the-Above” Path



- The best path forward relies on an “all-of-the-above” approach
- Focus on addressing climate change concerns with technology
- Recognizes the benefit of fossil fuels, renewables, and nuclear power generation
- Reduces the amount of carbon emissions rather than eliminating particular fuels

# Coal is Included



Plant Bowen Power Station 3,499 MW Powers 1.9 Million Homes

- The path which includes coal gives the Administration its best shot
- Coal is the lower cost solution and protects baseload electricity generation
- Mitigates the negative economic impacts on coal communities by saving miners' jobs
- Coal can be a meaningful part of addressing climate change concerns



# The Challenge



Wind Power

- Popular perception is leading society down the “all renewable” path
- This will be at great expense and with questionable progress
- The Infrastructure Bill should include substantial federal investment in technology to enable coal plants to become net-negative CO2 emitters.
- Too many see fossil fuels as the root of the problem without acknowledging their value

# What Does the Net-Negative Coal Plant Look Like?



Biomass in the Form of Pelletized Wood

- It's a coal plant co-firing 80% coal with 20% biomass and CCUS
- Biomass is in the form of pelletized wood
- When biomass grows it consumes CO<sub>2</sub>
- Thus, the fuel input stream already has a negative CO<sub>2</sub> footprint



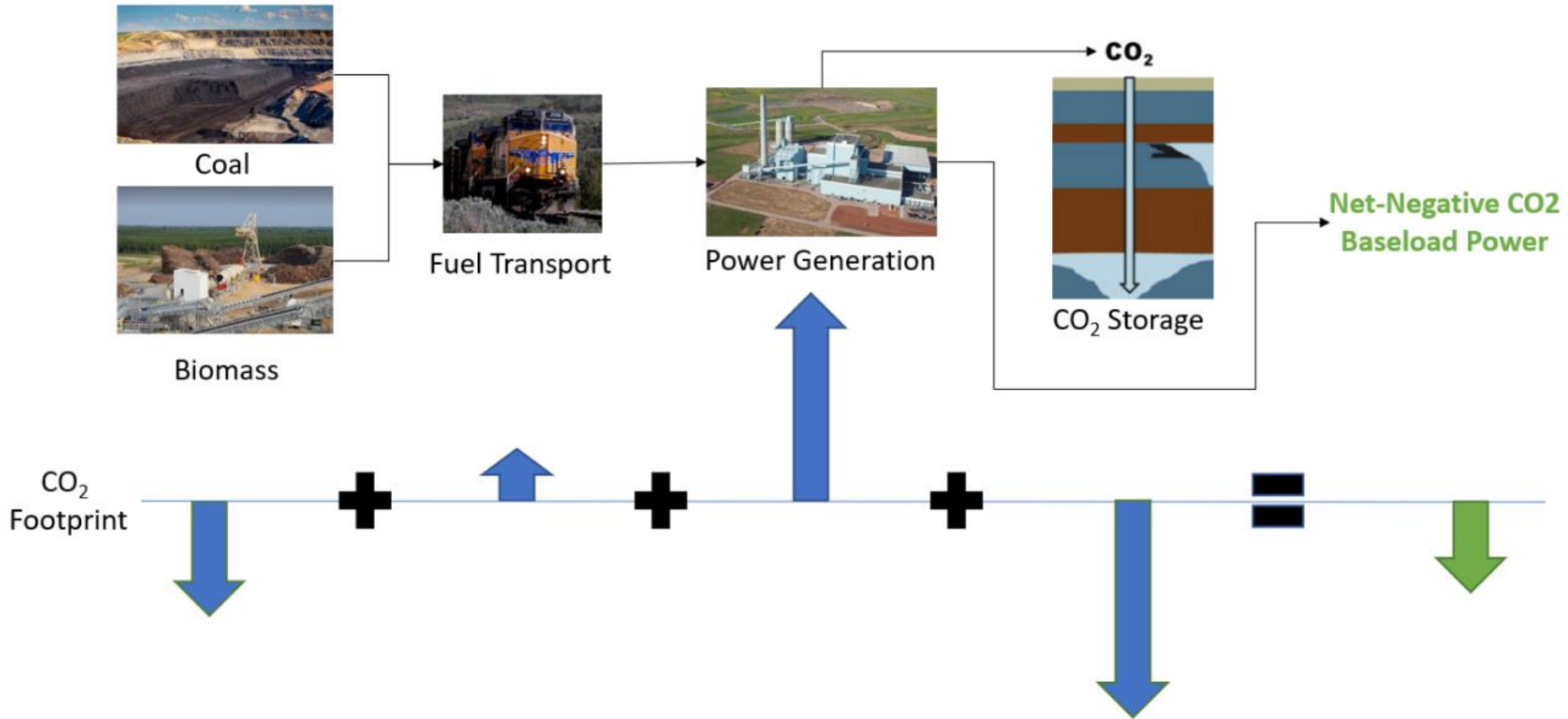
# Net-Negative Coal Plant



Virginia City Hybrid Energy Center burns coal, biomass, gob-pile coal

- Plant has CCUS on the back end removes 90% CO<sub>2</sub>
- Any CO<sub>2</sub> lost to the atmosphere is more than made up for
- By the biomass negative CO<sub>2</sub> footprint of the biomass fraction of the fuel
