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RE: Comments on TCI Model Rule

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At its heart the Transportation Climate Initiative is designed to promote the sale of full electric vehicles, and to promote the use of public transportation. Wealthier individuals would receive \$4,000 subsidies to buy electric vehicles currently selling at a \$15,000 to \$20,000 premium over conventional vehicles. Owners of such vehicles can fuel at lower cost, save on taxes used to fix and build roads, and get to drive alone in High Occupancy Vehicle travel lanes during rush hour traffic.

The Model Rule also moves motor fuel taxing authority from states to a non-governmental regional authority. Unlike traditional gasoline taxes, the revenue raised from allowance auctions will not go to maintaining and building highways. Electric vehicles weigh an extra thousand pounds actually adding more strain on highways, but pay no tax toward highway trust funds. States will have to raise gas taxes to make up for the revenue shortfall.

Everything else in the TCI program is window dressing to sell the program, and to establish enforcement and verification details to prevent cheating. As promoted the plan will add 11 cents to a gallon of gasoline in 2022 rising to 27 cents by 2032. That will cost a typical household over \$2,000, or about \$187 a year. It will hurt low income rural families the most. A worst case scenario could cost households \$414 in 2032, and total \$4,550 by 2032. A promise to spend 35% of program revenue on aid to poor communities rings hollow.

The TCI Model Rule is unlikely to lead to the desired result of reducing carbon dioxide emissions from motor vehicles by 66 million tons a year by 2032, and in fact may result in no emission savings. However, the number of available allowances is fixed so it could become impossible to deliver enough fuel leading to shortages. The Rule mimics a similar failed Model Rule used for the Regional Greenhouse Gas Initiative (RGGI). The section on potential carbon offsets has so many limitations it's useless. The Rule doesn't address the potential infringement on interstate commerce. Carbon dioxide (CO₂) saved, if any is saved, could cost between \$589 and \$1,481 per ton compared to a current average RGGI auction price of \$7 a ton. TCI needs to be scrapped.

Copying the RGGI program copies its mistakes

Calling RGGI a successful program does not make it so. My peer reviewed analysis, "A Review of the Regional Greenhouse Gas Initiative"¹ compared emissions from RGGI states to five states with similar policies that did not participate in RGGI. The key findings were:

- There were no added emissions reductions or associated health benefits from the RGGI program.
- Spending of RGGI revenue on energy efficiency, wind, solar power, and low-income fuel assistance had minimal impact.
- RGGI allowance costs added to already high regional electric bills. The combined pricing impact resulted in a 12 percent drop in goods production and a 34 percent drop in the production of energy intensive goods. Comparison states increased goods production by 20 percent and only



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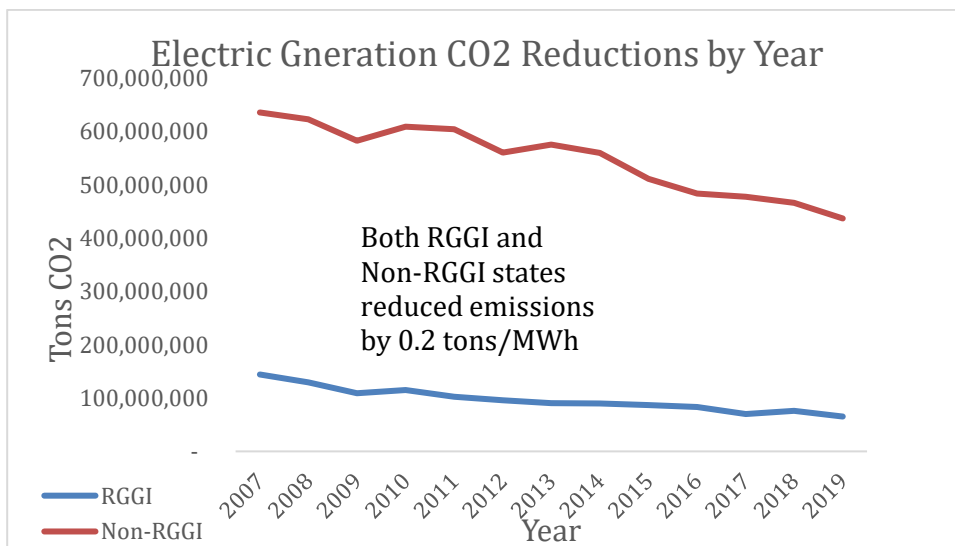
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lost 5 percent of energy intensive manufacturing. Power imports from other states increased from 8 percent to 17 percent.

