REPEALING FEDERAL ENERGY TAX CREDITS WOULD COST AMERICAN JOBS AND INCREASE HOUSEHOLD ENERGY BILLS: Appendix A

IRA Section	Policy	Included in BAU?	Repeal Modeled?	Methodology
				Finance
13101	Extension and Modification of Credit for Electricity Produced from Certain Renewable Resources	Yes	Yes	First, we calculate the percentage of new plants that will qualify for a) the prevailing wage and apprenticeship requirements and b) the domestic content requirements. For part a, we only calculate the share of plants that would meet the apprenticeship requirement and assume all these plants would also meet the prevailing wage requirement (varying assumptions on the share of qualifying plants across scenarios based on data for the construction industry from the ACP Labor Supply Report). For part b, we calculate the domestic content share for each power plant type. For onshore and offshore wind, we assume 100% of plants qualify for the bonus credit, based on a Net Zero America analysis, which lists domestic content shares for various wind components at well over the 55% domestic content requirement. For solar, we use the cited domestic content values for cells, modules, and inverters to calculate a weighted domestic content share, given the percentage of solar capital costs by component from the JEDI model. We assume a mid-case between scenarios where domestic content for solar PV remains constant and where domestic content can gradually increase to meet the 55% requirement by 2026. For batteries, we assume 100% of grid batteries will qualify, based on the volume of announced battery manufacturing projects in the U.S. Next, we add in the energy community bonus, assuming that 50% of capacity additions qualify. We then calculate what the total credit value would be for each technology in each year for both the ITC and the PTC. Finally, we apply a transferability multiplier of 7.5%. This value reduces the credit value available to developers to account for the fact tax credits are transferable. The credit phaseout is determined by when power sector emissions fall below 25 percent of 2022 values, which occurs in 2036 in the BAU. We also include a 1-3 delay in the credit phaseout timeline depending on power plant type to account for commenced construction provisions. We limit our analysis to onshore and offshore wind, solar PV, solar thermal, geothermal, municipal solid waste, and battery storage. We do not model credits for qualifying hydro or biogas plants. For solar PV, we calculate a LCOE for both the ITC and PTC settings to determine whether that resource elects the ITC or the PTC in each year.
13102	Extension and Modification of Energy Credit	Yes	Yes	See above

13103	Increase in Energy Credit for Solar and Wind Facilities Placed in Service in Connection with Low Income Communities	Yes	Yes	We assume that 1.8 GW of distributed solar is deployed as a result of this section each year the clean energy tax credits are in effect.
13104	Extension and Modification of Credit for Carbon Oxide Sequestration	Yes	Yes	For the power sector, we apply 45Q credits to all power plants equipped with CCS. The EPS is not currently equipped with endogenous industrial CCS based on economics. For the industry sector, we use a Rhodium analysis of CCS deployment under the IRA to determine the amount of CCS by industry category in both the Current Policies and IRA Repeal scenarios. We keep industry CCS constant after 2035.
13105	Zero-Emissions Nuclear Power Production Credit	Yes	Yes	The nuclear PTC runs through 2032, and we assume the credits are sufficient to keep all existing nuclear without planned retirement dates online through that time. We determined the credit values using calibration to find the value that kept all nuclear online through 2032.
13201	Extensions of Incentives for Biodiesel, Renewable Diesel and Alternative Fuels	Yes	No	Included in the Annual Energy Outlook (AEO), which we use as a primary source of input data for the BAU. We do not include this in the IRA Repeal scenario as we have no way to break out this specific impact from other AEO results. However, our external analysis suggests the greenhouse gas (GHG) and household impacts of these credits are small.
13202	Extension of Second Generation Biofuel Incentives	Yes	No	Included in the Annual Energy Outlook (AEO), which we use as a primary source of input data for the BAU. We do not include this in the IRA Repeal scenario as we have no way to break out this specific impact from other AEO results. However, our external analysis suggests the greenhouse gas (GHG) and household impacts of these credits are small.
13203	Sustainable Aviation Fuel Credit	Yes	No	Included in the Annual Energy Outlook (AEO), which we use as a primary source of input data for the BAU. We do not include this in the IRA Repeal scenario as we have no way to break out this specific impact from other AEO results. However, our external analysis suggests the greenhouse gas (GHG) and household impacts of these credits are small.
13204	Clean Hydrogen	Yes	Yes	In the Current Policies scenario, we assume varying levels of displacement of gray hydrogen across scenarios with electrolytic hydrogen, and assume electrolyzers are powered by new clean electricity. We assume all non-by product H2 is replaced, covering ammonia and all non-by product refinery demand. The credit is applicable through 2032 before it

