



PRINCETON UNIVERSITY

ZERO LAB

Zero-carbon Energy Systems Research and Optimization Laboratory

Addendum to Preliminary Report: The Climate Impact of Congressional Infrastructure and Budget Bills

This version: November 12, 2021

Since release of our “Preliminary Report: The Climate Impact of Congressional Infrastructure and Budget Bills,” on October 20th, 2021 (see repeatproject.org), the U.S. House of Representatives passed the **Infrastructure Investment and Jobs Act** ([H.R. 3684](https://www.congress.gov/bills/116/3684)) on November 6th and introduced a new version of the **Build Back Better Act** ([H.R. 5376, RCP 117-18](https://www.congress.gov/bills/117/117-18)) on November 3, 2021.

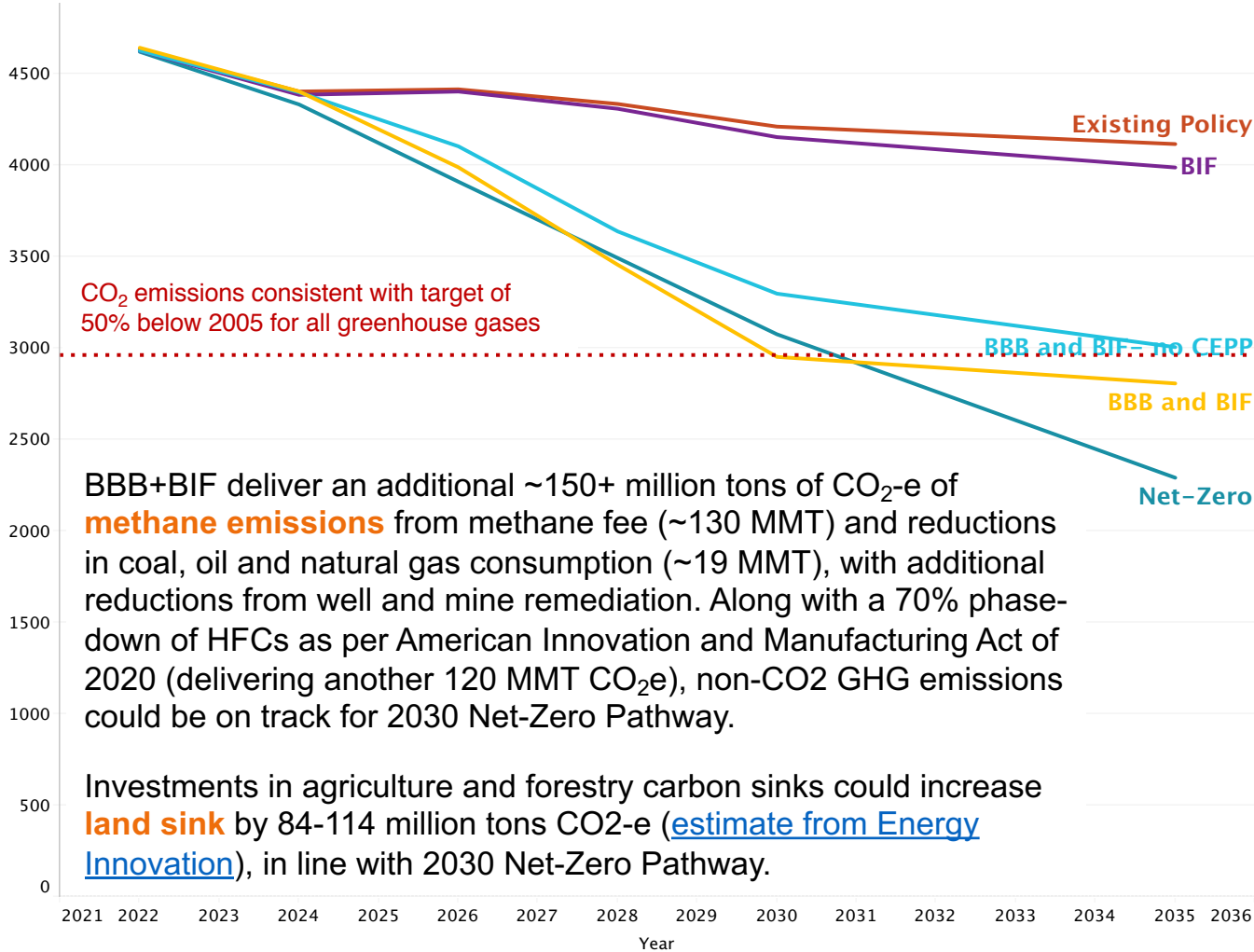
There are a significant number of changes to the Build Back Better Act, which the REPEAT Project has carefully documented along with a thorough catalog of all climate and clean energy provisions in the final Infrastructure Bill at <http://bit.ly/REPEAT-Policies>.