- The plant's CO<sub>2</sub> emissions are net-negative.

# Net-Negative Coal Plant





# Biomass Availability



Biomass Forest

- DOE estimates the biomass resource base is one billion tons annually
- The U.S. forest biomass could provide more than 100 million tons annually
- U.S. coal fleet co-fired with 20% biomass would need 100 million tons of biomass annually
- Opportunities exist for biomass farmers to negotiate long-term supply agreements

# Advantages of Coal with Biomass Co-Fueling

- Only scalable baseload power technology with “net-negative” carbon emissions
- Nuclear is “net-zero” baseload power technology
- Solar and wind are “net-zero” but intermittent
- Rely heavily on natural gas to back them up



# Advantages of Coal with Biomass Co-Fueling

- The technology exists to bring online a net-negative coal fired plant
- It preserves hundreds of billions of dollars of existing infrastructure
- It does require substantial site-specific engineering retrofit design work
- It is practical to do so but adequate financial incentives are needed.

# Opportunities for Biomass Farmers



Biomass

- Consider a typical 1,000-megawatt power plant co-firing with 80% coal and 20% biomass
- Would require 980,000 tons of biomass per year
- And would need 200,000 acres of high-yield production
- Opportunities for farmers getting long-term supply contracts with power generators



# Net-Negative CO2 Baseload Power, Inc.



Steve Winberg, Ken Humphries, Fred Palmer

- A new 501(3)(6) company formed
- Chair & CEO, Steve Winberg, former DOE Assistant Secretary
- Sr. V.P. Analyst & Project Finance, Ken Humphreys, former DOE Principal Deputy Asst. Sec.
- Senior Consultant, Fred Palmer, former Executive Peabody Energy and Western Fuels

