

American Clean Energy & Security Act

The Implications of Federal Cap-and-Trade & Clean Energy Legislation for Indiana

The U.S. Congress is working to advance comprehensive energy and global warming legislation over the summer and fall of 2009. The [American Clean Energy & Security \(ACES\) Act \(HR 2454\)](#), colloquially known as the “Waxman-Markey” bill, was passed on June 26, 2009 and constitutes the most significant energy reform package – and first-ever global warming bill – ever passed by the House of Representatives. The Senate has moved a smaller [energy package](#) out of the Energy & Natural Resources Committee and will follow up with climate (“cap-and-trade”) language in September¹. Differences between House and Senate legislation will likely need to be reconciled in a conference committee sometime in fall 2009.

ACES is divided into five major titles, which include, principally, a cap-and-trade system (Titles III and V) for reducing greenhouse gas emissions; emissions allowance revenues generated from cap-and-trade would fund many of the programs in the rest of the bill. Titles I and II are devoted to clean energy and energy efficiency, respectively, and would accomplish their goals through both standards and various incentive programs. Title IV ties ACES together with various policies focused on transitioning the US and other countries to a clean energy future with programs to create jobs, help carbon-intensive industries, finance promising technologies, and help people and threatened ecosystems mitigate and adapt to global warming impacts.

Competitive, market-based trading systems and incentive structures are a common thread throughout ACES, designed to reduced carbon emissions, increase clean energy generation/energy conservation, and deliver results efficiently, gradually, and at a minimum cost to consumers and industry.

Though in need of major improvements, ACES – all five titles in perspective – is a strong start for monumentally difficult legislation, as it strikes a reasonable balance between diverse stakeholders, and ought to be advanced in Congress. If passed, ACES would decisively begin to shift America toward an energy economy that is renewable, efficient, clean, and competitive—and set the necessary pieces in motion to address the extraordinary challenges of global warming.

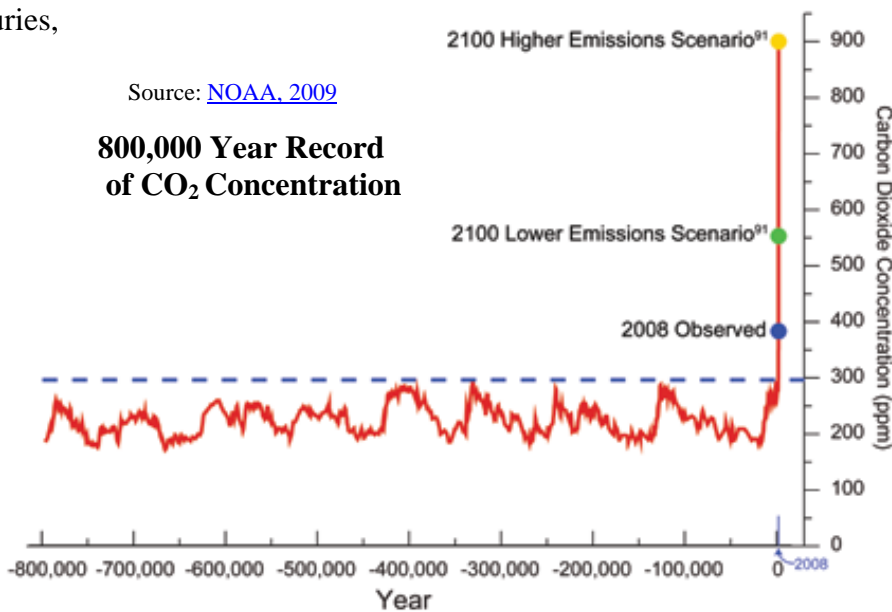
Addressing Global Warming through a Cap-and-Trade System for Greenhouse Gases (Title III)

- [Strong consensus](#) exists in the scientific community that increasing atmospheric concentrations of [anthropogenic \(human-generated\) greenhouse gases](#) are rapidly raising global temperatures and degrading the planet’s natural capital and ecosystem services, at great peril to human civilization.
- For the first time in US history, ACES would put a price on these greenhouse gas (“carbon”) emissions using a competitive, market-based trading system known as “cap-and-trade.” Though the term may sound foreign, cap-and-trade systems have been [used successfully in the past](#) in the US to lower sulfur dioxide emissions (that cause acid rain).
- One regional carbon cap-and-trade system is already operating in [New England](#), and another is set to be implemented in the [Pacific Northwest](#); the [European Union](#) enacted a cap-and-trade system in 2005.
- Because carbon dioxide (CO₂ – the principal greenhouse gas) lingers in the atmosphere for 100+ years after being emitted, emissions must be cut at rates fast enough to account for past, present, and future carbon, which is why a policy with a finite “cap” on total carbon that can go into the atmosphere – consistent with clear, science-based targets – is appropriate.

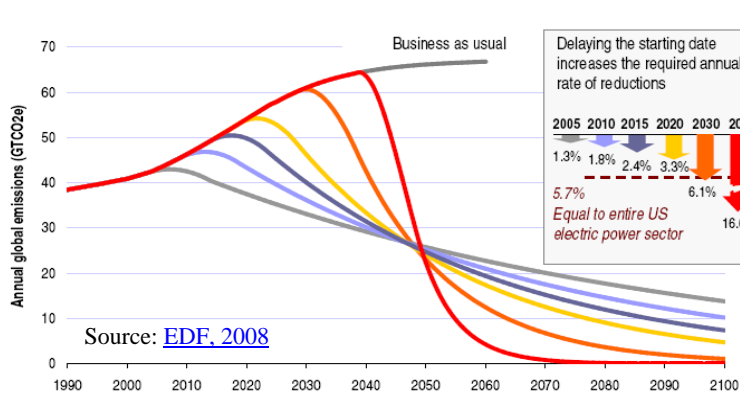


- The international scientific community believes that, in order to avoid the most dangerous impacts – associated with a 2.0°C [3.6°F] rise in temperatures above pre-industrial levels – atmospheric levels of CO₂ should be kept below a concentration of 450 parts per million [ppm]. In addition to CO₂, ACES would also cap a range of other less common, but [more potent greenhouse gases](#), like methane, nitrous oxide, and HFCs.
- The planet is currently at around 385ppm CO₂, rising at about 2ppm/year, and, over the next couple centuries, will [need to return](#) to a “safe” level of CO₂ around 350ppm or lower if humanity is to preserve a climate system and biosphere similar to that in which human civilization has developed and in which life on Earth is adapted.
- ACES aims to cut total US emissions 83% below 2005 levels by 2050, which is [on the low end](#) of the 80-95% reductions below 1990 levels recommended by the International Panel on Climate Change (IPCC).
- Unfortunately, even cuts in this recommended range would only provide, optimistically, about a [50/50 chance](#) of limiting warming to under the [450 ppm/Δ2°C threshold](#).
- ACES’s short-term target for direct emissions from (mostly industrial) sources, 17% below 2005 levels by 2020, is [dangerously short](#) of scientific recommendations; using the 1990 benchmark, ACES’s 2020 target would reduce these emissions [just 1% below 1990 levels by 2020](#), far short of the [25-40% cut below 1990 levels](#) the scientific community (conservatively) believes is necessary. Observation and studies since the release of the last IPCC report (2007) show that emissions and impacts are [exceeding the most pessimistic expectations](#) of only a few years prior.
- ACES would partially compensate for its weak 2020 emissions target by achieving supplementary emissions reductions in various ways: by preventing deforestation of tropical forests and protecting other critical “carbon sinks” in developing countries, which remove carbon from the atmosphere and sequester it in their biomass; by accelerating the deployment of renewable energy (RE) and energy efficiency (EE) through standards and incentive structures; and by fast-tracking high-potential, greenhouse gas-mitigation technologies like carbon capture and sequestration (CCS)—a technology that could substantially negate emissions from fossil fuel sources like coal plants and be exported to developing nations (namely China and India) that are rapidly industrializing.

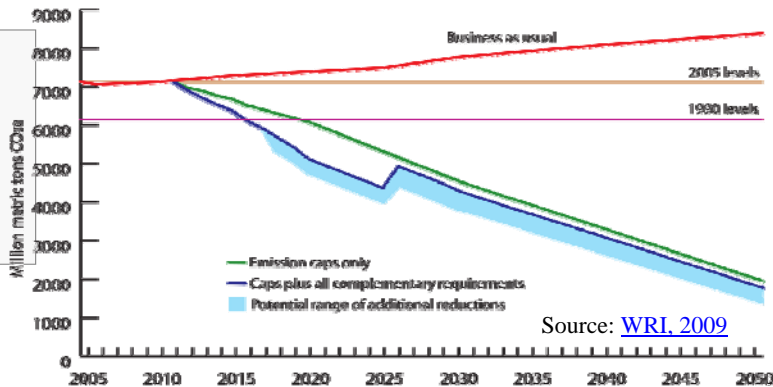
Source: [NOAA, 2009](#)
800,000 Year Record of CO₂ Concentration



Emissions Reductions Consistent with 2°C Warming



Emissions Reductions Under ACES, 2005 - 2050



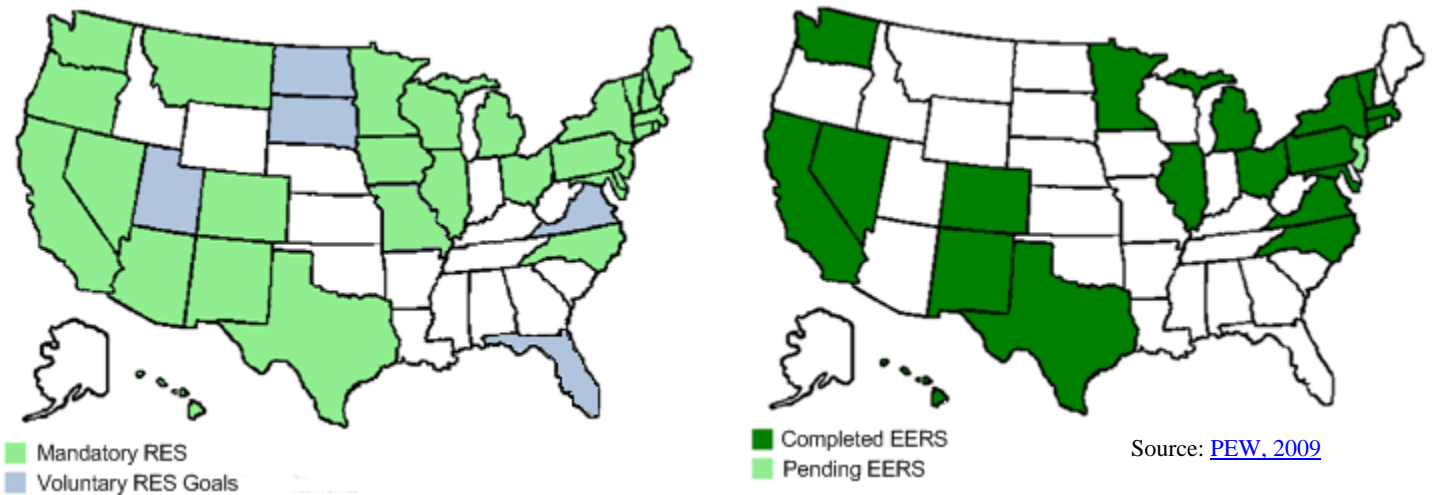
- These additional measures could potentially increase US emissions cuts to around [23% \(33%\) below 1990 \(2005\) levels by 2020](#) – still short of the IPCC-recommended minimum of [25% \(35%\) to 40% \(48%\) below 1990 \(2005\) levels](#), but an improvement. Though cuts could be accelerated in the future, skirting significant short-term cuts in hopes of compensating later on risks crossing over certain global warming “tipping points,” such as the melting of arctic permafrost or die-back of the boreal forest. Once crossed, these tipping points could induce global warming to snowball out of human control, as natural systems degraded by rising temperatures begin to collapse and in turn release their own carbon. Many of these tipping points are [already beginning to be reached](#).
- Due to the precipitous nature of these tipping points, short-term emissions cuts over the next 10 years carry far more weight than medium- and long-term cuts. The 2020 target is, in this respect, the most important single issue in the ACES bill, and should be strengthened.
- What’s clear is that the longer the US delays in curbing emissions, the sharper they must be cut in the future; passage of ACES would allow the US to go to [international climate negotiations in December 2009](#) as a leader and enhance US leverage in bringing developing nations like China and India on board with aggressive emissions reductions of their own.
- Because the current international emissions agreement, known as the Kyoto Protocol, will expire in 2012, it’s critically important that a successor treaty among states in the United Nations Framework Convention on Climate Change ([UNFCCC](#)) be secured in the December talks in Copenhagen.
- US pull-out from Kyoto in 2002 severely crippled international coordinating efforts; absent participation by the US, China and India opted to continue on their emissions trajectories during this period – and may do so again if the US, as the world’s largest emitter ([historically](#) and presently, [per capita](#), among major economies), cannot demonstrate leadership on this issue.



