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Transportation and Climate Initiative Program (TCI-P) Summary

On December 21, 2020, Massachusetts, Connecticut, Rhode Island and the District of Columbia signed a Memorandum of Understanding (MOU) to launch the multi-state Transportation and Climate Initiative Program (TCI-P). In parallel to the signing of this MOU, eight other Northeast, Mid-Atlantic and Southeast states issued a statement signaling their support to continue to work with the MOU signatory jurisdictions on the development of the program in addition to pursuing state specific initiatives to reduce emissions within the transportation sector.¹

Notably, the Transportation and Climate Initiative estimate that the implementation of the program in those four jurisdictions alone could:

- Reduce pollution from on-road gasoline and diesel vehicles in the region by 26% from 2022-2032
- Generate \$3.2 billion in proceeds by 2032, with one billion directed towards underserved and overburdened communities
- Result in up to \$200 million in health benefits and \$60 million in safety benefits

The signatory jurisdictions note that they will work together to encourage other jurisdictions to participate in the program with the goal of expanding the impact of the TCI-P.²³ To increase the impact of the program, the TCI-P and the Model Rule will be developed to facilitate potential future linking to other emissions reduction programs (e.g., the Regional Greenhouse Gas Emissions Initiative). The following sections outline key components of the TCI-P design and implementation.

Program Design and Implementation

The program will require large gasoline and diesel fuel suppliers to purchase “allowances” for the pollution caused by the combustion of fuels they sell in participating jurisdictions.⁴ Beginning in 2023, a CO₂ emissions-based cap will be developed which will equal the total of the TCI-P participating jurisdictions’ 2023 CO₂ transportation emissions budget. The cap will decline 30 percent by 2032, decreasing evenly year over year.

- ¹ Delaware, New York, North Carolina, Pennsylvania, Vermont, and Virginia issued the statement of support for the TCI-P. Notably, New Hampshire and Maine declined to sign either the statement of support or the MOU.
- ² If other jurisdiction choose to join the program, they must establish their CO₂ budgets based on a methodology agreed upon by the Signatory Jurisdictions.
- ³ The Transportation and Climate Initiative note that if all of the jurisdictions that have contributed to the development of the program eventually implement TCI-P, the program would generate \$2 billion or more in proceeds annually, with up to \$700 million committed to underserved and overburdened communities, and would result in the reduction of five million metric tons of CO₂ by 2032.
- ⁴ State fuel suppliers will be required to obtain allowances to cover CO₂ emissions from the combustion of the affected fuel and to report emissions. The owners of the affected fuel at fuel terminals will be the primary regulated entity and may cover up to 3.3 percent of its reported emissions with offset allowances in each compliance period.

Each compliance period will last for three years and will: 1) allow unlimited banking of CO₂ allowances for use in future compliance periods; and 2) provide compliance alternatives including a limited use of offsets.⁵ Participating jurisdictions are required to annually review and report on the impacts of their program and will assess the equity impacts of the program to ensure that the policies and investments benefit communities overburdened by air pollution. Each report will include how proceeds are spent including what projects and programs were supported by the TCI-P and what levels of investment were received by each. After the initial compliance period, and regularly thereafter, participating jurisdictions will undergo a comprehensive review of the TCI-P and will consider additional reductions on or before 2032. Table 1 includes the TCI-P participating jurisdictions emissions budgets as of the signing of the MOU.

Table 1: 2023 Base Annual CO₂ Emissions Budgets

State	CO ₂ Emissions Budgets
Connecticut	13,497,957 metric tons
District of Columbia	877,715 metric tons
Massachusetts	24,467,216 metric tons
Rhode Island	3,291,658 metric tons

Emissions Budgets and Modelling

The TCI-P emissions cap differs from the previously modeled emissions caps released in December 2019 and September 2020 in the following ways— the cap: 1) begins in 2023 instead of 2022; 2) starts at a lower emissions level than recent historical emissions due to the COVID-19 pandemic⁶; and 3) has a more ambitious decline than the December 2019 emissions cap, declining 30 percent instead of at most 25 percent by 2032. The updated Reference Case projects CO₂ emissions from on-road transportation fuels will decrease by approximately 24 percent by 2032 compared to emissions in 2022 due primarily to improving vehicle efficiency and greenhouse gas emissions standards. Specifically, the Reference Case anticipates the implementation of more ambitious federal policies as well as the assumption that participating jurisdictions will implement additional complementary policies to the TCI-P, including but not limited to:

- continuous improvements in federal vehicle emission standards through 2025 and beyond
- electric vehicle purchase incentives
- jurisdictions achieving sales targets outlined in the Multi-State Medium- and Heavy-Duty Zero Emission Vehicle MOU

These assumptions result in lower projected emissions compared to the previously released TCI modeling. In September, the TCI jurisdictions conducted modeling to better understand how the COVID-19 pandemic could affect emissions in the first few years of the program. Table 2 displays the three COVID scenarios modeled. The modelling results suggest emissions could increase to higher levels during the first year of the program than initially projected in the 2019 Reference Case, especially as the economy recovers. This estimated short-term increase in emissions led to the change in the starting cap levels for the program in 2023 though the analysis notes that oil prices and other factors are likely to have a larger longer-term impact on emissions.