The impact of RGGI varied widely from state to state. Vermont had essentially no emissions to start and simply pocketed allowance revenues from an emission budget it was given to buy its participation in the program. Rhode Island was already generating all the power it needed from natural gas, and still is with no reduction in emissions and no penalty. Maine stopped exporting power to the rest of New England and is now an electricity importer. Massachusetts went from importing 18% of its power to 57%, Delaware from 29% to 53%, and MD from 23% to 35% thus simply passing the buck on emissions.

New Hampshire and New York made considerable progress similar to the Non-RGGI states by switching from high emitting coal to low emitting natural gas, but the switch was primarily because of the rapidly falling price of natural gas, not because of RGGI.

An updated chart below shows how emissions have fallen in the two sets of states with a steeper slope for the non-RGGI states. Both sets of states dropped carbon dioxide emission rates by about 0.2 tons/Megawatt-hour. Not shown on the chart is an extra 13.6 million tons of RGGI state emissions exported to other states as electricity imports grew by 10 percentage points, and by exporting 5.7 million tons as energy intensive business and jobs left the RGGI states.



The expenditures of RGGI funds didn't seem to do much good. Non-RGGI comparison states actually added more wind and solar generation than RGGI states adding 5.5 percentage points to generation compared to 2.3 percentage points in the RGGI states. Investing the RGGI revenue in energy efficiency projects suggests RGGI states should be improving energy efficiency faster than other states. Based on gains in overall energy intensity of 11.5 % in Non-RGGI states compared to 9.6% in RGGI states this claim appears to be false. An explanation for this disparity may be that the funds are not going to energy efficiency, or that the energy efficiency projects may not be working well. RGGI contributes to the Low



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Income Heating Assistance Program, but added less than 4 percent to the program and so had a minimal impact (\$30 million annual RGGI contribution/\$795 million federal contribution).

Poor TCI assumptions mean missed emission reduction targets

TCI documents target a 6%, or 15 million ton per year emission savings by 2032 from an expected 2022 forecast² level of 253 million tons for twelve states and the District of Columbia. An emission allowance budget is established for each state. In the appendix of the September, 2020 TCI webinar a study by ICF International indicates only 11.8 million tons will be saved and that is partially offset by increased emission of 3.7 million tons from increased electric generation to power an increased number of electric vehicles. So, TCI documents admit the actual emissions savings may only be 8 million tons per year, or 3%.

TCI is partially counting on higher prices to discourage driving, but travel necessity makes fuel use very inelastic. A study by the U.S. Energy Information Agency³ found motor fuel prices would need to increase 25 to 50 percent to reduce driving by 1 percent, or to about \$3.72/gallon in today's dollars. The Model Rule forecasts a maximum price of 27 cent/per gallon which might only reduce emissions by about 0.2%, or 0.5 million tons.

Another TCI assumption is a planned \$4,000 subsidy per electric vehicle against a premium purchase price of \$12,000 will stimulate sales by 10 million vehicles by 2032 using up 80% of the expected allowance auction revenue. Yet a more generous federal subsidy of \$7,500 per vehicle has only stimulated sales of about 300,000 vehicles a year, or 3 million over ten years, for a CO₂ reduction of about 2 to 5 million tons a year by 2032.

Considering the low impact of higher fuel prices on the miles people drive, and likely lower electric vehicle sales than forecasted, direct emission savings from TCI might only be about 2.5 to 5.5 million tons per year, a fraction of the 15 million ton forecast.

The big TCI forecast savings, 51 million tons, is supposed to come from federal programs for higher mile per gallon standards, and alternative fuels. The US Energy Information Agency released its 2021 Annual Energy Outlook⁴ and only expects a 4% reduction in petroleum based transportation emissions between 2022 and 2032 equaling only a 10 million ton reduction in the TCI region by 2032.

In addition, transportation emissions in the TCI region in 2018 were 347 million tons⁵ so reaching the 2022 target of 253 million tons would require a 27% reduction, or 94 million tons. Between 2012 and 2018 emissions actually increased 9.5% as miles per gallon improvement was eclipsed by more miles traveled, and more vehicles on the road. It is unlikely the TCI region will meet the starting goal of 253 million tons by 2022.

Considering a higher emission starting point in 2022, and a slower contribution to emission reductions from federal programs by 2032, it is easy to imagine the expected 51 million ton 2032 TCI target is a pipe dream. It is actually possible there will be zero emissions reductions by 2032 even if all the regional target jurisdictions adopt TCI. Yet allowances allowing fuel delivery will be reduced assuming the 66 million ton reduction TCI forecast leading to massive shortages of motor fuel.