Clean, Renewable Energy and Energy Efficiency: The Role of a Federal Standard (Title I) in ACES

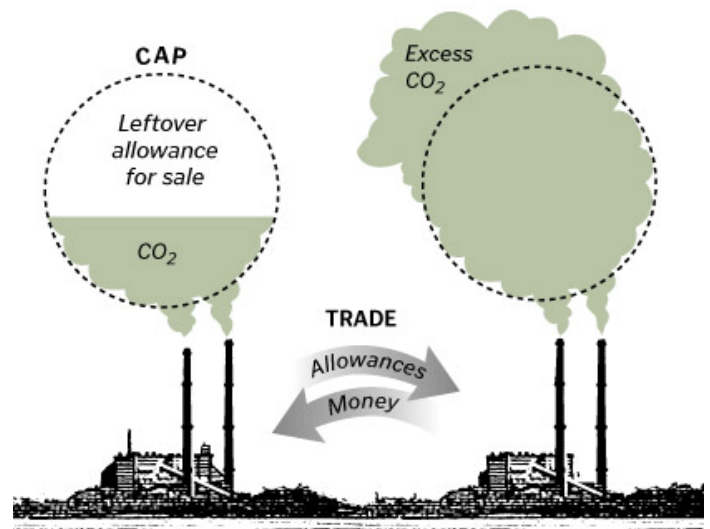
- Because direct pricing of carbon emissions through ACES’s cap-and-trade system would not be fully phased in until 2016, one of the most important short-term provisions of the bill is its 20% by 2020 *Combined Efficiency and Renewable Electricity Standard (CERES)*.
- CERES is an essential complementary policy to cap-and-trade, both for its ability to lower carbon emissions beyond what cap-and-trade’s market conditions would deliver, and for its potential to create green jobs during a severe economic downturn and to strategically position Indiana and the US to compete internationally in the emerging low-carbon energy economy.
- The standard would require that, over time, rising percentages of the electricity that utilities sell to their customers come from clean, low-carbon, renewable energy (RE) resources – or that utilities upgrade their generation facilities and create programs that reduce the need to add more generation capacity in the first place, known as energy efficiency (EE).
- Renewable Electricity Standards (RES) and Energy Efficiency Resource Standards (EERS) have proven to be among the most effective drivers of emissions reductions, clean energy investment, and green job creation in the record of state experience. 28 states have enacted RES policies and 18 have enacted EERS policies in order to capture the many benefits of clean energy for their economies, from cost savings on utility bills to attracting major RE manufacturing firms.
- These state efforts fall short, however, of the large-scale, coordinated effort that is needed to capture the environmental and economic benefits of clean energy on the national scale needed to address global warming and to position the US to compete in these industries internationally.

Current State Renewable Electricity (RES) and Energy Efficiency Resource Standards (EERS)



Market-Based Mechanisms in ACES: How would Cap-and-Trade and CERES Work?

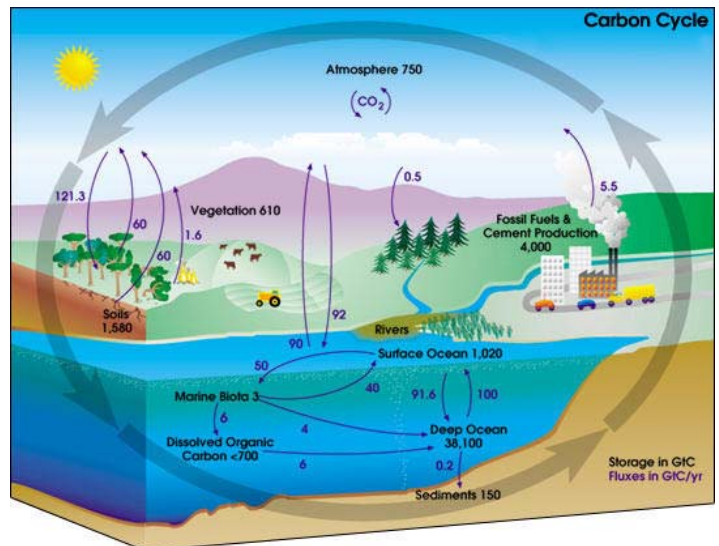
- To be clear: cap-and-trade and the federal clean energy standard (CERES) are fundamentally different in that, under the standard, utilities would be *required* to invest in certain forms of energy – clean energy (RE/EE); though utilities would have many options to choose from within the realm of clean energy, fossil fuels and nuclear power would, characteristically, not qualify as “renewable” or “clean.”
- Cap-and-trade, on the other hand, would simply create a market condition – by putting a price on each ton of CO₂ or CO₂ equivalent (greenhouse gases) emitted into the atmosphere – and let energy producers figure out the most economically efficient way to produce the desired result: low/zero-carbon energy. If nuclear energy and fossil fuels employing CCS can deliver low-carbon energy, economically, then they have a future under cap-and-trade.
- Aside from this core difference, both cap-and-trade and CERES would employ similar *market-based trading systems* in which participants would compete to find the least-cost means of achieving the two systems’ respective goals: producing RE/saving energy (in the standard) and reducing greenhouse gas emissions (in cap-and-trade).
- The “currency” being traded in these systems – in the form of Renewable Electricity Credits (RECs)/savings certificates (in the standard) and carbon emissions allowances/offsets (in cap-and-trade) – would have market value as commodities necessary to comply with these programs.
- In both systems, every given market participant (usually an emitter) would have a continuous choice to make: to either invest in new clean energy/reduce carbon emissions itself (earning RECs/savings certificates for compliance with the standard and avoiding the need to buy emissions allowances/offsets under cap-and-trade) – or to purchase these commodities from a competitor that is more economically efficient (better, more innovative) in achieving these policies’ respective goals – whatever is most economical at a given point in time.
- In the short to medium term, it might make more sense financially for a high-carbon utility (that owns lots of coal plants, for instance) to simply buy RECs from another utility that has invested in more wind farms; or for one power plant owner to pay another that’s emitting less for some extra permits, instead of reducing its own emissions at that point in time. Eventually, however, there is a clear economic incentive to shift toward clean, low-carbon energy so that one can sell credits/certificates/allowances/offsets to others, instead of having to buy them each year.



	Federal Combined RE/EE Standard (CERES)	Cap-and-Trade System for Greenhouse Gases
<i>Targets</i>	6% by 2012, 20% by 2020, phased in gradually; up to 2/5ths can be met by EE in a given year (8% in 2020)	17% below 2005 levels by 2050, 83% below 2005 levels by 2050, phased in gradually
<i>Regulatory Body</i>	Federal Energy Regulatory Commission (FERC)	Environmental Protection Agency (EPA): Offsets Integrity Advisor Board (OIAB) US Department of Agriculture (USDA): Greenhouse Gas Reduction and Sequestration Advisory Committee
<i>Trading "Currency"</i>	<i>Renewable Electricity Credit (REC):</i> 1 credit is issued for each megawatt hour (MWh) of renewable electricity that an energy producer generates. <i>Demonstration of Total Annual Electricity Savings:</i> a certificate indicating that a certain amount of megawatt hours were saved through efficiency measures in a given year. There are not individual Energy Efficiency Credits comparable to RECs for each MWh saved by efficiency measures, just a single certificate denoting total annual savings achieved by a given saver over a certain period of time. Certificates can be purchased from multiple parties.	<i>Carbon emissions allowance:</i> a "pollution permit" will exist for each ton of carbon dioxide in the economy that is emitted by regulated entities each year; a finite number of these will be created annually by the EPA - constituting a "cap" - which will be lowered over time <i>Carbon offsets:</i> polluters can purchase offsets to "cancel out" carbon emissions they do not have allowances to cover. For every ton of carbon polluters prevent from being emitted through domestic and international conservation activities, they can offset a ton of their own emissions in a 1:1 ratio; beginning in 2018, the required ratio for international offsets increases to 1.25:1.
<i>Currency Availability</i>	Unlimited (in theory): Entities can get credit for as many MWhs of RE/EE as they generate/save - and trade what they don't need; however, because polluters have the option of making an Alternative Compliance Payment (ACP) if it is cheaper than buying an REC/savings certificate, an implicit "cap" is created by market forces.	Limited: A finite number of allowances and offsets will be authorized each year by EPA; over time, the number ("cap") is ratcheted down, consistent with lowering carbon emissions. Initially, EPA will give away ("allocate") 85% of allowances, but around 2025 an increasing proportion will be auctioned to the highest bidder and their value rebated to consumers.
<i>Compliance</i>	Entities must annually submit RECs and efficiency savings certificates to the FERC to verify that they have met the required percentage of RE/EE for that year. Entities must make a \$25/MWh Alternative Compliance Payment (ACP) to FERC if they are unable to submit sufficient RECs/EE savings certificates.	Emitters must hold enough emissions allowances and/or offsets to cover all of their emissions in a given year; for each ton of CO ₂ that a polluter cannot cover, it must pay a fee to the EPA equal to twice the market rate for an emissions allowance.