				expires. We assume the same level of hydrogen production through electrolysis once the tax credits expire (considering producers will have already invested in the production process). The IRA Repeal scenario removes the credit amount and assumes no change in hydrogen production pathways relative to today's production,
13301	Extensions, Increase, and Modifications of Nonbusiness Energy Property Credit (25C)	Yes	No	Included in the Annual Energy Outlook (AEO), which we use as a primary source of input data for the BAU. We do not include this in the IRA Repeal scenario as we have no way to break out this specific impact from other AEO results. However, our external analysis suggests the greenhouse gas (GHG) and budgetary impacts of these credits are small.
13302	Residential Clean Energy Credit (25D)	Yes	Yes	The Current Policies scenario uses research from RMI to estimate annual distributed solar additions due to the 25D tax credits. We remove these additions from the IRA Repeal scenario.
13303	Energy Efficient Commercial Buildings Deduction (179D)	No	No	This section is not covered in the Annual Energy Outlook. Our back of the envelope calculations indicate the emissions savings from this program are quite small, and we therefore opt not to manually adjust Annual Energy Outlook energy demand projections for commercial buildings.
13304	Extensions, Increase, and Modifications of New Energy Efficient Home Credit (45L)	Yes	Yes	Included in the Annual Energy Outlook (AEO), which we use as a primary source of input data for the BAU. We do not include this in the IRA Repeal scenario as we have no way to break out this specific impact from other AEO results. However, our external analysis suggests the greenhouse gas (GHG) and budgetary impacts of these credits are small.
13401	Clean Vehicle Credit	Yes	Yes	We calculate a weighted average incentive level based on the incentive amount and the share of vehicles that would qualify based on manufacturing requirements, critical minerals, AGI cap, and MSRP cap.
13402	Credit for Previously-owned Clean Vehicles	No	No	We do not track used vehicle sales in the EPS
13403	Qualified Commercial Clean Vehicles	Yes	Yes	For commercial vehicle credits, we find that the credit caps of $7,500 for vehicles under 14,000 pounds or $40,000 for vehicles over 14,000 pounds apply in all years of the credit. We apply the credit to all new sales of commercial trucks, using a weighted average credit value for our freight LDV category which covers both light and medium duty trucks. We also apply the credit to a fraction of buses, excluding buses purchased by the government. The credit runs from 2023-2032.

13404	Alternative Fuel Refueling Property Credit	Yes	Yes	We calculate an incremental number of chargers deployed based on funding and the model's weighted average charger cost. We take estimated funding from the released JCT scores and assume 80% of the spending is directed toward public chargers. We do not attempt to model the effects of private chargers. The number of additional chargers is then fed into our model's calculations for the shadow price used to represent range/charging anxiety for passenger LDV owners, which is partially determined by the ratio of charging infrastructure to gasoline pumps. This adjustment helps to drop the shadow price in response to additional infrastructure and increase consumer adoption of electric vehicles.
13501	Extension of the Advanced Energy Project Credit	Yes	Yes	See methodology for Section 13502.
13502	Advanced Manufacturing Production Credit	Yes	Partial	The EPS explicitly tracks tax credits for vehicle battery production. We therefore apply a credit of $35/kWh for battery cells and $10/kWh for assembly for on-road vehicle batteries and grid batteries. We use several external sources to determine the average kWh battery capacity for each vehicle type. We use ICCT research to determine what portion of the credits paid to producers is passed on to consumers in each year. We remove these credits in the IRA Repeal scenario. Based on announced and anticipated battery manufacturing capacity relative to demand for vehicles with batteries, we assume 100% of domestically produced vehicles incorporate these cost reductions. For other tax credits, we manually adjust industrial energy demand from the Annual Energy Outlook based on our own calculations in the Current Policies scenario. We use the sector breakdowns from a Data for Progress analysis. We leverage the tax credits into total increased output of industries. Next, we use the model's 'buy in-region' policy to increase outputs of selected industries by the correct totals. We do not remove these credits in the IRA Repeal scenario as they do not map cleanly onto an existing model policy lever. However, the effect of these credits is relatively small within the modeled IRA package.
13601	Reinstatement of Superfund	No	No	Out of scope for model
13701	Clean Electricity Production Credit	Yes	Yes	See methodology for Sections 13101-13102.
13702	Clean Electricity Investment Credit	Yes	Yes	See methodology for Sections 13101-13102.
13703	Cost Recovery for Qualified Facilities, Qualified Property, and	Yes	No	Included in the Annual Energy Outlook (AEO), which we use as a primary source of input data for the BAU. We do not include this in the IRA Repeal scenario as we have no way to break out this specific impact from other AEO results. However, our external analysis suggests the greenhouse gas (GHG) and household impacts of this provision is small.