# Aim of the Project

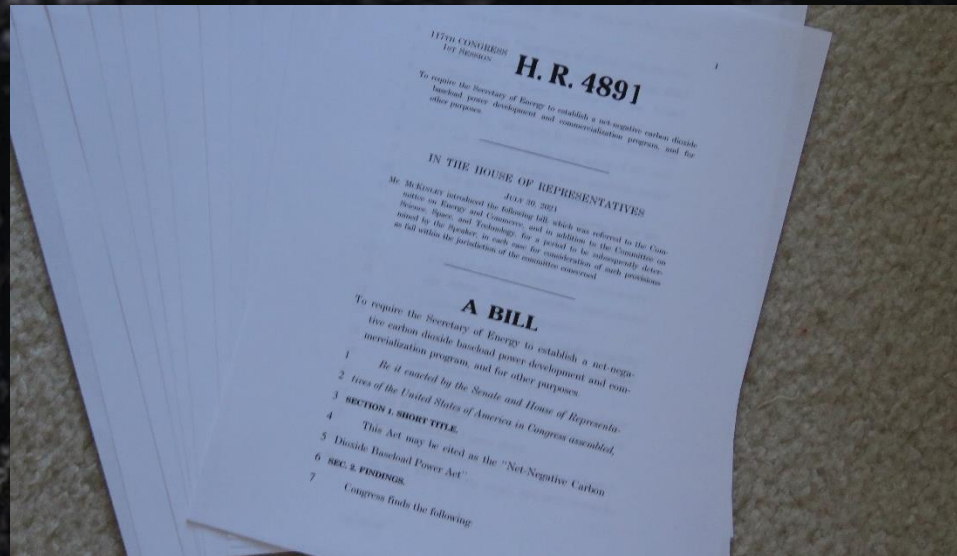


Scherer Steam Coal Plant 3,564 MW Powers Over 2 Million Homes

- Aim is to advance federal and state policy by obtaining funding
- To maintain the existing coal fleet
- Develop the fleet into the low cost, always available, net-negative CO<sub>2</sub> electric supply
- To meet the needs of the American people



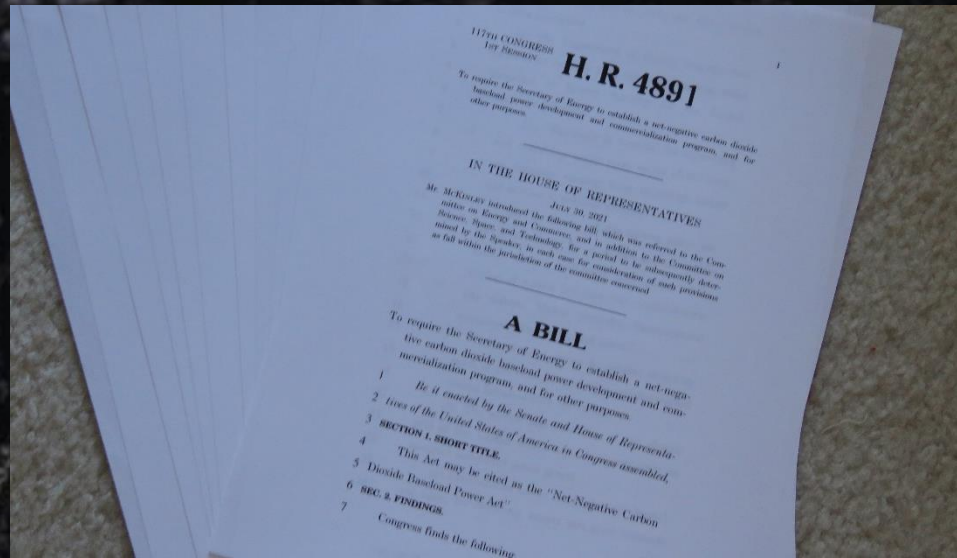
# Progress to Date



H.R.4891

- Introduced the project to the House Coal Caucus in May 2021
- Assisted in drafting legislative language for bill
- Obtained initial funding to advance the project
- On July 30, 2021, Rep David McKinley (R-WV) introduced H.R.4891