Carbon Offsets (Title V): Expanding Carbon Mitigation Beyond Power Plants

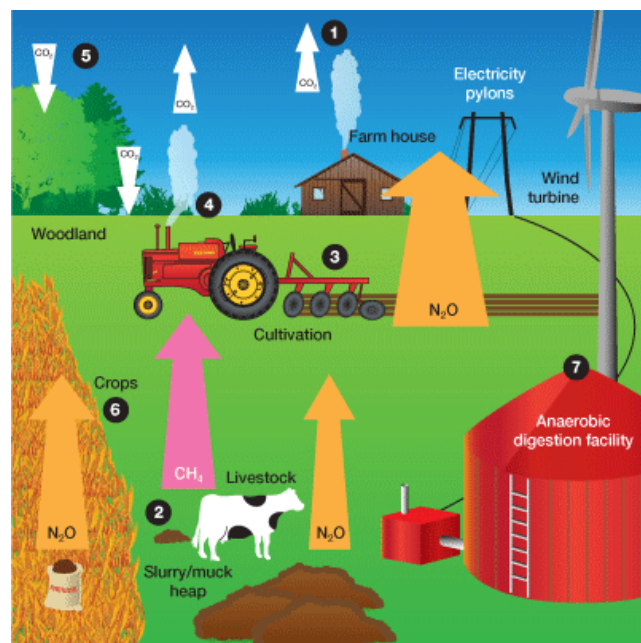
- Under cap-and-trade, participants could reduce the number of allowances that they need to buy and hold to cover their greenhouse gas emissions each year by purchasing carbon "offsets"; a single offset would effectively "cancel out" (on paper, not physically) 1 ton of greenhouse gases being emitted by a polluter.
- The central qualifying requirement of offset certification is *additionality*: a given project that avoids, reduces, or sequesters (typically in plant biomass) greenhouse gases can only be certified as an offset if it verifiably results in a lower net level of greenhouse gas emissions/atmospheric concentration than would otherwise occur in the absence of the project.
- Providing emitters the option to offset their emissions is critical to fighting global warming, as it creates an economic incentive for broadening carbon mitigation beyond power plants: farmers, forest owners, and green entrepreneurs, in the US and internationally, have a critical role to play in reducing carbon, especially in poor, developing nations where many of the world's most precious "carbon sinks," like rainforests, are located.
- EPA and USDA would authorize 2 billion tons of offsets each year - 1 billion domestic and 1 billion international, though the number of (typically cheaper) international offsets could be increased to 1.5 billion tons if economically affordable domestic offsets are in short supply.



Eligible Offset Activities: Expanding Carbon Mitigation

Assuming passage of ACES and promulgation of eligible offset activities by oversight integrity bodies, the following activities would most likely qualify for offset credit, many of which (but not all) are currently listed under the Kyoto Protocol's Clean Development Mechanism (CDM). The additionality and scientific/environmental integrity of a given project would be determined by different oversight bodies, depending on domestic/international and sectoral distinctions.

- Renewable energy projects
- Energy efficiency projects (supply-side/industrial, demand-side/household, performance)
- Destruction of super-potent industrial greenhouse gases, such as nitrogen oxide, HFCs, and PFCs
- Coal mine/bed methane reduction
- Afforestation/reforestation of land that is not forested; restoration (adding as opposed to conserving carbon stocks) of peatlands, grasslands, wetlands; urban tree-planting
- Preventing deforestation; conservation of carbon stocks (US domestic qualification only)
 - International forest/carbon stock *conservation* (as opposed to restoration) activities do not currently qualify for offset credit under the CDM. ACES would authorize USAID to allocate 5% of emissions allowances in 2012 (falling to 2% in 2031) to fund projects aimed at preventing deforestation and degradation of forests in developing nations, in large part to build up offset-generating capacity.
 - Due to extensive international negotiations and advances in the accuracy of forest and carbon leakage measurement, it's likely that forest *conservation* activities *will* qualify for offset eligibility under a future, post-Kyoto agreement: the UNFCCC's current Reducing Emissions from Deforestation and Forest Degradation (REDD) proposal could possibly replace the CDM in December 2009 negotiations taking place in Copenhagen.
- Agricultural, grassland, and rangeland management changes (domestic onlyⁱⁱ):
 - Altered tillage practices (no-till farming)ⁱⁱⁱ
 - Winter cover cropping, continuous cropping and other means to increase biomass returned to soil
 - Reduction in nitrogen fertilizer use or increase in nitrogen-use efficiency (reduces N₂O emissions)
 - Field application of manure instead of commercial fertilizer
 - Reduction in the frequency and duration of flooding of rice paddies (creates methane)
 - Reduction in carbon emissions from organic soils
 - Reduction in carbon emissions from manure, effluent, and through better animal management practices, including dietary modifications (livestock emit methane) and rotational grazing
 - Waste aeration (reduces methane by promoting aerobic digestion instead of anaerobic digestion)
 - Biogas capture and combustion (burning methane captured from anaerobic digesters on farms)
- Agroforestry and adaptation of plant traits/advances in technology that increase carbon sequestration by forests (domestic only)



Clarifying Offset Oversight Authority: EPA vs. USDA

- EPA would have control over the administration of programs overseeing all international offsets and, in the following sectors, domestic offsets: industrial, electricity generation, transportation, residential, and commercial. ACES would create an Offsets Integrity Advisor Board (OIAB) within EPA to verify that domestic and international offsets created and exchanged under cap-and-trade are indeed additional and scientifically sound.
- However, EPA would not have control over domestic agricultural and forestry offsets – this authority would go to the US Dept. of Agriculture (USDA). A comparable oversight body, known as the Greenhouse Gas Reduction and Sequestration Advisory Committee, would be responsible for ensuring the scientific integrity of these offsets. Because a large portion of emissions reductions eligible for offsets will come from the agricultural and forestry sectors, USDA would exercise a great deal of power over domestic offsets.
- There are merits and downsides to this hybrid approach: while USDA has vastly more manpower, close ties with farmers at the county level, and greater familiarity with their practices than EPA, as an organization its historical focus has not been regulatory or science-based in nature; USDA works closely with businesses and is generally a facilitator of economic activity in the agricultural sector, which presents a conflict of interest. This is reflected in USDA's [poor track record](#) of implementation and oversight of conservation programs.
- More problematic, ACES would not require that the USDA advisory committee's membership include a diversity of stakeholders or have a deep scientific expertise of relevant carbon science: all members could come from within USDA and would only need the "education" needed to "evaluate technical information."
- Although ACES directs the committee to "coordinate" with other federal agencies in drafting scientific standards for offsets and to periodically "consult" with EPA, Title V specifies that use of USDA science should be "maximized" and ultimately would insulate USDA from any real challenge to its authority.



How would "renewable energy" and "energy efficiency" be defined in the federal CERES?

- The following sources would qualify as "renewable energy" (RE) under the standard: wind, solar, geothermal, incremental hydro (upgrades to existing dams), marine/wave, biogas (like methane from anaerobic digesters), and biomass derived from eligible feedstocks (like corn stover, switchgrass, sustainably sourced forest thinnings, and wood waste).
- Other qualifying RE resources would include landfill gas, wastewater treatment gas, coal mine methane, and qualified^{iv} waste-to-energy sources, like municipal solid waste (MSW).
- Electric suppliers choosing to use energy efficiency (EE) for a portion of their compliance would be required to demonstrate achievement of electricity savings relative to business-as-usual projections; savings could be achieved through reductions in end-use customer electricity consumption attributable to equipment or facility upgrades, use of combined heat and power (CHP), fuel cell savings, and reducing electricity losses that occur during distribution.
- "Clean coal," which refers to fossil fuel power plants that use technology to capture and geologically sequester their carbon emissions underground (CCS), and nuclear power would *not* be considered "renewable" in CERES, as fossil and nuclear fuels are not characteristically renewable and carry significant non-carbon-related environmental impacts – they are not "clean."
- Furthermore, one of the primary goals of ACES is to diversify the US electricity supply with new forms of energy: including coal and nuclear power, which currently [dominate over 90%](#) of electric generation in the US, in the CERES standard, would defeat purpose of diversification.

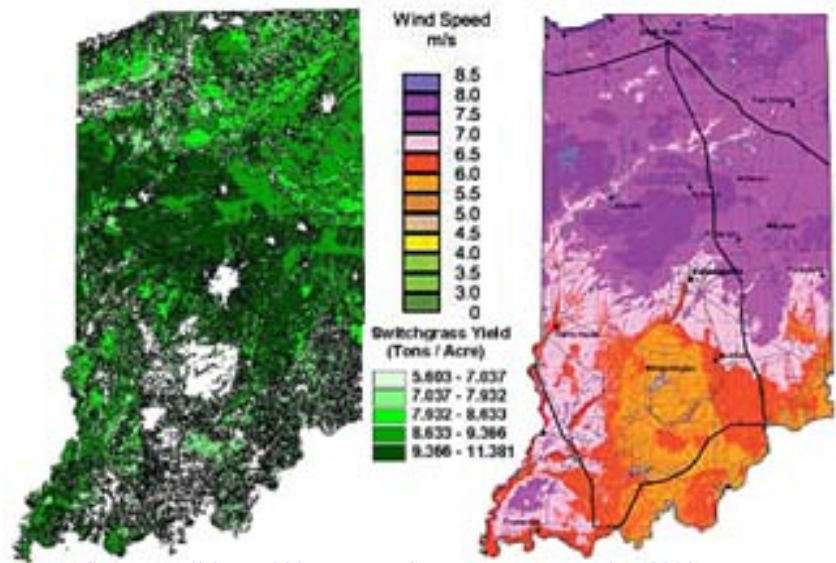


- Nonetheless, due to compromises made in the House Energy & Commerce Committee with heavily coal-dependent states – such as Indiana, which is 96% dependent on coal – ACES would allow utilities to use EE upgrades to meet 1/4th of the standard; if individual states have trouble meeting the standard, governors could petition to have their EE carve-outs increased to up to 2/5ths of total compliance in a given year (8% in 2020).
- CERES would also allow utilities to exempt from their generation “baseline” (their total generating “fleet” capacity) certain existing hydroelectric facilities (dams), *new* nuclear generating units, and coal plants that employ CCS; as a result, the standard’s required amount of RE/EE would be correspondingly lowered.

What renewable resources does Indiana have to comply with the federal CERES?

- Indiana has an abundance of economically viable, geographically distributed renewable resources.
- NREL estimates that commercial-speed winds in Indiana at [70-meter heights](#) constitute 40,000 megawatts (MW) of wind potential; at [100-meter heights](#), the potential may be as high as 80,000 MW.
- Indiana currently has [5,500 MW of wind development](#) in Midwest ISO interconnection queue; 5,700 MW of wind alone would be enough to meet a 15% RES in 2021, and 9,600 MW of wind would satisfy a 25% by 2025 RES. Indiana would likely have little trouble meeting the current 20% by 2020 CERES standard in ACES.
- Indiana produces [over 16 million dry tons of biomass residues each year](#), mostly in the form of corn stover left unused on farms.
- Other biomass feedstocks include sustainably generated forests (not old-growth or protected forests), forest thinnings, wood waste from the timber industry/mills, urban wood waste residues, and dedicated energy crops.
- On marginal (non-food production) lands, farmers can grow energy crops like [switchgrass](#) that grow fast, require little production input (high energy output-to-input ratios), and utilize existing equipment.
- Short of dedicated biomass generation, [biomass can be co-fired in Hoosier coal plants](#) as a cost-effective, transitional strategy to reduce carbon emissions.
- Biomass is geographically distributed throughout the state, with energy crops concentrated in central Indiana and the [timber industry](#) concentrated in southern Indiana.
- Indiana has [better solar resources than Germany](#), the world leader in solar. Harnessing heat from inside the planet, known as geothermal power, can also be done almost anywhere, though resource intensities [vary geographically](#).
- Advances in photovoltaic and geothermal technology are making commercial-scale (power plant-scale) solar and geothermal power more economical, though for the foreseeable future wind will dominate new RE generation capacity added in Indiana.