	Energy Storage Property			
13704	Clean Fuel Production Credit	Yes	No	Included in the Annual Energy Outlook (AEO), which we use as a primary source of input data for the BAU. We do not include this in the IRA Repeal scenario as we have no way to break out this specific impact from other AEO results. However, our external analysis suggests the greenhouse gas (GHG) and household impacts of these credits are small.
13801	Elective Payment for Energy Property and Electricity Produced from Certain Renewable Resources, Etc.	No	No	Out of scope for model
13802	IRS Appropriations	No	No	Out of scope for model
13901	Extension of tax to fund Black Lung Disability Trust Fund	No	No	Out of scope for model
13902	R&D Credit	No	No	Out of scope for model
Agriculture				
21001	Additional Agricultural Conservation investments	Yes	Yes	Our approach is to calculate the amount of the model's 'crop and rice measures,' 'livestock measures, 'improved soil measures' emissions abatement potential that matches the total funding in this Section. The corresponding emissions are then removed from our Current Policies totals. The remaining emissions abatement potential possible through policy levers is also adjusted. The EPS assumes agricultural practices need to be consistently implemented in every year in order to maintain emissions reductions. To be conservative, we phase out agricultural practices incentivized by the IRA over a period of 4 years in the Current Policies scenario rather than assume permanent reductions.

21002	Conservation Technical Assistance	Yes	Yes	Our approach is to calculate the amount of the model's 'crop and rice measures,' 'livestock measures, 'improved soil measures' emissions abatement potential that matches the total funding in this Section. The corresponding emissions are then removed from our Current Policies totals. The remaining emissions abatement potential possible through policy levers is also adjusted. The EPS assumes agricultural practices need to be consistently implemented in every year in order to maintain emissions reductions. To be conservative, we phase out agricultural practices incentivized by the IRA over a period of 4 years in the Current Policies scenario rather than assume permanent reductions.
22001	Funding for Electric Loans for Renewable Energy (Sec. 317)	No	No	We find that attempting to explicitly model this provision in scenarios that retain EPA's Clean Air Act 111 rules may lead to double counting of coal retirements, based on how the 111 rules are modeled using data from EPA's Regulatory Impact Assessment. Therefore, we default to the EPA data that includes IRA in the baseline.
22002	Rural Energy for America Program	No	No	Out of scope for model
22003	Biofuels Infrastructure and Agriculture Market Expansion	No	No	We do not track biofuel infrastructure in the EPS.
22004	USDA Assistance for Rural Electric Cooperatives	No	No	We find that attempting to explicitly model this provision in scenarios that retain EPA's Clean Air Act 111 rules may lead to double counting of coal retirements, based on how the 111 rules are modeled using data from EPA's Regulatory Impact Assessment. Therefore, we default to the EPA data that includes IRA in the baseline.
22005	Additional USDA Rural Development Administrative Funds	No	No	Out of scope for model
23001	National Forest System Restoration and Fuels Reduction Projects	Yes	Yes	We sum forestry funding that aligns with the scope of the Energy Policy Simulator's LULUCF sector, then assign it to either the model's 'forest management' or 'afforestation and reforestation' potential. We then find the policy setting that matches total government spend over the period of 2023-2031. For Section 23001, we only include the protection of old-growth forests funding and exclude hazardous fuels reduction and vegetation management, which are outside the scope of the model. We then adjust our BAU forestry projections and policy potential accordingly. The EPS assumes forest management practices need to be consistently implemented in every year in order to maintain