⁵ A reporting period will be held in 2022 prior to the launch of the first compliance period.

⁶ The cap is based on the modeled emissions under the COVID Low 1 Scenario displayed in Table 2 and begins at 267.6 million metric tons (MMT).

Table 2: COVID Sensitivities

Impact	COVID High	COVID Low 1	COVID Low 2
Macroeconomic	Recession	Recession	Recession
Oil Prices	AEO 2018 Oil Prices	AEO 2018 Oil Prices	TCI Reference Oil Price
Personal LDV VMY	High	Low	Low

The modelling produced on behalf of the Transportation and Climate Initiative evaluated a wide variety of factors to determine the containment reserve amounts described in Table 6. The analysis found that if regulated entities in the petroleum industry chose to pass the full cost of allowances on to consumers, gas prices in 2023 would be \$0.05 per gallon higher than they would be otherwise. Additionally, if demand for CO₂ allowances is higher than expected, the cost containment reserve would help ensure that gas prices would not exceed \$0.09 per gallon in 2023. While these estimates represent the upper bound of gasoline and diesel prices, the modelling analysis notes that complementary policies implemented by the participating jurisdictions would further reduce emissions and are expected to moderate TCI-P costs. Table 3 displays an estimate of potential state proceeds if each state within the TCI region chose to implement the program in 2023.⁷

Table 3: 2023 Projected Carbon Market Proceed Examples

	30% Cap
New York	\$339 million
Pennsylvania	\$315 million
North Carolina	\$283 million
Virginia	\$251 million
New Jersey	\$236 million
Maryland	\$155 million
Massachusetts*	\$153 million
Connecticut*	\$84 million
Maine	\$47 million
New Hampshire	\$39 million
Rhode Island*	\$21 million
Delaware	\$27 million
Vermont	\$19 million
DC*	\$5 million
TOTAL/REGIONAL	\$1.97 billion

Source: MJ Bradley & Associates

*Participating jurisdictions

⁷ Modelling assumes that each state implements the 30% cap reduction policy (“TCI-P policy case”) and utilizes investment portfolio B, the illustrative portfolio used as the basis for the economic and health benefit analysis conducted on behalf of TCI. For more information on potential carbon market proceeds from the TCI-P, see M.J. Bradley & Associates Transportation and Climate Initiative Carbon Market Proceeds Estimator at <https://mjbradley.com/content/tci-carbon-market-proceeds-estimator-0>.

The modelling listed in Tables 4 and 5 represent modeling results derived from several different models and reflect the potential benefits of the TCI-P. Importantly, the modeling represents the collective benefits if all 13 jurisdictions in the TCI region chose to participate, scaled to the benefits of the current participating jurisdictions. The analysis notes that the benefits for the TCI-P program would increase if additional jurisdictions joined the program and highlight that the modeled results are subject to change as each participating jurisdiction will choose how to invest their program proceeds based on a variety of factors leading to various emissions reduction outcomes. The analysis incorporates the following models:

- National Energy Modeling System (NEMS): The analysis uses a modified version of NEMS that focuses on the TCI region (“TCI NEMS”) to better understand trends in both the transportation and electricity sectors with and without investing in the cap-and-invest program. Notably the growth in the freight truck VMT was adjusted upwards slightly in all regions in order to better match the VMT projected by the jurisdictions. Additionally, the updated modeling accounted for emissions associated with all gasoline consumption, regardless of end-user and also included an improved estimate of highway diesel consumption.
- Regional Economic Models, Inc. (REMI): The analysis uses the REMI model to project macroeconomic impacts including changes in economic growth, income, and employment.
- Transportation, Equity, Climate and Health (TRECH) Project: The TRECH Model utilizes outputs from TCI modeling completed in 2019 to estimate the potential changes in health outcomes from active mobility and air quality. These preliminary results were published in October 2020.

Notably, the results displayed below do not include the commitment by participating jurisdictions to dedicate at least 35 percent of the auction proceeds to projects and programs that directly benefit overburdened and underserved communities.