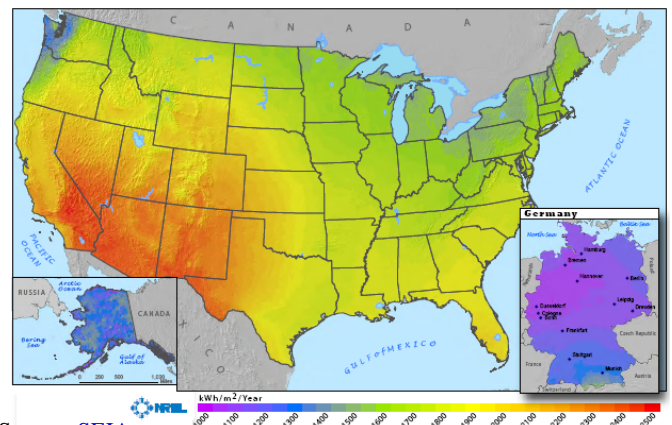
Switchgrass and Wind Speed Resources



Source: [Ball State, 2007](#)

Source: NREL ([Purdue, 2008](#))

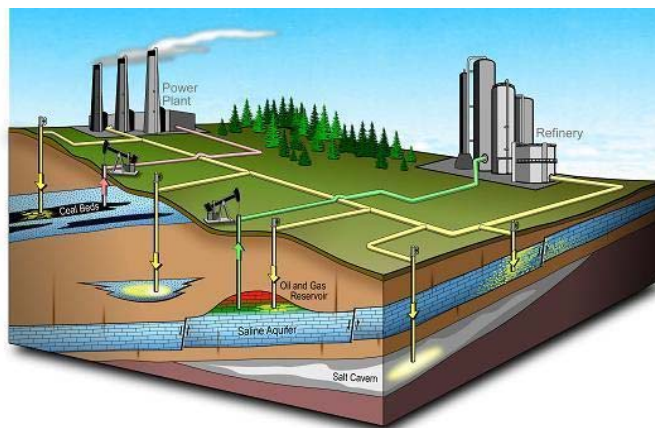
Photovoltaic Solar Resources: US vs. Germany



Source: [SEIA](#)

What about “Clean Coal”? Carbon Capture & Sequestration (CCS) in ACES

- ACES would use a combination of regulatory requirements and financial incentives to fast-track the development of carbon capture and sequestration (CCS), a technology that, once commercially viable, could be deployed on a large scale to [negate 80-90% of emissions](#) from fossil fuel facilities like coal plants by pumping CO₂ underground into geological reservoirs for long-term storage, instead of into the atmosphere.
- ACES would require EPA to create a national strategy for CCS and to design streamlined legal frameworks to identify technical, financial, and [regulatory barriers](#) to scaling up CCS.
- The principal challenge of CCS is ensuring that geologically sequestered emissions do not leak out to threaten public safety, contaminate groundwater, or end up (counterproductively) in the atmosphere. ACES would require scientifically verifiable reporting and monitoring of geologically sequestered emissions.
- To facilitate private financing of CCS, ACES would authorize the formation of a Carbon Storage Research Corporation (CSRC), the board of which would be made up of a mandated diversity^v of stakeholders from government, private industry, and public interest groups; once authorized by a majority of public regulators, the CSRC would be able to collect a fee (around \$1 billion/year, nationally) from retail customers of fossil fuel-based electricity in order to award competitive grants, contracts, and financial assistance to promising, commercial-scale CCS demonstrations.
- ACES would principally support CCS through the allocation of valuable emissions allowances to the fossil fuel sector: 2-5% of all allowances created by EPA in a given year would be distributed to projects (not limited to coal plants) on the condition that the proceeds be used to pay for CCS investments.
- In order to receive this financial assistance, emitting entities would have to sequester at least 50% of their emissions upon commencement of CCS utilization, or else lose eligibility for the assistance. For the first 6 gigawatts of CCS generation deployed in the energy economy, a bonus allowance program would award eligible “early movers” for deploying CCS technologies quickly and sequestering more carbon than is required.
- For every ton of CO₂ that it sequesters, a project would receive an allowance, from a minimum of \$50 a ton (for 50% sequestration) to a (bonus allowance) maximum of \$90 a ton (for 85% sequestration), which would effectively amount to a sliding, per-ton subsidy of CCS projects.



Performance Standards for New Coal Plants

- While ACES *prohibits* EPA from setting *broad* performance standards for coal plants using certain existing authorities in the Clean Air Act (clarified in the next section), it *does* create performance standards specifically requiring new coal plants to deploy CCS – and these standards are deliberately tied to the aforementioned financial incentive structure for carbon sequestration.
- Coal plants that fail to meet these standards risk either not receiving preconstruction permits (in which case they will not be built) or forfeiting financial assistance if they commence operation without CCS utilization:
 - Coal plants permitted between 2009 and 2015 lose eligibility for federal financial assistance if they do not retrofit CCS within five years after commencing operations; if they do not retrofit CCS by this date, they must retrofit CCS by no later than 2025 *without* federal financial assistance.
 - Coal plants permitted between 2015 and 2020 lose eligibility for federal financial assistance if they do not sequester 50% of their emissions when they commence operation; if they do not use CCS when they commence operations, they must retrofit CCS by no later than 2025 *without* financial assistance.



- For a new coal plant to be granted a preconstruction approval permit by EPA after 2020, it *must* use CCS upon commencing operations and sequester at least 65% of its emissions.
- The 2025 retrofit deadline is moved forward if 4 gigawatts of electricity generation is deployed with CCS in the energy economy before 2025; it may also be extended by EPA by up to 18 months.
- Coal plants permitted before 2009 would not be required to retrofit with CCS at any time.

Regulation of Greenhouse Gases: Clarifying EPA's New Authority Under the Clean Air Act

- Because the ubiquitous nature of carbon dioxide and other greenhouse gases would make regulating them through certain existing Clean Air Act (CAA) titles (namely Titles [I](#) and [V](#)) far too litigious and burdensome to be practical, ACES would instead address these emissions through two new cap-and-trade systems, which would cover about 85% of industrial emissions of greenhouse gases:
 - The primary cap-and-trade system would cover carbon dioxide and other common greenhouse gases like methane and nitrous oxide; ACES would add this system to the CAA as Title VII.
 - A second, more stringent cap would cover the super-potent hydrofluorocarbon (HFC) family of greenhouse gases; ACES would amend it to existing CAA Title [VI](#), which currently covers similar, super-potent [ozone-depleting](#) gases with a cap.
- ACES would also add to the CAA a second new title (VIII) that differentiates and clarifies under what CAA authorities (new and existing) EPA is allowed to regulate *capped* greenhouse gases (those from sources emitting 25,000 tons or more of CO₂ equivalent a year) versus *uncapped* greenhouse gases (from sources emitting 10,000 tons or more of CO₂ equivalent a year).
- Under the new rules in Title VIII, EPA would *only* be able to regulate “capped” greenhouse gases – *for their greenhouse gas effects* – under the authority of the newly created cap-and-trade systems (in Titles VI and VII); in other words, Title VIII *specifically precludes* EPA from using certain existing CAA authorities to regulate capped greenhouse gases – *on the basis of their impact on global warming* – in the same way that these authorities are commonly used to regulate pollutants like mercury and sulfur for their impacts on public health/local air quality. These precluded authorities (mostly in CAA Title [I](#)) include:
 - Criteria air pollutant (Title I, Sec. [108](#))
 - International air pollutant (Title I, Sec. [115](#))
 - New Source Review (Title I, [Part C](#)): allows for case-by-case review of new plants and modifications
 - Standards of Performance for New and Existing Stationary Sources (Title I, Sec. [111](#))
 - § Note: The new performance standards in Title VIII requiring the deployment of CCS as part of the financial incentive program are much more specific than the broad authorities in prohibited in Title I and *could* be used to regulate capped sources.
 - Operating Permits (Title V)
 - § Note: Though EPA could not deny old (pre-2009) or new coal plants operating permits under Title V, EPA *could* deny *preconstruction* approval permits to new coal plants under Title VIII in tandem with Title VIII's new performance standards for CCS deployment.
- The exception to this rule for capped greenhouse gases is that, *if it could be demonstrated* that these gases have *non-climate-related*, negative health/environmental impacts, *then* these existing CAA authorities *could* be used to regulate the gases *for their non-greenhouse gas impacts*.
- Uncapped greenhouse gases – which would be limited to industrial sources – are treated differently than capped gases by ACES. For these, Title VIII *would* allow the EPA to use Title I, Sec. 111 of the CAA to develop new performance standards for uncapped sources of greenhouse gases with the goal of covering, in combination with capped sources, about 95% of greenhouse gas emissions in the energy economy; sources of enteric fermentation (methane from livestock) would be exempted from regulation.
- While these rules may seem confusing at first, their purpose and effect is quite simple: By compartmentalizing the regulation of the greenhouse gas effect through cap-and-trade, ACES implicitly recognizes that global warming is an unprecedentedly vast and complicated environmental challenge – and that reducing emissions of greenhouse gases is a task addressed, for the most part, more practically through legislation (cap-and-trade) than (traditional) regulation.