# H.R.4891 “Net-Negative Carbon Dioxide Baseload Power Act”

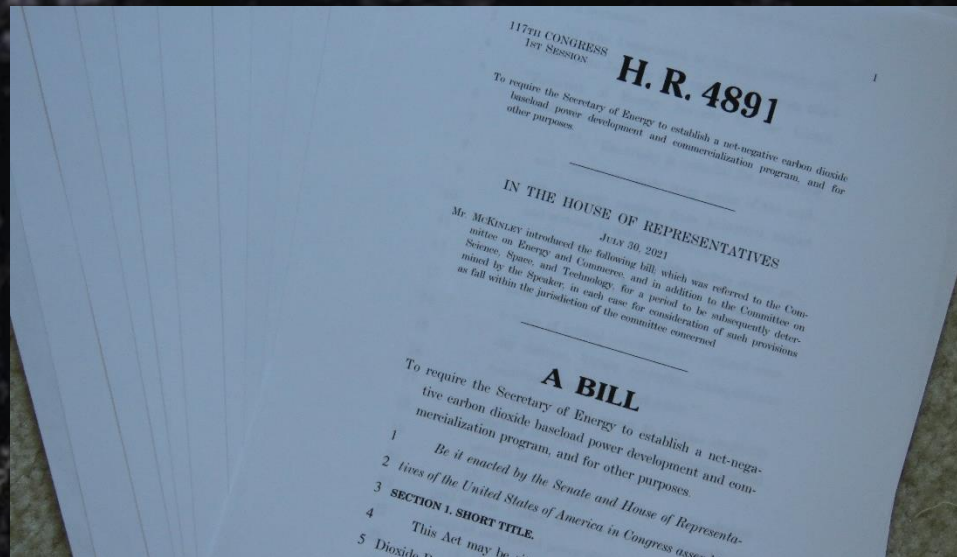


H.R.4891

The “Net-Negative Carbon Dioxide Baseload Power Act” provides financial incentives for coal-fueled power plants to use a blended coal-biomass fuel and implement carbon capture and storage (CCUS). This would initiate the transition of some existing coal-fueled power plants from their status as carbon dioxide (CO<sub>2</sub>) emitters to a new role in the U.S. energy system as baseload electricity generators with net-negative CO<sub>2</sub> emissions.



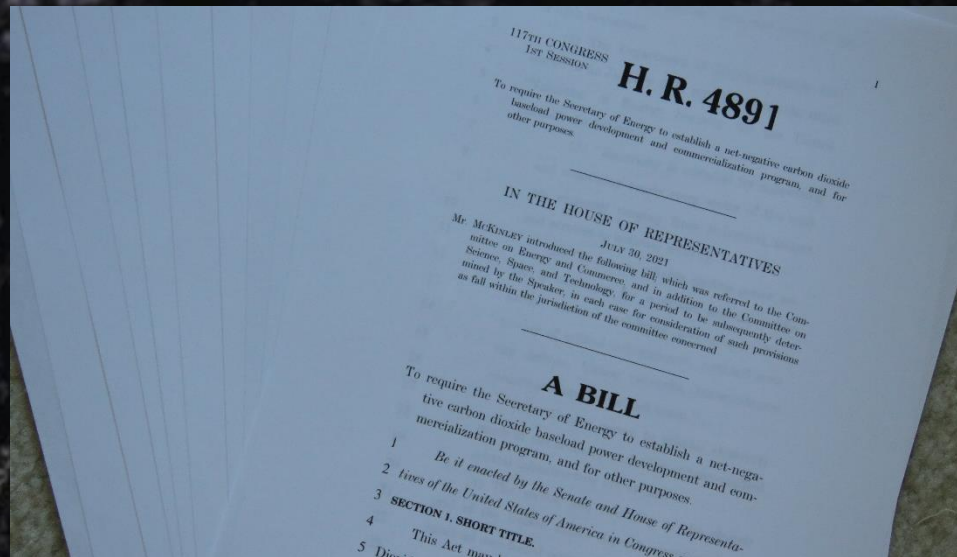
# The Benefits of the Act



H.R.4891

- Sustaining America's baseload electricity production capability
- Providing continued economic opportunity for coal-dependent states and communities
- Providing new economic opportunities for the forest products and agricultural sectors
- Supporting the Administration's CO2 reduction goals, which are otherwise unattainable without net-negative emitting technologies