				emissions reductions. To be conservative, we phase out forest management practices incentivized by the IRA over a period of 4 years in the Current Policies scenario rather than assume permanent reductions.
23002	Non-Federal Land Forest Restoration and Fuels Reduction Projects and Research	Yes	Yes	We sum forestry funding that aligns with the scope of the Energy Policy Simulator's LULUCF sector, then assign it to either the model's 'forest management' or 'afforestation and reforestation' levers. We then find the policy setting that matches total government spend over the period of 2023-2031. For Sections 23002 and 23003, we include all funding.
23003	State and Private Forestry Conservation Programs	Yes	Yes	See above
23005	Administrative Costs	No	No	Out of scope for model
Banking				
30001	Enhanced Use of Defense Production Act of 1950	No	No	Out of scope for model
30002	Improving Energy Efficiency or Water Efficiency or Climate Resilience of Affordable Housing	No	No	This section is not covered in the Annual Energy Outlook. Our back of the envelope calculations indicate the emissions savings from this program are quite small, and we therefore opt not to manually adjust Annual Energy Outlook energy demand projections for residential buildings.
Commerce				
40001	Investing in Coastal Communities	No	No	Out of scope for model

	and Climate Resilience			
40002	Facilities of NOAA and National Marine Sanctuaries	No	No	Out of scope for model
40003	NOAA NEPA	No	No	Out of scope for model
40004	Oceanic and Atmospheric Research and Forecasting for Weather and Climate	No	No	Out of scope for model
40005	NOAA Computing Capacity and Research for Weather, Oceans, and Climate	No	No	Out of scope for model
40006	Acquisition of Hurricane Forecasting Aircraft	No	No	Out of scope for model
40007	Alternative Fuel And Low-Emission Aviation Technology Program	No	No	Out of scope for model
Energy and Natural Resources				
50121	Home Energy Performance-Based, Whole-House Rebates	No	No	This section is not covered in the Annual Energy Outlook. Our back of the envelope calculations indicate the emissions savings from this program are quite small, and we therefore opt not to manually adjust Annual Energy Outlook energy demand projections for residential buildings.

50122	High-Efficiency Electric Home Rebate Program	No	No	This section is not covered in the Annual Energy Outlook. Our back of the envelope calculations indicate the emissions savings from this program are quite small, and we therefore opt not to manually adjust Annual Energy Outlook energy demand projections for residential buildings.
50123	State-Based Home Energy Efficiency Contractor Training Grants	No	No	Out of scope for model
50131	Assistance for Latest and Zero Building Energy Code Adoption	No	No	This section is not covered in the Annual Energy Outlook. Our back of the envelope calculations indicate the emissions savings from this program are quite small, and we therefore opt not to manually adjust Annual Energy Outlook energy demand projections for residential buildings.
50141	Funding for Department of Energy Loan Programs Office	No	No	Out of scope for model
50142	Advanced Technology Vehicle Manufacturing	No	No	Out of scope for model
50143	Domestic Manufacturing Conversion Grants	No	No	Out of scope for model
50144	Energy Infrastructure Reinvestment Financing	No	No	We find that attempting to explicitly model this provision in scenarios that retain EPA's Clean Air Act 111 rules may lead to double counting of coal retirements, based on how the 111 rules are modeled using data from EPA's Regulatory Impact Assessment. Therefore, we default to the EPA data that includes IRA in the baseline.
50145	Tribal Energy Loan Guarantee Program	No	No	Out of scope for model
50151	Transmission Facility Financing	No	No	The EPS now endogenously adds transmission infrastructure as new resources are added to the grid. Our back of the envelope calculations of transmission incentivized by these sections is much lower than the amount of transmission already added to the grid in our Current Policies scenario.