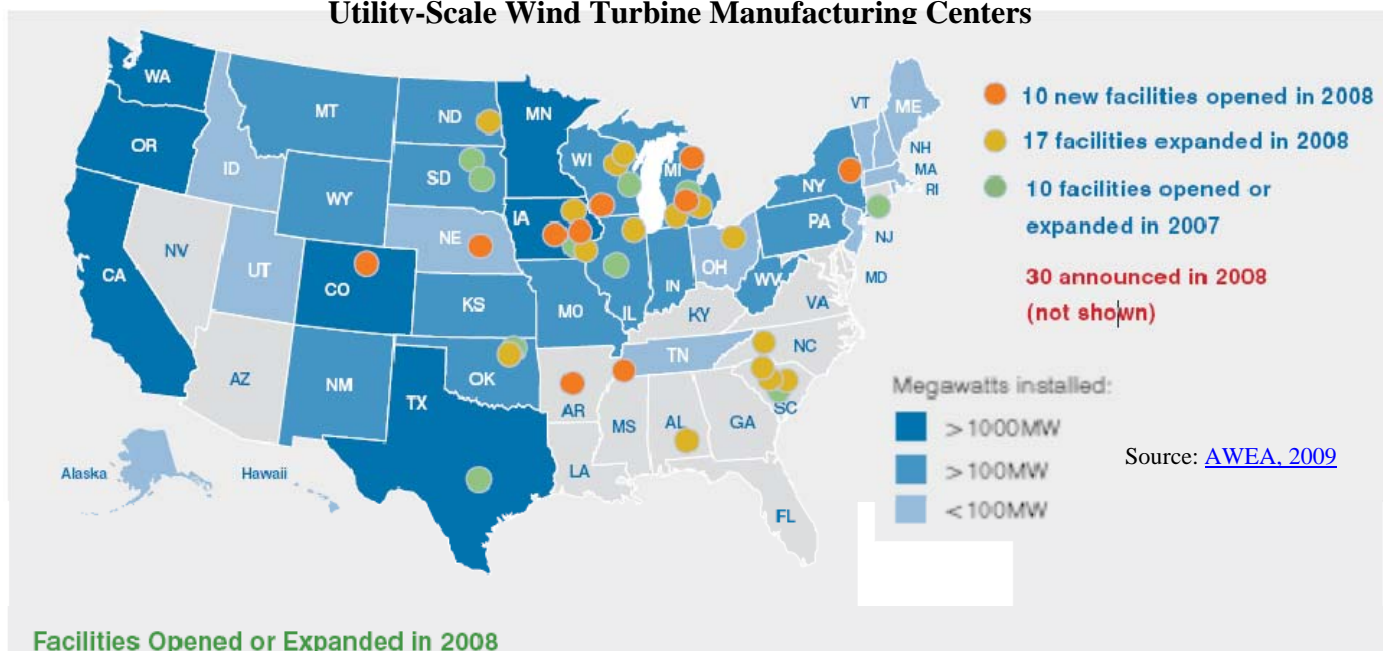


Renewable Energy Manufacturing: CERES Key for Indiana and US

- Renewable energy and energy efficiency create [far more jobs per megawatt](#) than fossil fuel energy; a federal RES would be a powerful job creator, especially for manufacturing states like Indiana.
- More than 1,300 Hoosier manufacturing firms could be re-tooled to create [40,000+ renewable energy manufacturing jobs](#) needed to produce RE component parts, giving Indiana one of the highest job creation potentials, per capita, in the nation for these jobs.
- Many of these jobs would be created, at first, in the wind energy industry – the fastest growing renewable energy sector and that from which most of Indiana’s new RE generating capacity will come from in the future. However, manufacture of myriad parts for solar panels, biomass/geothermal power plants, and energy infrastructure upgrades would also be significant.
- Due to its large industrial and automotive base, Indiana is at a competitive advantage for RE component manufacturing and also boasts [some of the nation’s most productive manufacturing workers](#); thousands more jobs would be necessary to construct/install, maintain, operate, and market clean energy technologies, like wind turbines.
- Indiana came close to passing an RES during the 2009 state legislative session – but now remains the only state in the Midwest without a policy, which has hurt Indiana’s ability to compete in clean energy and, in particular, RE manufacturing.
- While opponents of the RES claim that Indiana cannot meet a strong federal RES, the record of state experience shows that states have often bumped up the aggressiveness of their targets after initial passage of standards in order to realize clean energy benefits faster and to compete with neighboring states: [over 75% of new clean energy investment](#) in RE has gone to those states that have enacted standards—a clear indication of these effectiveness in attracting jobs and investors.
- A federal RES would level the playing field for Indiana and create an assured national market for clean energy; this would give shaky investors the confidence and long-term market certainty they need to make investments and create jobs during this economic recession; internationally, a federal standard would help the US catch up in clean energy markets like wind power instead of [losing market-share to Europe and Asia](#).



Utility-Scale Wind Turbine Manufacturing Centers



How would distributed generation and small businesses benefit from ACES?

- From homeowners installing solar panels on their rooftops to neighbors investing in a shared wind turbine to farmers converting livestock methane into electricity, ACES would promote an energy economy where energy is created in more places, by more people, and interconnected on a “smart grid.”
- To encourage greater use of local, distributed energy like rooftop solar, small wind, and farm energy, ACES would reward utilities with *triple REC credit* for purchasing energy from “distributed” (up to 2 MW capacity) generation sources.
- This in turn would incentivize homeowners, businesses, farms, and communities to produce their own RE, feed it back to the grid, and help utilities meet the federal CERES; depending on a state’s “net metering” rules – which determine how much credit a utility is required to grant a distributed power producer – homeowners and businesses could significantly lower their utility bills and watch their energy meters run backwards.
- In order to accommodate new electricity-generation sites (including plug-in vehicles), reduce utility peak loads, and improve demand response, ACES would direct the Federal Energy Regulatory Commission (FERC) to reform and modernize the planning processes for new regional transmission lines and expand rebates for installing smart-grid equipment.

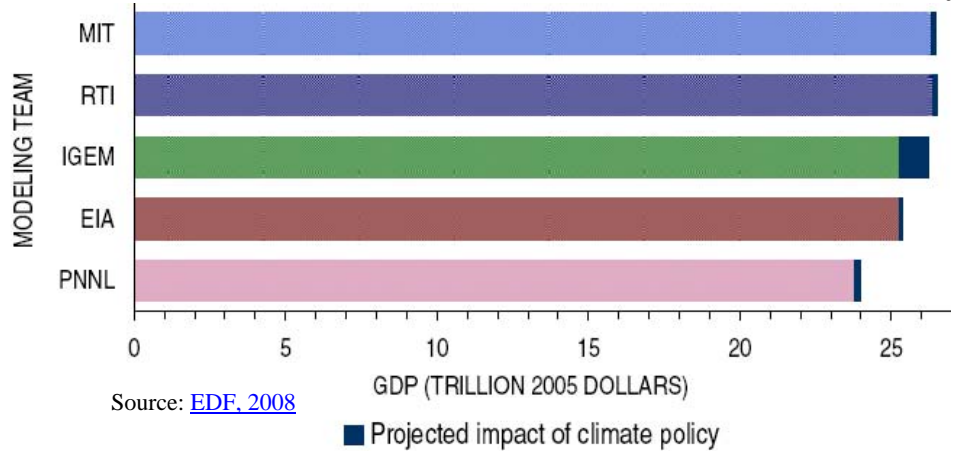


- By incentivizing distributed generation, CERES would create a market for generating electricity locally and begin to “decentralize” the energy production process; this means more participation, economic opportunity, and flexibility for both utilities and ratepayers, which is fundamentally pro-consumer.
- Decentralizing the grid would create a “ripple effect” of jobs in manufacturing and servicing small- and medium-scale renewable energy systems, so small businesses would play a major role in creating jobs for Hoosiers – not just large energy developers.

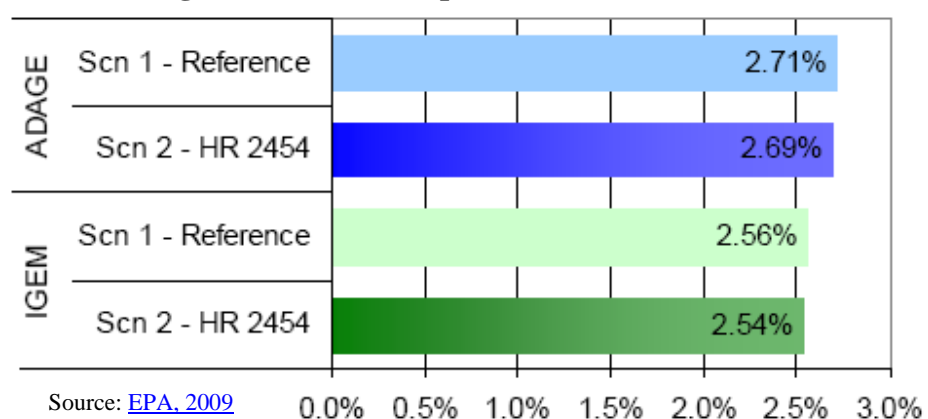
How would ACES impact utility rates, consumers, and the greater economy?

- From a macroeconomic perspective, the costs of putting a price on carbon to the greater economy would be tiny to imperceptible over time. Meta-analysis of public and private economic modeling of earlier cap-and-trade bills shows that the cost of cap-and-trade would lower total GDP each year by about [three-hundredths of a percentage point \(0.03%\) by 2030](#), which translates into less than 1% of average household budgets over the next two decades.
- Congressional Budget Office (CBO) analysis of the ACES bill has determined that the net annual economy-wide cost of the cap-and-trade program in 2020 would be \$22 billion – or about [\\$175 per household, per year](#) (less than 50 cents per day).
- The poorest households – those in the lowest income quintile – would see an average *net benefit* of about \$40 in 2020, or about 11 cents per day.
- Studies purporting massive increases or even a “doubling” of energy costs for consumers due to cap-and-trade are based on unrealistic assumptions, and in some cases, fail to even model the actual ACES bill.
- For instance, in analyzing a 2007 cap-and-trade proposal (S. 2191), the National Association of Manufacturers assumes that emissions allowance prices would go as high as [\\$270 per ton of CO₂ in 2030](#) – leading NAM to conclude that residential electricity prices would go up 129%. By contrast, government analysis by the Energy Information Administration (EIA) produced a figure only a fraction as large, [\\$61-78/ton in 2030](#), for the same 2007 bill, which would translate into a roughly 8% to 40% increase for Midwest states.
- EPA’s analysis of ACES finds that, due to [changes made](#) to the bill from its original form, including more generous availability of international offsets and the lowering of the 2020 emissions target, allowance prices would be even lower at around [\\$26-31/ton in 2030](#). The impact of higher energy costs would cause average annual household consumption to decline by a virtually imperceptible 0.11 percent in 2020, 0.31 percent in 2030, and 0.78 percent in 2050 compared to “business-as-usual” scenarios.
- In net present value terms, this is a reduction of \$61 per year, per household in 2020, \$132 in 2030, and \$174 in 2050 – on average, *about 30 cents/day*.

GDP Forecasts in 2030: Business-as-Usual and Climate Policy



Average Annual Consumption Growth Rate (2010-2030)



Model Assumptions

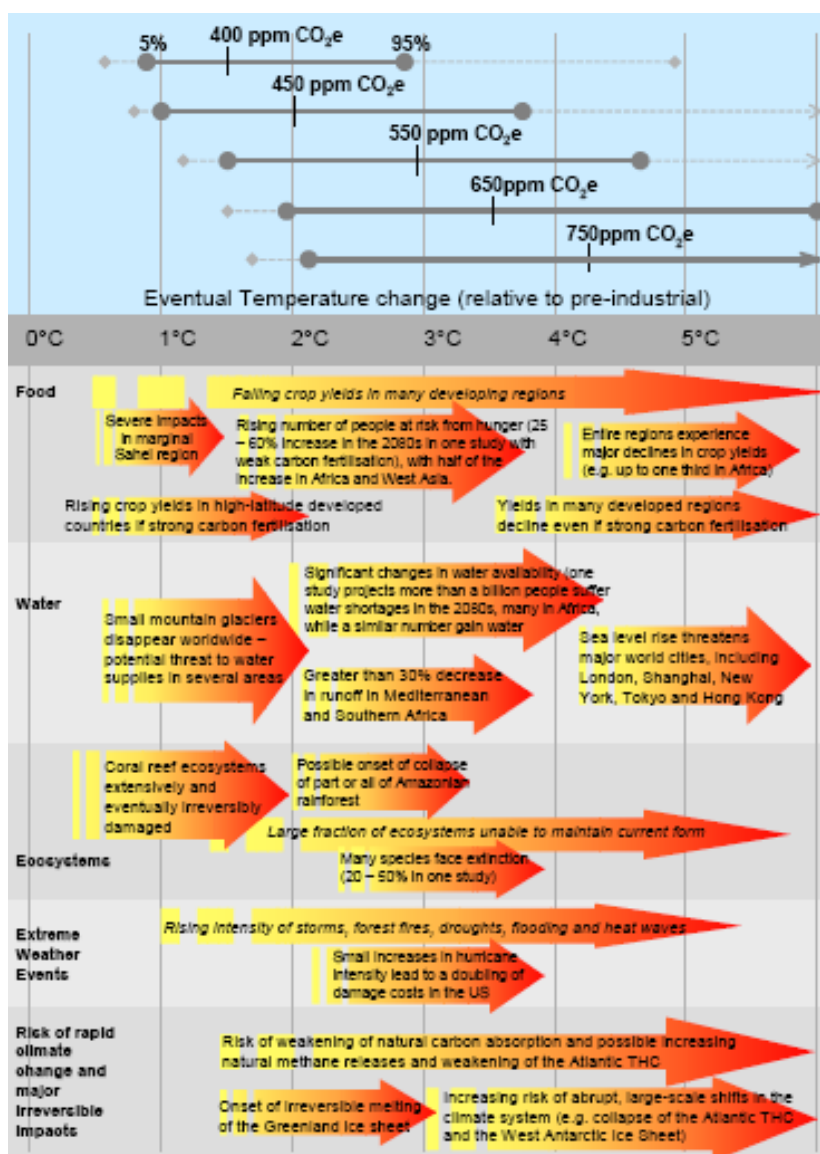
- Significant variability in cost and other estimates is owed to the fact that scenario assumptions made in and among models can vary wildly, and the impact of assumptions is amplified significantly over time. The key assumptions responsible for the largest price variations include:
 - Emissions reduction targets and timeline (how much and how fast)
 - Allocation of allowances
 - Availability of (cheap) international offsets
 - Cost of nuclear and CCS