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Cost implications

The Model Rule establishes target emission allowance prices where allowances will be added or removed from the auction to control the auction price. That is hardly a true auction. TCI forecasts an average price that would add 11 cents to a gallon of gasoline in 2022 rising to 27 cents by 2032, with a worst case estimate rising as high as 41 cents. That will cost a typical household \$2,000 over the next decade, or about \$187 a year. The worst case scenario could cost households \$414 in 2032, and total \$4,550 by 2032. Low income rural families will be hurt the most, and the Model Rule offers no relief for those families. The average cost per reduced ton of CO₂ of \$589. To put that in perspective RGGI spent about \$79/ton of reduced CO₂ over the last decade.

The Model Rule fails to satisfactorily deal with equity for low income people

TCI claims 35% of funds will be spent on equity for low income communities, but the Model Rule is short on specifics. Urban areas rely on public transportation. Subways and trains already run on electricity. Much of nation's bus fleet has already been transitioned from diesel to lower emitting natural gas and propane. Replacing buses with electric versions that cost two to three times as much provides little additional value. Plans to add walking and biking trails in urban areas will likely find recreational use, but are unlikely to reduce commuting travel, especially in cold, wet weather.

Adding to the injustice much of the money will be used for subsidies for electric vehicles often bought by wealthy individuals for access to High Occupancy Vehicle lanes as a single occupant. The national Renewable Energy Laboratory⁶ estimates 86% of EVs are bought by people making over \$60,000 a year. TCI money will also be given as subsidies for public and private electric vehicle charging stations so those wealthy families can recharge their vehicles anywhere. Since over 80% of charging occurs overnight at home utilities are offering lower electric rates after 8 PM saving these wealthier families even more money.

Other potential benefits are uncertain. Improving air quality would certainly have been worth-while in years past. However, air quality monitoring stations in most of the northeast are very close to meeting the National Ambient Air Quality Standard for ozone, and there is only one station near Pittsburgh not meeting the standard for fine particles. Adding money to the federal Weatherization Assistance Program often doesn't help because it has limitations. Delaware can't qualify enough homes to spend all the money. One of the biggest issues is old heating systems and the program doesn't cover replacement. Many people live in rental units. If improvements get made the rent can go up. Roof leaks and bad wiring aren't covered and disqualify homes for WAP. Getting project permits in some places is just so difficult no one wants to work in the jurisdiction.

These issues are part of the reason the Sierra Club has withdrawn support from TCI. Organizations representing the poorest among us have woken to how the tax revenue will take from the poor and give to the rich and are withdrawing support for TCI⁷.

Other Model Rule problems

The Rule contains a plan for using carbon dioxide offsets to create allowances by "destroying" methane released from landfills, and from farmed animal manure, and through carbon dioxide sequestration



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in expanding the number of forest trees. The ideas sound reasonable until you read the details on what is actually allowed and how the emission reduction will be measured.

For example, there is no definition of what “destroy” means. Is that adding it to a natural gas streams, flaring, or some chemical reaction? Secondly it only counts if the capture system is an anaerobic digester. Anaerobic digesters are being widely used to capture methane from animal slaughter waste, but not from manure which can be used raw or processed for fertilizer. There is a further limitation that, “The offset project is located in a jurisdiction that has a market penetration rate for anaerobic digester projects of 5% or less”. It sounds like getting through the eye of needle on this is just not worth it.

There are similar restrictions for reforestation, and landfill gas demonstrating poor understanding of how these operations work in the real world. In the end the key strike against such programs is similar programs were included in the original RGGI Model Rule and worked so poorly they were ended. The offset programs should be stricken from the TCI Model Rule.

If a distributor fails to deliver enough allowance credits they must fulfil the shortfall with three allowances for each one missed plus pay an undisclosed fine. The penalty is excessive. There are bound to be cross border suppliers caught up in this complicated process that bring up potential legal issues revolving around Interstate Commerce.

Conclusion

TCI will likely fail to significantly reduce carbon dioxide emissions from motor fuels, but will raise fuel prices hurting the poor the most, while leaving states short of highway trust funds, and out of the loop in controlling taxes. Worst case the plan may result in fuel shortages leading to long lines at the pump. President Biden’s proposed infrastructure bill duplicates the TCI plan on a national scale that would not create a regressive tax on the poor, and would not leave the states considering the TCI plan with a competitive disadvantage.

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