50152	Grants to Facilitate the Siting of Interstate Electricity Transmission Lines	No	No	
50153	Interregional and Offshore Wind Electricity Transmission Planning, Modeling, and Analysis	No	No	
50161	Advanced Industrial Facilities Deployment Program	Yes	No	This program has a maximum government spend of 50% of total project costs and $6 billion in funding. We assume 40% public/60% private. We also add in $3 billion from the 48C program for industry. We then use EPS data on the costs to implement industrial efficiency policies to calculate annual efficiency improvements. We manually adjust energy demand projections from the Annual Energy Outlook by the expected efficiency improvements. We assume industrial efficiency will improve through 2031 when the funding window ends. We do not remove this program in the IRA Repeal scenario as they do not map cleanly onto an existing model policy lever. However, the effect of this program is relatively small within the modeled IRA package.
50171	Department of Energy Oversight	No	No	Out of scope for model
50172	National Laboratory Infrastructure	No	No	Out of scope for model
50173	Availability of High-Assay Low-Enriched Uranium	No	No	Out of scope for model
50221	National Parks and Public Lands Conservation and Resilience	No	No	Out of scope for model

50222	National Parks and Public Lands Conservation and Ecosystem Restoration	No	No	Out of scope for model
50223	National Park Service Field Employees	No	No	Out of scope for model
50231	Bureau of Reclamation Domestic Water Supply Projects	No	No	Out of scope for model
50232	Canal Improvement Projects	No	No	Out of scope for model
50241	Office of Insular Affairs Climate Change Technical Assistance	No	No	Out of scope for model
50251	Leasing on the Outer Continental Shelf	No	No	Out of scope for model
50261	Offshore Oil and Gas Royalty Rate	Yes	No	Included in the Annual Energy Outlook, which we use as a primary source of input data. We do not include this in the IRA Repeal scenario as we have no way to break out this specific impact from other AEO results. However, our external analysis suggests the greenhouse gas (GHG) and budgetary impacts of this provision are small.
50262	Mineral Leasing Act Modernization	Yes	No	Included in the Annual Energy Outlook, which we use as a primary source of input data. We do not include this in the IRA Repeal scenario as we have no way to break out this specific impact from other AEO results. However, our external analysis suggests the greenhouse gas (GHG) and household impacts of this provision are small.
50263	Royalties on All Extracted Methane	Yes	No	Included in the Annual Energy Outlook, which we use as a primary source of input data. We do not include this in the IRA Repeal scenario as we have no way to break out this specific impact from other AEO results. However, our external analysis suggests the greenhouse gas (GHG) and household impacts of this provision are small.

50264	Lease Sales Under The 2017-2022 Outer Continental Shelf Leasing Program	Yes	No	Included in the Annual Energy Outlook, which we use as a primary source of input data. We do not include this in the IRA Repeal scenario as we have no way to break out this specific impact from other AEO results. However, our external analysis suggests the greenhouse gas (GHG) and household impacts of this provision are small.
50265	Ensuring Energy Security	No	No	Not included in the Annual Energy Outlook, which we use as a primary source of input data.
50271	United States Geological Survey 3D Elevation Program	No	No	Out of scope for model
50281	Department of the Interior Oversight	No	No	Out of scope for model
50301	Department of Energy NEPA	No	No	Out of scope for model
50302	Federal Energy Regulatory Commission NEPA	No	No	Out of scope for model
50303	Department of the Interior NEPA	No	No	Out of scope for model
Environment and Public Works				
60101	Clean Heavy-Duty Vehicles	No	No	Our back of the envelope calculations indicate that incremental vehicle sales due to this section will be lower than the amount of heavy-duty vehicles deployed in the BAU case (due to a combination of economics and sales requirements through Advanced Clean Trucks states). Therefore, we do not make any manual adjustments to vehicle sales, which are calculated endogenously in the model.
60102	Grants to Reduce Air Pollution at Ports	No	No	Out of scope for model

60103	Greenhouse Gas Reduction Fund (Technology Accelerator)	Partial	Partial	Using the cost for distributed solar, we calculate the capacity of distributed solar deployed each year due to the $7 billion carve-out for zero-emission technologies in low-income and disadvantaged communities. These distributed solar additions are removed in the IRA Repeal scenario. We do not attempt to calculate the energy and emissions impacts of the remaining funding.
60104	Diesel Emissions Reductions	No	No	There is not enough specificity in this section to determine what types of projects will be funded or what their impact will be.
60105	Funding for Air Pollution Monitoring	No	No	Out of scope for model
60106	Funding to Address Air Pollution at Schools	No	No	Out of scope for model
60107	Low Emissions Electricity Program	No	No	Out of scope for model
60108	Funding for Section 211(O) of the Clean Air Act	No	No	Out of scope for model
60109	Funding for Implementation of the American Innovation and Manufacturing Act	Yes	Yes	The American Innovation and Manufacturing Act is assumed to be met in our Current Policies scenario.
60110	Funding for Enforcement Technology and Public Information	No	No	Out of scope for model
60111	Greenhouse Gas Corporate Reporting	No	No	Out of scope for model