# The Act

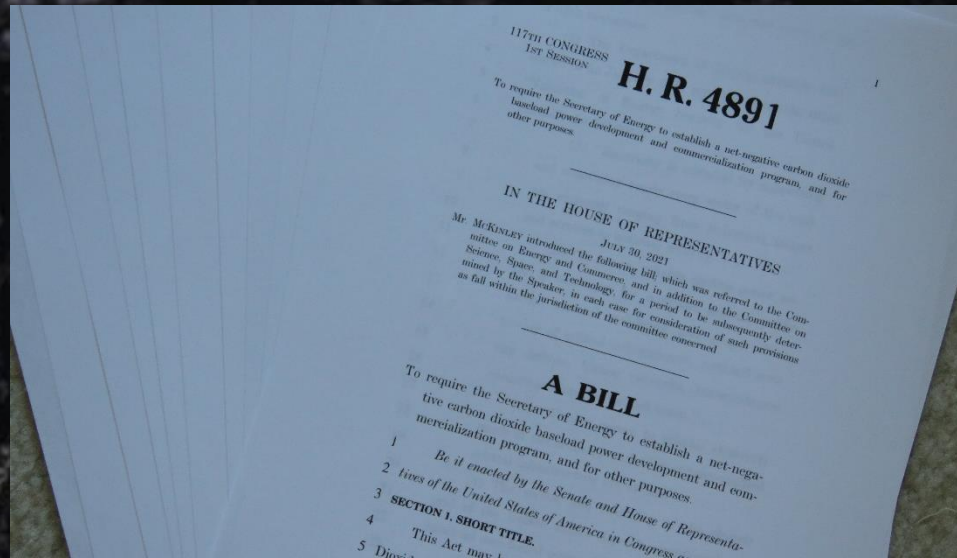


H.R.4891

- Creates a streamlined incentive program administered by U.S. DOE
- Establishes qualification criteria for projects proposed at existing coal-fired powerplants
- Opens eligibility to investor-owned utilities, rural electric cooperatives, municipalities, power administrations, and other power plant owners (as well as their project partners)
- Provides federal grants for power plant-specific Project Concept Studies



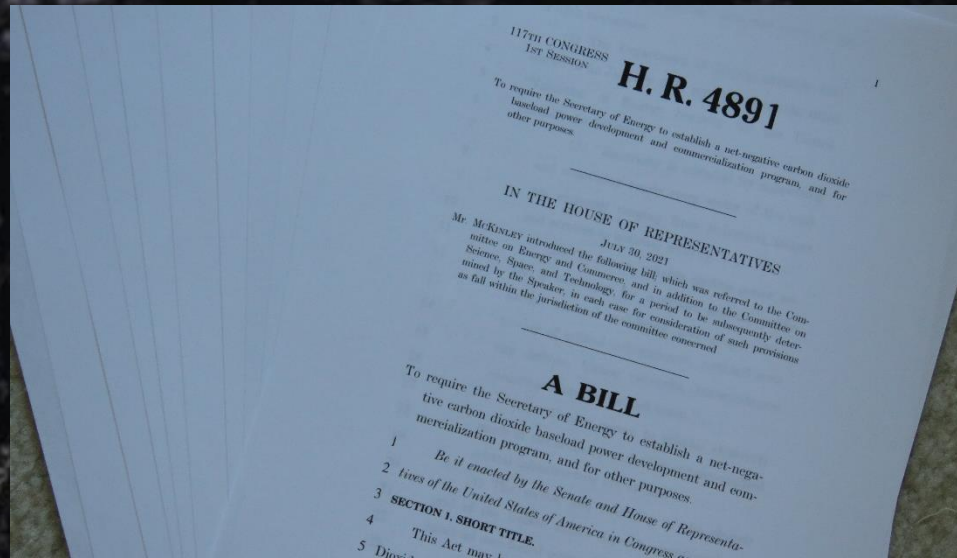
# The Act (continued)



H.R.4891

- Provides cost-sharing for Project Development Activities, such as engineering, permitting, legal work, and community engagement.
- Provides Project Construction and Operating Incentives to increase the likelihood of securing project financing, completing construction, and successfully operating.