This **addendum to our preliminary report** compiles emissions results from our original analysis of the Build Back Better Act ('BBB 1.0') as reported by the Budget Committee on September 27, 2021 but *without* the Clean Electricity Performance Program (the most substantive single change from BBB 1.0 to BBB 2.0) as well as our initial analysis of the Infrastructure Bill impacts.

The REPEAT Project is currently modeling the updated version of Build Back Better ('BBB 2.0') and conducting a final analysis of the Infrastructure Bill, which will supersede results in our preliminary report and this addendum and will be released as soon as possible.

To be clear, the Build Back Better Act results in this analysis do not capture *all* changes in the current legislation (only removal of the CEPP), and should be viewed as approximate estimates of the impact of the current (Nov 3, 2021) version of the Build Back Better Act.

Annual CO2 Emissions million metric tons



BBB+BIF deliver an additional ~150+ million tons of CO₂-e of **methane emissions** from methane fee (~130 MMT) and reductions in coal, oil and natural gas consumption (~19 MMT), with additional reductions from well and mine remediation. Along with a 70% phase-down of HFCs as per American Innovation and Manufacturing Act of 2020 (delivering another 120 MMT CO₂e), non-CO₂ GHG emissions could be on track for 2030 Net-Zero Pathway.

Investments in agriculture and forestry carbon sinks could increase **land sink** by 84-114 million tons CO₂-e ([estimate from Energy Innovation](#)), in line with 2030 Net-Zero Pathway.

Modeled 2030 Energy and Industrial CO₂

Existing Policy (4,210 MMT CO₂): >1.1 billion tons CO₂ short of 2030 target (29% below 2005, 18% below 2020)

Net-Zero Pathway (3,075 MMT CO₂): 48% below 2005, 40% below 2020.

BIF (4,153 MMT CO₂): nominal reduction below Existing Policy case (57 MMT) if enacted on own (30% below 2005, 20% below 2020)

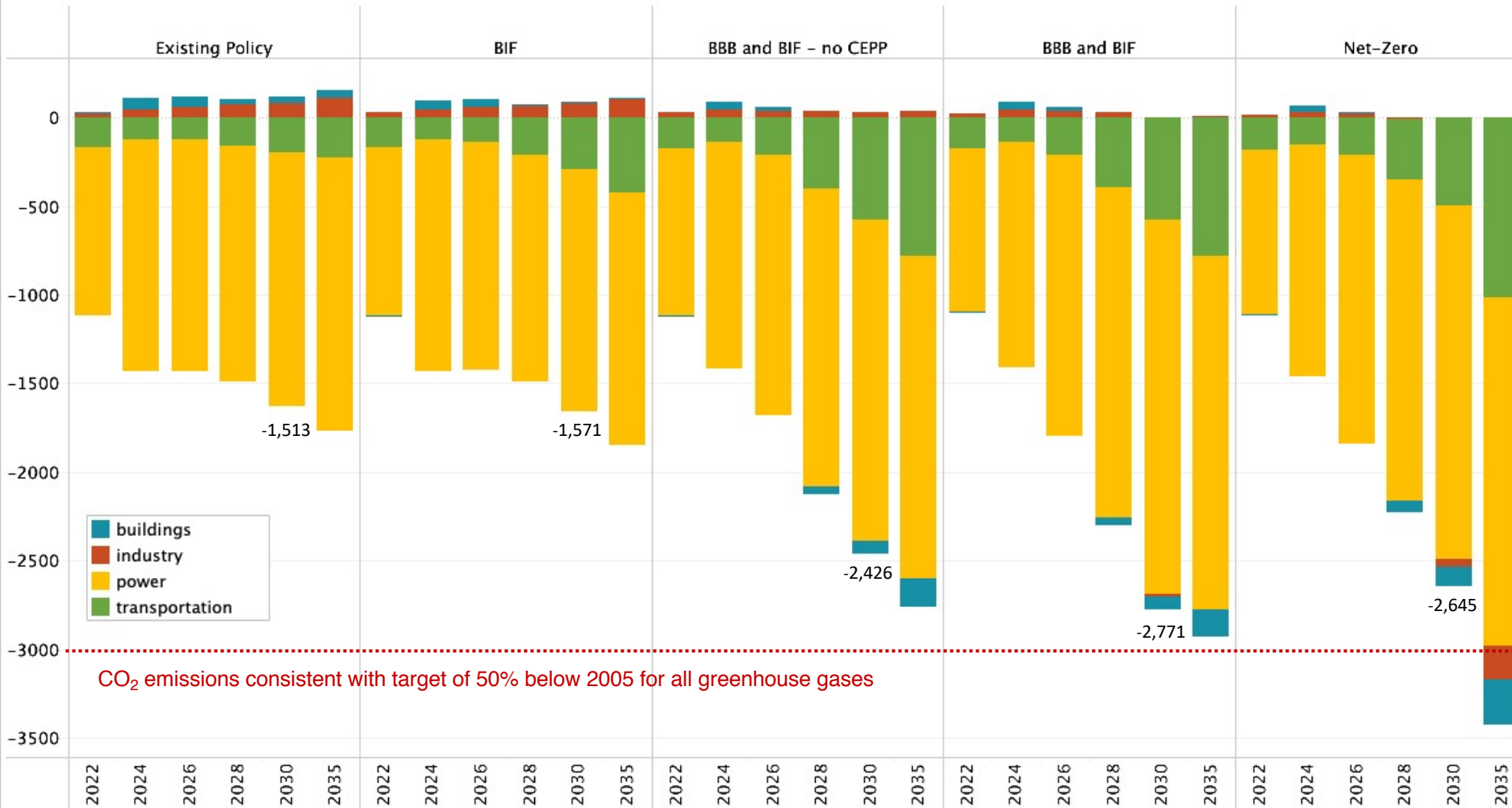
BBB and BIF (2,951 MMT CO₂): BBB and BIF are synergistic, delivering greater emissions reductions than BIF on its own (an additional 107 MMT).