- The CBO and EPA analyses include the effects of higher energy prices, price changes for other goods and services, impacts on wages, and returns to capital. Cost estimates also reflect the value of strategic allocation of allowances returned to households, directly or indirectly, which offsets much of cap-and-trade's impact.
- Unfortunately, the CBO analysis fails to model any of the many cost savings provisions in ACES, such as the CERES and various energy efficiency provisions. The EPA analysis models some clean energy provisions, like the CERES EE carve-out and allowance allocations for EE, but fails to model savings that would be realized from RE deployment and other EE standards for transit, appliances, and industry. These would all lower costs.
- While it is important that ACES be sensitive to carbon-intensive industries and consumers during the initial transition, giving away too much risks diluting the price signal needed to drive decarbonization. These models, while useful, *characteristically underestimate* the degree to which technological breakthroughs, changes in consumer behavior, and aggressive clean energy policies can reduce carbon liability and energy cost impacts well beyond the modest assumptions made in CBO, EPA, EIA, and independent modeling.
- The greatest flaw of these model analyses and many others is their failure to account for the economic, social, and environmental benefits of a major boon in clean energy – in the form of averted/mitigated global warming impacts, more productive natural capital and ecosystem services, improved public health, and greater worker productivity.

Costs of Inaction

- Though obvious, it's worth emphasizing that the [economic costs of doing nothing](#) dwarf any short-term benefits, real or perceived, of delaying emissions cuts. Again, EPA and CBO modeling of ACES does not perform cost-benefit analysis of mitigating global warming impacts. The scientific community, however, has attempted to translate the [degradation of natural capital and productivity loss among ecosystem services](#) as a result of anthropogenic global warming into economic terms like GDP and per capita consumption.
- The costs of continued unmitigated, "business-as-usual" emissions are stunning:
 - Extreme weather could reduce global GDP by up to 1% per year by 2050.
 - A 2-3°C rise in temperatures could reduce global economic output, permanently, by 3%.
 - If temperatures rise by 5°C, up to 10% of global output could be lost by 2100. The poorest countries would lose more than 10% of their output.
 - In a worst-case BAU scenario, global consumption per capita could fall 20% by 2100.
 - To stabilize warming at manageable levels, emissions would need to peak in the next 20 years and then fall between 1% and 3% each year thereafter.
 - *This would cost a cumulative 1% of global GDP by 2050 – a small price tag by any standard.*

Stabilization Levels and Associated Global Warming Impacts

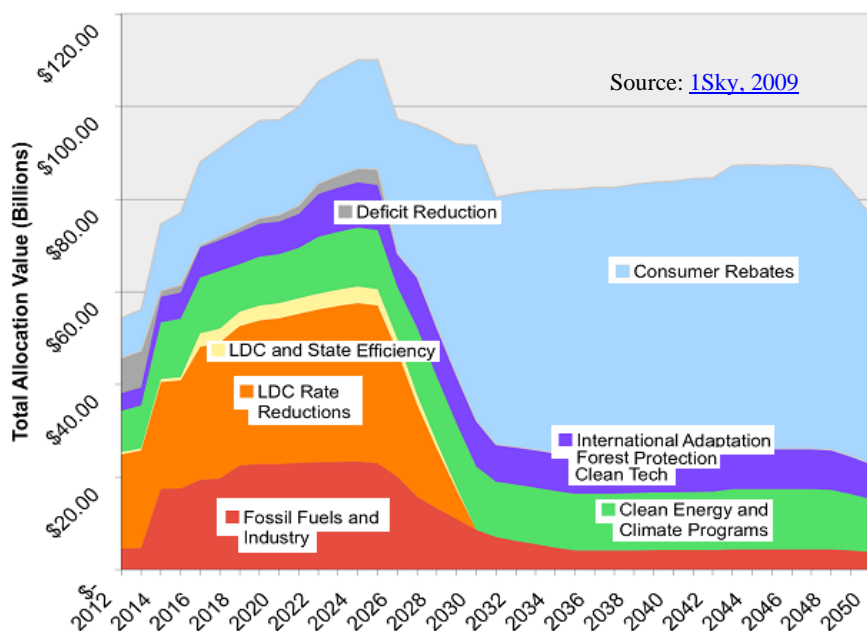


Source: [Stem Review, 2006](#)

Strategic Allowance Allocations: Cushioning Transitional Impacts, But Preserving Market Signals

- Instead of auctioning 100% of the emissions allowances, 85% of them would initially be given away for free (“allocated”) by EPA, which will oversee the cap-and-trade program, to local distribution companies (LDCs/“utilities”) and carbon-intensive industries, so to cushion the initial costs of transition.
- ACES would provide LDCs with allowances equal to 90% of the increased electricity costs and 2/3s of the increased natural gas costs that the bill would create – *on the condition that 100% of the value of these allowances be passed on to consumers*; in this way, power generators still feel the market signal of a price on carbon, but commercial and residential ratepayers are buffered from the majority of its impact.
- State-based public utility commissions and EPA would have the power to revoke allowances if LDCs attempt to absorb their value as windfall profits.
- In order to preserve the market signal needed to encourage energy-efficient behavior among consumers, ACES specifies that LDCs should, to the maximum extent practicable, compensate consumers through lump-sum rebates on the *fixed* portion of their bills, instead of directly lowering the per-unit rate of electricity/natural gas.
- Coal plants, oil refineries, and other fossil fuel producers – as well as carbon-intensive industries like steel, cement, paper, and chemicals – would also be granted allowances to help negate the initial costs of the cap.
- In addition to the 35% of allowances consumers would get *through* their utilities, 15% of allowances would be auctioned by EPA, and the proceeds would be returned *directly* to households in the form of direct cash, electronic rebates, and benefit payments. Starting around 2025, allowance giveaways for utilities and industry would begin to phase out, and allowances would be gradually shifted to increase direct consumer rebates and to fund investment in clean energy deployment, research, jobs programs, and domestic/international climate change adaptation measures.

ACES Allowance Allocation 2012-2050

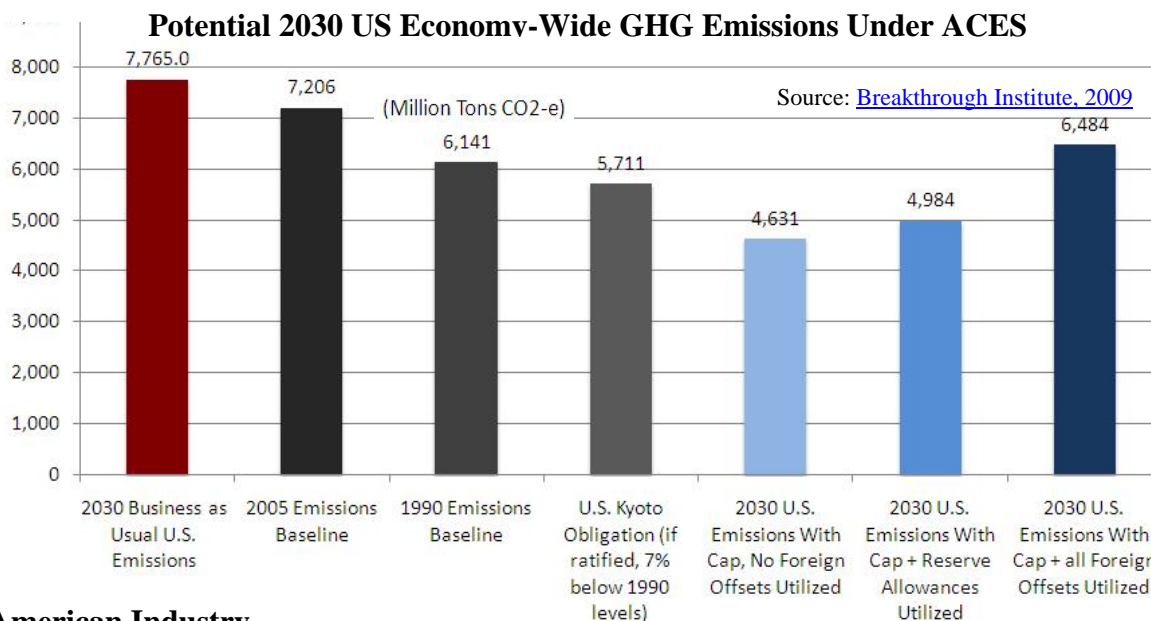


Allowance Allocation in 2020	
Fossil Fuels & Energy-Intensive Industries	
Oil Refineries	2
Coal Plant Operators (merchant coal and long-term power purchase agreements)	5
Carbon Capture and Sequestration (CCS)	5
Energy-Intensive Industries	13
Local Distribution Companies (LDCs)	
Electricity Cost Reductions	30
Natural Gas Cost Reductions	6
State and LDC Energy Efficiency	4
Direct Consumer Rebates	
Federal Low-Income Consumer Rebates	15
Home Heating Oil Consumer Rebates	1
Public Investments	
RE/EE Deployment	5.5
Clean tech R&D	1.5
Electric Vehicles	1.0
Green Job and Transition Programs	0.5
Domestic Adaptation	2
International Investments	
International Adaptation	1
Reducing Tropical Deforestation	5
Exporting Clean Tech	1
Deficit Reduction	2

Additional Cost-Containment Measures

- ACES contains numerous cost-containment measures recommended by an industry-environmental coalition called the US Climate Action Partnership ([USCAP](#)), including unlimited banking of allowances, a two-year compliance period (which allows borrowing one year in advance), and a strategic reserve (“safety valve”) of allowances (built up by setting aside 1-3% of allowances in a given year to no more than 5% of total emissions allowances in a year) that are available for auction if allowance prices exceed 160% of their three-year average.
- The proceeds of any sales from the reserve will be used to acquire additional international offsets (then converted into allowances), which will replenish the reserve at a low cost and result in additional reductions in carbon emissions.

- International offsets are a key cost-containment measure in ACES but *may be too bountiful*: with 2 billion tons of carbon offsets available each year – of which 1.5 billion could be (cheap) international, as opposed to domestic, offsets – independent analysis suggests that it could be legally permissible for polluters to continue emitting above business-as-usual levels for years, if not decades.
- Excessive availability of cheap international offsets and utilization of the strategic allowance reserve could dilute the price signal needed to drive emissions cuts at the pace needed to effectively mitigate global warming.