60112	Environmental Product Declaration Assistance	Yes	No	We rely on external research reporting a range of emissions outcomes for cement as a result of these initiatives. We implement these in the EPS as energy efficiency (i.e. a reduction in energy consumption in our industrial energy demand file). The estimates include ranges for the combined impact from both procurement pilots and EPD programs. We do not include spillover effects. For concrete, it is assumed that the primary way of lower emissions is through different mixing ratios. For example, existing EPDs suggest significant reductions are possible through using less cement in ready-mixed concrete. Because the concrete and cement sectors are the same in the EPS, this is approximated as a reduction in energy consumption and process emissions rather than a reduction in product demand. We do not remove this program in the IRA Repeal scenario as it does not map cleanly onto an existing model policy lever. However, the effect of this program is relatively small within the modeled IRA package.
60113(a) & (b)	Methane Emissions Reduction Program (Spending)	No	No	We find that attempting to explicitly model this provision in scenarios that retain EPA's methane performance standards for existing oil and gas sources rules may lead to double counting of methane emissions reductions, based on how the rules are modeled using data from EPA's Regulatory Impact Assessment.
60113(e)	Methane Emissions Reduction Program (Revenue)	No	No	See above
60114	Climate Pollution Reduction Grants	No	No	Out of scope for model
60115	Environmental Protection Agency NEPA	No	No	Out of scope for model
60116	Low-Embodied Carbon Labeling for Construction Materials	Yes	No	See methodology for section 60112

60201	Environmental and Climate Justice Block Grants	No	No	Out of scope for model
60301	Endangered Species Act Recovery Plans (NEPA)	No	No	Out of scope for model
60302	Funding for the United States Fish and Wildlife Service to Address Climate-Induced Weather Events	No	No	Out of scope for model
60401	Environmental and Climate Data Collection	No	No	Out of scope for model
60402	Council on Environmental Quality NEPA	No	No	Out of scope for model
60501	Neighborhood Access and Equity Grant Program	No	No	Out of scope for model
60502	Assistance for Federal Buildings	No	No	This section is not covered in the Annual Energy Outlook. Our back of the envelope calculations indicate the emissions savings from this program are quite small, and we therefore opt not to manually adjust Annual Energy Outlook energy demand projections for commercial buildings.
60503	Use of Low-Carbon Materials	Yes	No	See methodology for section 60112
60504	General Services Administration Emerging Technologies	No	No	Out of scope for model

60505	Department of Transportation - Federal Highway Administration NEPA	No	No	Out of scope for model
60506	Low-Carbon Transportation Materials Grants	Yes	No	See methodology for section 60112
			Homeland Security and Government Affairs	
70001	DHS Office of Chief Readiness Support Officer (Clean Procurement)	No	No	Out of scope for model
70002	USPS Clean Fleets	No	No	Our back of the envelope calculations indicate that incremental vehicle sales due to this section will be lower than the amount of heavy-duty vehicles deployed in the BAU case (due to a combination of economics and sales requirements through Advanced Clean Trucks states). Therefore, we do not make any manual adjustments to vehicle sales, which are calculated endogenously in the model.
70003	USPS Oversight	No	No	Out of scope for model
70004	GAO Oversight	No	No	Out of scope for model
70005	OMB Oversight	No	No	Out of scope for model
70006	FEMA Building Materials Program	No	No	Out of scope for model
70007	FPISC	No	No	Out of scope for model
			Indian Affairs	
80001	Tribal Climate Resilience	No	No	Out of scope for model
80002	Native Hawaiian Climate Resilience	No	No	Out of scope for model

80003	Tribal Electrification Program	No	No	Out of scope for model
80004	Emergency Drought Relief for Tribes	No	No	Out of scope for model