BBB and BIF – CEPP (3,297 MMT CO₂): Losing CEPP alone results in +346 million tons greater emissions than full House bill with BIF, falling short of 2030 target.

NOTE: **BBB here reflects 'BBB 1.0'**, the version introduced 9/27/21, without the Clean Electricity Performance Program. Other changes from 9/27 to 11/3 versions of BBB are not reflected in this analysis.

Annual CO2 Emissions Relative to 2005 CO2 Emissions

difference in million metric tons



Modeled 2030 Reductions in CO₂ relative to 2005 (and Existing Policies)

Existing Policy: -1,513 million metric tons (MMT) CO₂

BIF: -1,571 MMT CO₂ (58 MMT below Existing Policy)

BBB and BIF – CEPP: -2,426 MMT CO₂ (913 MMT below Existing Policy)

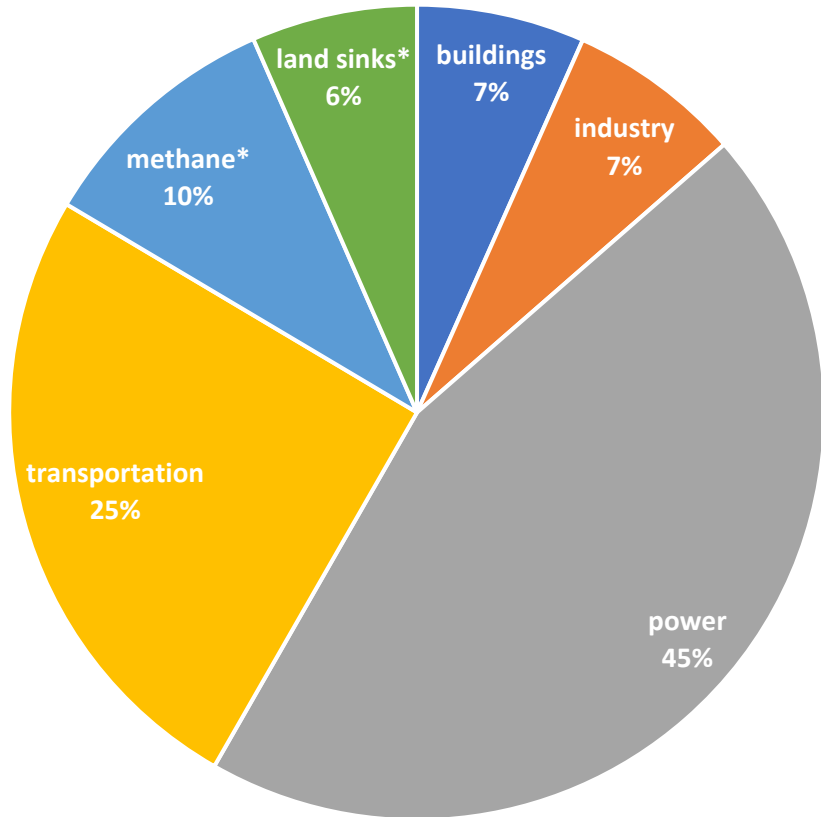
BBB and BIF: -2,771 MMT CO₂ (1,258 MMT below Existing Policy)