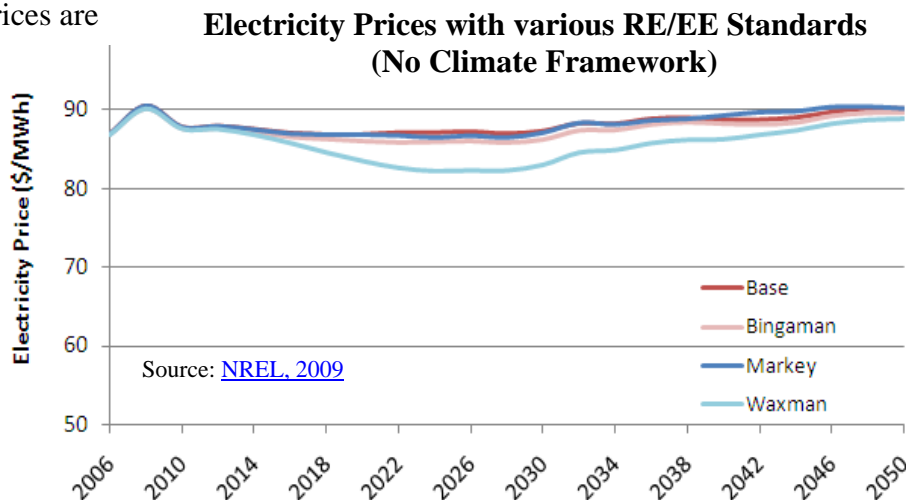
Protecting American Industry

- No later than 2022, ACES would require the President to determine whether to continue allocating allowances to certain carbon-intensive sectors, after assessing the extent to which other countries, especially developing countries like China and India, are also making meaningful efforts to reduce their greenhouse gas emissions. If other countries are producing goods with greater carbon-intensity than the US, due to more lax emissions reduction policies or a lesser degree of participation in international treaties than the US, then the president can decide to continue allocating allowances to US industries in order to protect American workers.
- ACES would make it the policy of the US to actively engage with other countries as part of the UNFCCC to establish binding agreements committing all major-emitting countries to contribute equitably to the reduction of global greenhouse gas emissions.
- However, in the event that allocating domestic emissions allowances to US sectors is not enough to prevent “carbon leakage” (industries shifting overseas to more carbon-intensive countries), then the president can authorize an International Reserve Allowance Program, beginning in 2025, that would create a separate pool of emissions allowances for foreign countries in essentially the same format as the domestic allowance program.
- Foreign firms seeking to sell their goods in the US would have to buy emissions allowances from EPA in order to cover the “extra” carbon in their goods; this would effectively amount to an import tariff, balancing out differences in carbon intensity at the border, and prevent countries like China and India from undercutting American industry.
- “Covered goods” would mostly include primary products such as iron, steel, aluminum, cement, glass, pulp, paper, chemicals, and industrial ceramics, as well as products that generate “a substantial quantity of direct greenhouse gas emissions or indirect greenhouse gas emissions” in the course of their manufacture.



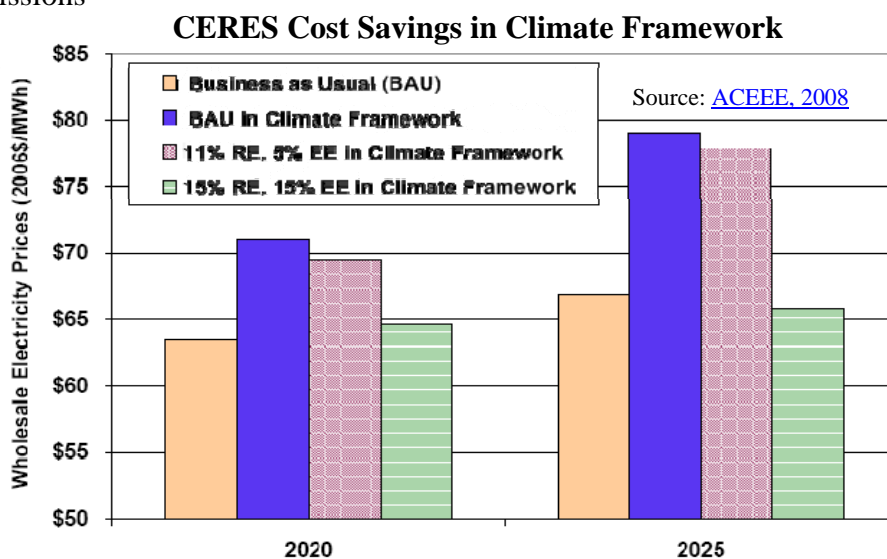
Cost Savings from CERES: Higher RE/EE %, More Savings

- National Renewable Energy Laboratory (NREL) analysis of the state record of RES policies shows that standards have historically had [minimal to negative \(consumers save\) impacts on electricity prices](#) in the 28 states in which they've been enacted.
- Recent NREL economic modeling of three federal RES proposals in congressional legislation finds that [none of the RES bills modeled have a significant impact](#) on consumer electricity prices at the national level – and that no state sees an electricity price increase of more than 5% compared to the base case in 2022, the year of peak impact on prices.
- NREL finds that the lowest electricity prices are achieved in the scenario (“Waxman”) with the *highest combined percentage* of RE (25% by 2025) and EE (15% reduction in load by 2020); energy efficiency is particularly beneficial, as it deters the need to build new generation capacity (including new RE capacity) for which ratepayers are ultimately charged by utilities.
- Using a version of EIA’s economic modeling system (NEMS), a 2009 analysis by the Union of Concerned Scientists (UCS) found that a 25% by 2025 RES would [save Hoosier ratepayers](#) a cumulative \$2.12 billion in electricity and natural gas costs by 2030 and the average American family \$67, each year, on their utility bills by 2025.
- The record of state experience has shown that, in cases where an RES policy does raise electricity prices, it lowers natural gas prices more, resulting in a *net savings* to consumers by [shielding them from volatility in natural gas prices](#).
- It’s important to note that these analyses are modeling the price impacts/savings of RE/EE standards *in the absence of carbon regulation*: they do not assume cap-and-trade as a market condition.



CERES as a Complementary Policy to Cap-and-Trade

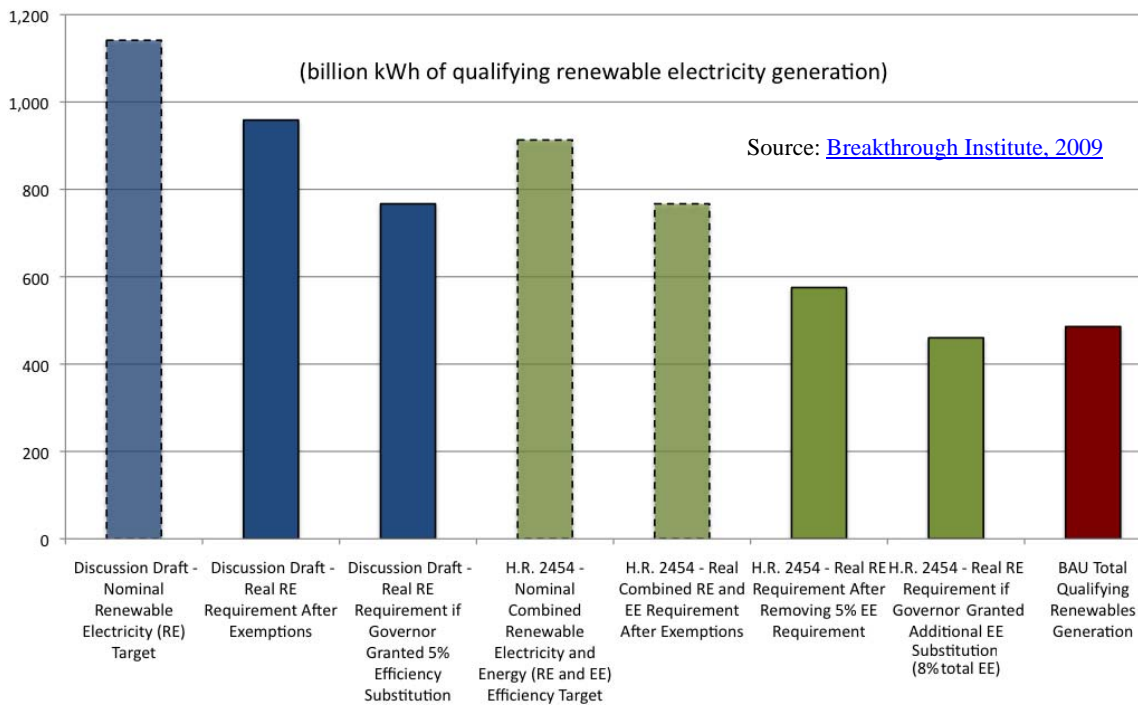
- When a price is put on each ton of CO₂ emissions (through cap-and-trade), the cost savings benefits of RE/EE are markedly amplified. Under cap-and-trade, greater amounts of (low/zero-carbon) RE/EE lower energy costs for consumers by displacing carbon-intensive fossil fuels, increasing market competition, and lowering demand.
- EPA analysis of ACES finds that the CERES would *reduce* wholesale electricity prices, natural gas prices, and gas consumption by 1-2% throughout the life of the policy.
- The same 2009 UCS study projects that with a modest price on carbon allowances, the 25% RES would deliver an *additional, cumulative savings* of \$19.4 billion by 2025, nationally, from emissions allowances that would not have to be purchased.
- With enough clean energy deployed (30% RE/EE), [consumers could end up paying less in 2025](#) for energy than they would have under a business-as-usual scenario, wherein carbon had never been regulated.



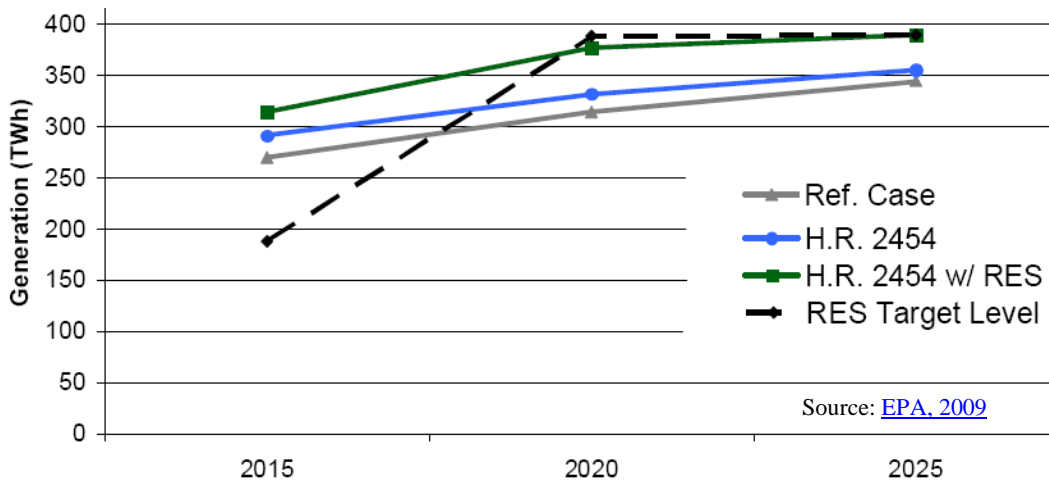
Standalone CERES Passed by House Energy Committee is Too Weak; Even Under Cap-and-Trade, Standard Delivers Only Marginally More RE Capacity than Business-as-Usual

- Unfortunately, the current CERES proposal in ACES for 20% RE by 2020 (with up to 2/5ths being met by EE in a given year) could potentially [fall short](#) of achieving the clean energy penetration needed to realize the full cost savings and emissions reduction benefits of clean energy deployment: [NREL](#) and [independent](#) analyses find that CERES, as a standalone policy (no cap-and-trade) at the national level, would actually require less RE generation in 2025 than the market and existing state-level standards would deliver on their own.
- The [current Senate RES proposal](#), at 15% by 2021 with a 1/4 carve-out for EE, would deliver even less of an impact, if any, in many states. Because Indiana is 96% powered by coal, a weak RES might make a difference beyond BAU scenarios.
- EPA’s analysis of ACES finds, predictably, that cap-and-trade (“HR 2454”) would increase RE generation compared to BAU and that, *as a complementary policy*, CERES would increase RE generation beyond the carbon pricing forces in cap-and-trade – [but only by about 1% of total electricity generation](#) in a given year.
- The standard would also fail to ramp up national investment in energy efficiency; if the EE carve-out (8% in 2020) were fully utilized, [only 3% more EE would be delivered](#), nationally, beyond BAU estimates in 2020.