# The Act (continued)

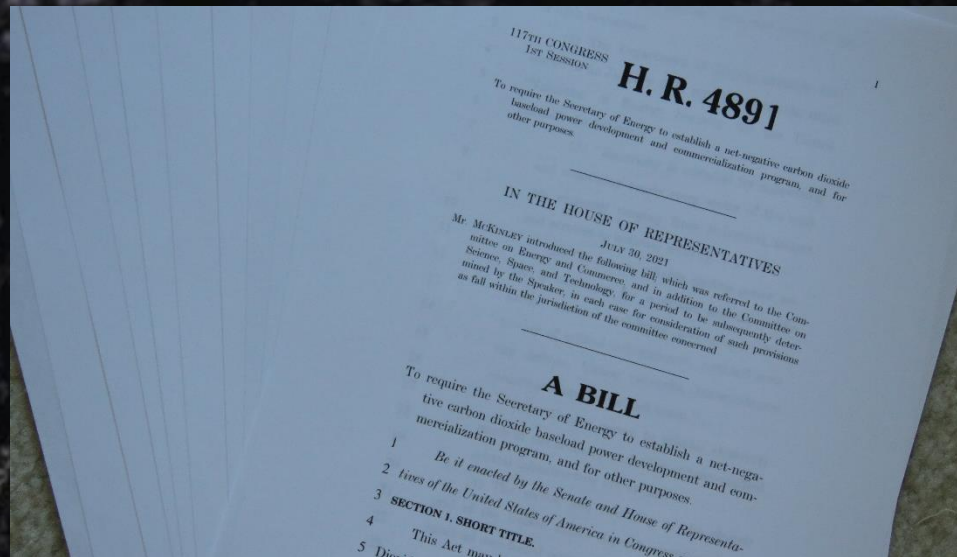


H.R.4891

- Ensures that Federal incentives encourage success while protecting the public interest.
- Establishes an Authorization of \$300 million for Project Concept Studies.
- Establishes a Federal trust fund for Appropriations made against the Authorizations.
- The trust fund is essential to provide the financial certainty for the project participants.



# The Present Position



## H.R.4891

- H.R.4891 was referred to the Committee of Energy and Commerce and the Committee on Science, Space and Technology for a period to be determined by the Speaker
- Discussions have taken place with Sen. Joe Manchin's (D-WV) staff
- We now have to find public support
- \* Please read the handout on your seat and take action!

# Reach Out to Members of Congress



U.S. Capitol

- Promote net-negative in every venue where you have the opportunity
- A net-negative CO2 Baseload Coal Power Program MUST be part of any infrastructure or climate related legislation that incentivizes other low-carbon infrastructure such as renewables.
- Deep reductions of GHG emissions requires an unprecedented level of economy-wide electrification and ALL low-carbon electricity generation options are needed



# Drive Home the Key Messages



Coal Plant to Burn Biomass

- The Administration's climate goals can only be met with net-negative technologies that preserve affordable, reliable baseload power
- Coal with biomass co-firing is the **ONLY** scalable, baseload power with net-negative emissions
- If the Administration is serious about global leadership on climate change, the U.S. should commercialize the technology domestically and export it abroad

# American Coal Industry Recent Events



Rocky Mountain Coal Mining Institute, Rocky Mountain Mining Institute

- Arch Coal is now Arch Resources
- Major manufacturers like Komatsu and Sandvik call coal, soft rock (“coal” not politically correct)
- The Rocky Mountain Coal Mining Institute is now the Rocky Mountain Mining Institute.
- We need to do better than this!



# Stand Up and Fight for Coal!



Coal Rally in Washington, D.C.

- Coal remains a vital industry for the Nation
- And we must not be ashamed and fight for our industry
- Fight for our coal miners, who have done so much for America
- And fight for our own jobs and for the future of PCMIA and SME.

**COAL**  
**ZOOM.COM**