Net-Zero Pathway: -2,645 MMT CO₂ (1,132 MMT below Existing Policy)

NOTE: **BBB here reflects 'BBB 1.0'**, the version introduced 9/27/21, without the Clean Electricity Performance Program. Other changes from 9/27 to 11/3 versions of BBB are not reflected in this analysis.

Share of CO₂-equivalent (CO₂e) reductions in all greenhouse gas emissions and land use relative to Existing Policies

BBB 1.0 & BIF
(1,506 MMT CO₂e)

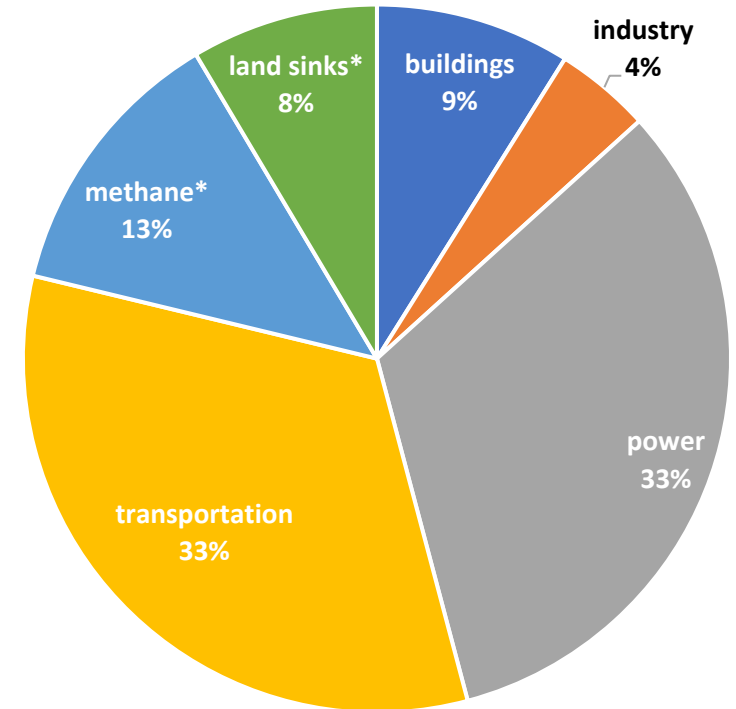


Target of 50% of 2005 GHG emissions is **-1,500 MMT CO₂e below Existing Policies.**

BBB 1.0 & BIF (left) were well calibrated to this target, while removing CEPP (right) would leave the U.S. ~250 MMT CO₂e short of the 2030 goal without further legislative or regulatory action

NOTE: BBB here reflects 'BBB 1.0', the version introduced 9/27/21, without the Clean Electricity Performance Program. Other changes from 9/27 to 11/3 versions of BBB are not reflected in this analysis.

BBB 1.0 & BIF – CEPP
(1,159 MMT CO₂e)



Note: CO₂e calculations using 100 year global warming potential equivalence as per EPA Inventory of Greenhouse Gas Emissions

* Estimated reductions (not from optimization modeling); see Slide 4.

Other significant changes to Build Back Better (November 3rd vs. September 27th versions) besides removal of the Clean Electricity Performance Program that are not captured in this analysis include:

- Significant reductions in funding for energy efficiency, building electrification and electric vehicle charging grants.
- New funding programs to support U.S. wind, solar and semiconductor manufacturing, industrial decarbonization grants, soil carbon sequestration in agricultural lands, and clean energy and climate resilience workforce development.
- An increase in the 45Q tax credit for carbon dioxide capture and storage or use to \$85/ton for geologic storage of CO₂ and \$60/ton for industrial uses of CO₂.
- A switch from technology-specific tax credits for renewable electricity and biofuels to a set of new, technology-neutral tax credits for all zero-emissions electricity sources and low-carbon fuels.

For detailed section-by-section summary of climate and clean energy provisions in the current version of Build Back Better and changes from the September 27th version, see

<http://bit.ly/REPEAT-Policies>



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