Table 4: Scaled Economic Benefits for CT, DC, MA & RI

Benefits	Year 2032	Year 2040	Average Annual (2023-2040)
Gross Domestic Product (GDP)			
Increase in GDP (Billions of 2017\$)	0.092	0.2	0.097
% Increase from Reference Case	0.01	0.02	0.01
GDP at Projected Reference Case Level (Billions of 2017\$)	1,005	1,142	1,001
Disposable Income (DPI)			
Increase in DPI (Billions of 2017\$)	0.069	0.190	0.075
% Increase from Reference Case	.01	.01	.01
DPI at projected Reference Case Level (Billions of 2017\$)	1,127	1,1582	1,168
Employment			
Increase in Employment (job-years)	411	987	434
% Increase from Reference Case	.01	.01	.01
Reference Case Level	7,892,572	8,058,771	7,900,727

Table 5: Scaled Health and Safety Benefits for CT, DC, MA & RI

Benefits	Year 2032
Avoided deaths from increased physical activity (TRECH)	15.7 (10.8-20.7)
Avoided deaths from improved air quality (TRECH)	8
Avoided deaths from improved safety (Investment Strategy Tool)	6
Avoided injuries from improved safety (Investment Strategy Tool)	85
Total monetized health and safety benefits (2017\$)	\$264 million

*Estimated health benefits from the TRECH project are preliminary and subject to change ⁸

Stability Mechanisms

The model rule includes a cost containment reserve (CCR), an emissions containment reserve (ECR), and a minimum auction reserve price floor. Both the CCR and ECR will consist of a quantity of allowances totaling approximately 10 percent of the annual base budget each, described in Table 6. The CCR allowances will only be sold if emissions reduction costs are higher than projected and will be replenished each year. Similarly, the ECR allowances will only be withheld if the demand for allowances results in an auction price that is less than the ECR trigger price.

Table 6: Cost and Emissions Containment Reserves (dollars per metric ton)

Allowances	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
CCR Trigger	\$12.00	\$13.43	\$15.02	\$16.81	\$18.80	\$21.04	\$23.54	\$26.34	\$28.19	30.16
ECR Trigger	\$6.50	\$6.98	\$7.51	\$8.07	\$8.66	\$9.29	\$9.97	\$10.68	\$11.47	\$12.30

Addressing Equity

Each participating jurisdiction will generate CO₂ allowances and will have the option to either auction, set aside, or retire each allowance. At least 35 percent of each jurisdictions’ proceeds will be set aside to ensure that “overburdened and underserved communities benefit equitably from clean transportation projects and programs.” Each jurisdiction must establish and support an Equity Advisory Body⁹ that will: 1) develop criteria for defining overburdened and underserved communities; 2) provide recommendations for equitable investments of program proceeds and complementary policies that achieve desired benefits for overburdened and underserved communities; and 3) develop metrics for evaluating how investments of program proceeds provide direct and meaningful benefits for overburdened and underserved communities. Additionally, all jurisdictions agreed to consider a range of complementary policies to further increase emissions reductions with a focus on emissions reductions in overburdened and underserved communities.

⁸ The TRECH study did not consider scenarios for partial TCI-P participation and also did not consider a scenario in which some jurisdictions implement the TCI-P at different times. Because of these discrepancies, the modeling summary notes that more information would be needed in order to make a more accurate estimate of the air-quality and health related benefits.

⁹ Each Equity Advisory Body must be composed of a diverse stakeholder group, with the majority of representatives from overburdened and underserved communities.

Implementation and Reporting

To support the development and implementation of the program, the signatory jurisdictions will establish an administrative organization that is comprised of two representatives from each jurisdiction that will provide administrative and technical support for the implementation of the TCI-P.¹⁰ The administrative organization is required to carry out the following functions:

- create an administrative forum amongst participating jurisdictions
- administer auctions
- monitor emissions allowances and fuel markets
- implement a shared tracking, reporting, auction, and banking system in addition to other administrative functions needed to assist and support the implementation of the TCI-P

Participating jurisdictions will establish a shared electronic emissions reporting system informed by existing reporting requirements. Compliance obligations will be calculated based on the CO₂ emissions reported by the State Fuel Suppliers. Participants will annually review and report on program impacts including equity components. Allowances that originated in other TCI-P participating jurisdictions will be accepted for compliance subject to additional laws and regulations defined by the state or jurisdiction implementing the Model Rule. Participating jurisdictions can offer all allowances for sale at auction or can choose to set aside or retire allowances to increase the stringency of the program. All participating jurisdictions are required to establish a minimum reserve price below which allowances will not be sold.

Complementary Policies

The MOU and supplemental programmatic documents released in December 2020 noted that additional complementary programs will be required to achieve long-term reductions in pollution from the transportation sector (e.g., regulations in areas such as fuel and vehicle emissions standards, utility investments, building standards, and land use policy). Participating jurisdictions will work with communities to assess the impacts of their programs including by monitoring air quality in communities overburdened by air pollution to ensure that policies and investments are effectively implemented. Additionally, participating jurisdictions will also prioritize investments in multi-modal public and commercial transportation infrastructure including bike and pedestrian infrastructure, and incentive programs and projects to promote clean transportation and travel demand management, including teleworking opportunities.

Next Steps

The reporting period for the TCI-P may begin as early as January 1, 2022 with the first compliance period of the TCI-P beginning as early as January 1, 2023 or when at least three jurisdictions are ready to implement their individual programs.

¹⁰ Only the participating jurisdiction is allowed to enact and implement a program. The administrative organization cannot adopt, implement, or enforce the TCI-P or any participating jurisdiction's individual program.

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