Impact of ACES vs. Discussion Draft RES and BAU, 2025

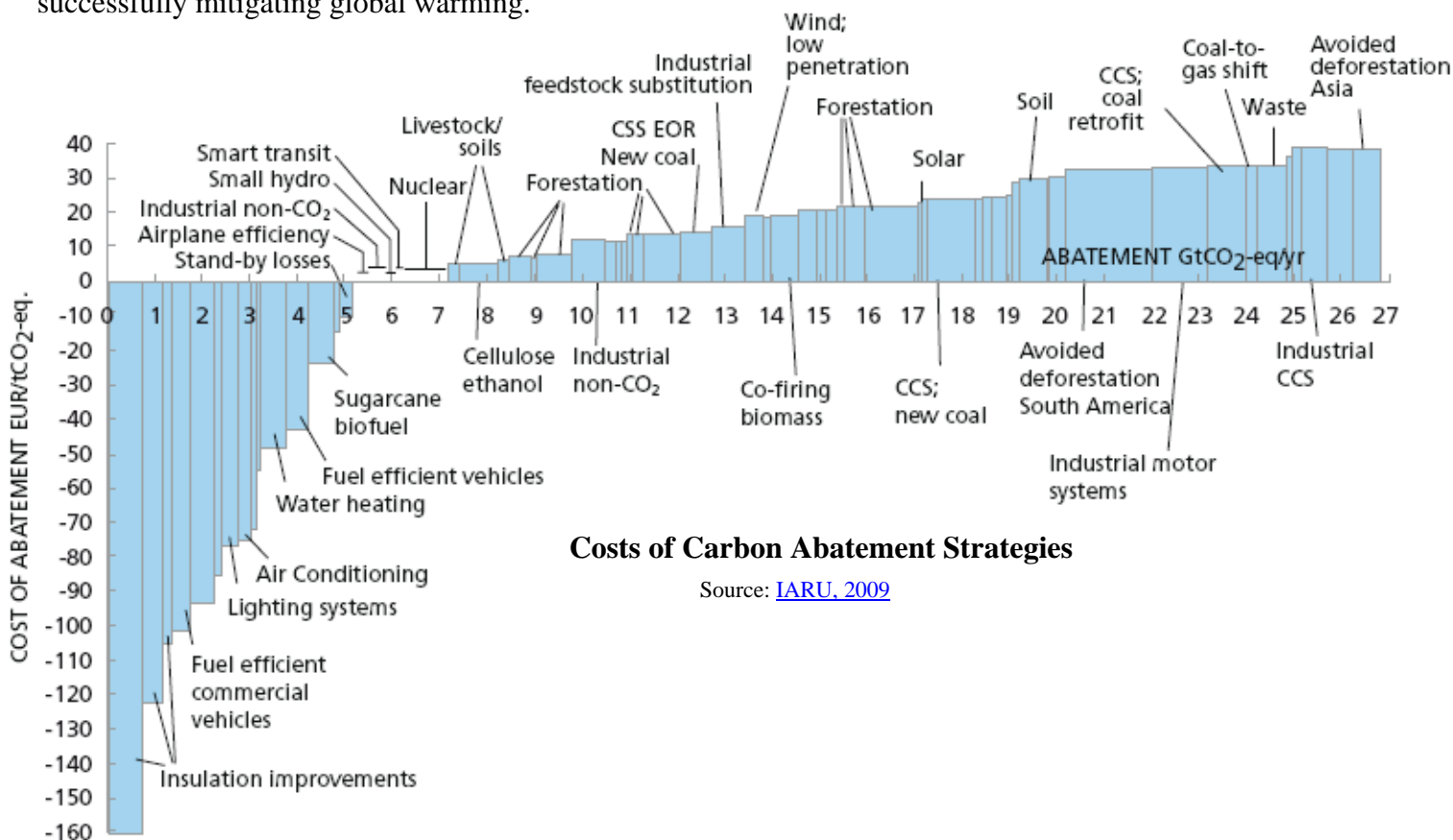


RE Generation: BAU vs. ACES with and without RES

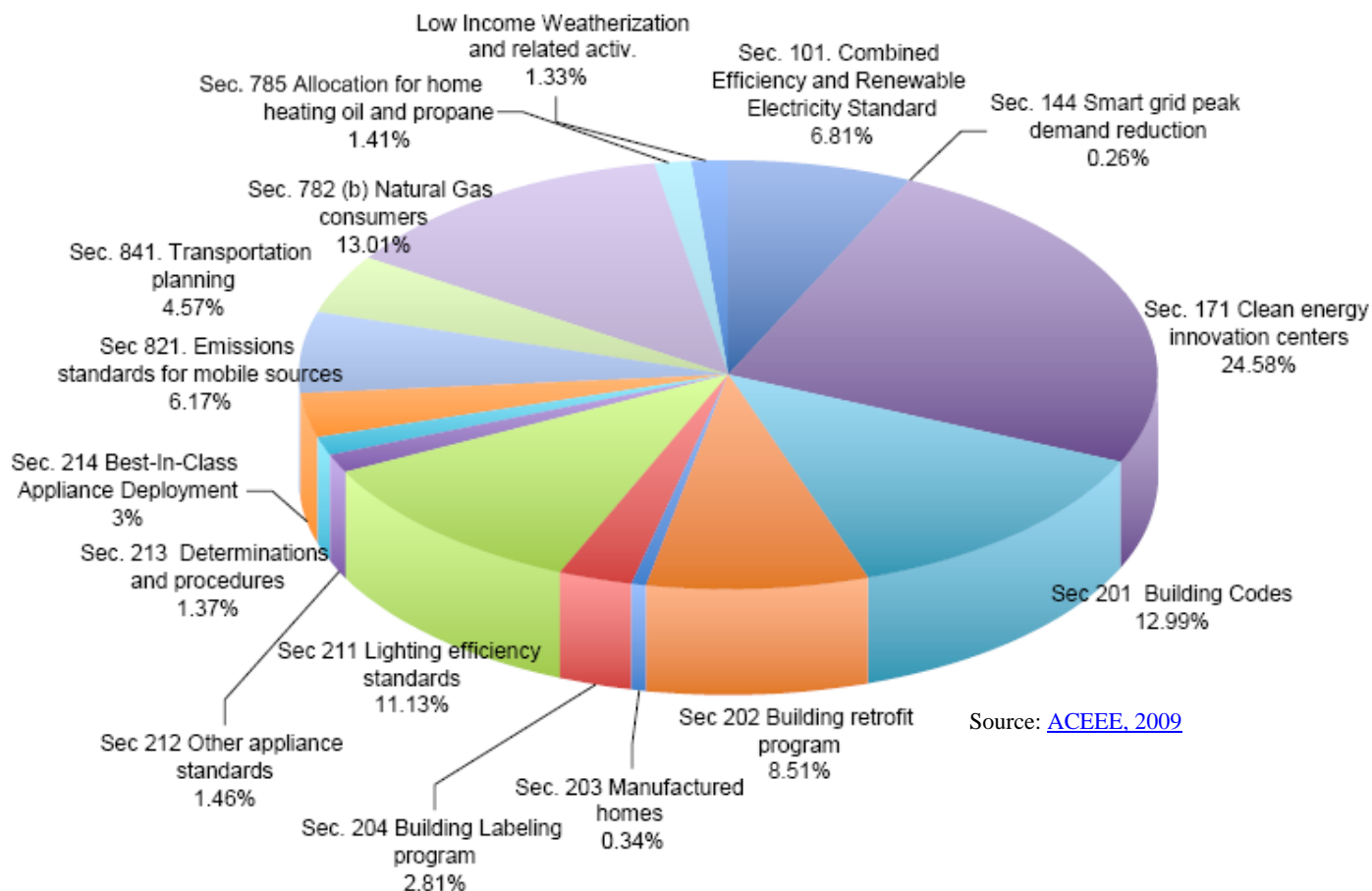


Cost Savings from Other Energy Efficiency Provisions (Title II) in ACES

- The central goal of energy efficiency is to get more productive energy “bang for the buck/megawatt” through better technology and smarter practices (not wasting energy) – and in the process reduce emissions and save money for businesses and consumers.
- In addition to the compliance carve-outs for EE in the current CERES proposal, ACES would promote energy efficiency throughout the energy economy, in households, and in communities by authorizing the Dept. of Energy, EPA, and other public entities to set higher standards, create programs, and engage in a wide array of collaborative, rule-making, and funding activities with state/local governments.
- ACES would remove administrative and financial barriers to federal-state and public-private collaboration, streamline and expand opportunities for grants and loans to more recipients, and promote competitive bidding for funding resources.
- As with most programs in ACES, funds would be generated from the proceeds of emissions allowances allocated for clean energy programs and disbursed in each state through State Energy and Environmental Development (SEED) accounts.
- States would use their SEED accounts to fund a range of programs, from weatherizing low-income homes to designing more efficient transit networks for cities. Collectively, energy efficiency provisions in ACES could save approximately 2.45 quadrillion BTUs of energy by 2020 and 4.85 quadrillion BTUs by 2030, which translates into a cost savings per household of around \$750 by 2020 and \$3,900 by 2030.
- Energy efficiency measures, in various forms, are by far the cheapest means of reducing greenhouse gas emissions – on a cost-per-ton basis – and constitute a sort of “low-hanging fruit” for carbon mitigation.
- Insulating buildings, utilizing more efficient air conditioning and lighting systems, and increasing fuel economy in vehicles deliver the greatest emissions reductions “bang for the buck”; retrofitting coal plants with CCS technology to reduce emissions, switching coal plants to use (lower-carbon) natural gas, and preventing deforestation in developing countries are among the most expensive strategies, though still necessary to successfully mitigating global warming.



4.85 Quadrillion Potential BTUs Saved in 2030



Buildings, Homes, and Appliances

New Buildings: ACES would direct the Dept. of Energy to work with public and private consensus code-setting organizations to establish EE codes for new buildings, both residential and commercial, to achieve 30% and 50% EE improvements in 2010 and 2016, respectively, and 5% efficiency gains every 3 years after 2018.

Existing Buildings: The Dept. of Energy would also work to retrofit existing buildings through a new Retrofit for Energy and Environmental Performance (REEP) program – a consolidation of existing and new building retrofit programs created in ACES – which would provide funding to state/local governments and private entities to carry out EE retrofits. REEP would pay for up to 50% of the cost of retrofits for competitive projects, with greater funding in proportion to greater EE gains.

Manufactured Homes: Federal rebates of up to \$7,500 would be available for low-income purchasers of new Energy Star-rated manufactured homes.

Building Labeling Programs: To improve consumer decision-making, EPA would develop a program to institute building labeling of energy performance characteristics, using building-type and consumption data from EIA.



