



AMERICAN CONCRETE PAVEMENT ASSOCIATION NEWYORK STATE CHAPTER

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Draft Scoping Plan Comments
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Thank you for the opportunity to comment on the *New York State Climate Action Council Draft Scoping Plan* (the Plan). The American Concrete Pavement Association – New York State Chapter (ACPA-NYS) supports the Plan’s goals to:

- Reduce greenhouse gas (GHG) emissions and global warming potential (GWP).
- Provide a more resilient infrastructure.
- Better achieve climate justice.
- Maintain, or enhance, New York State’s economic competitiveness.

In fact, these goals are consistent with the cement and concrete industries commitment to sustainability and resiliency. Concrete pavement will help New York State meet the Plan’s goals in ways that asphalt cannot.

The Plan’s *Sector Strategies, Chapter 11. Transportation*, (Chapter 11) correctly emphasizes the need to transition from gasoline and diesel-powered vehicles to zero emission vehicles (ZEVs) powered by electricity, hydrogen fuel cells, or biomass. According to the United States Environmental Protection Agency’s *2021 United States Greenhouse Gas Inventory*, fossil fuel combustion for transportation is the largest contributor (28%) of all GHG emissions in the United States. There is no way to sufficiently reduce GHG emissions to combat climate change without a significant reduction in, or elimination of, burning fossil fuels for transportation. Essentially all fossil fuels burned for transportation are petroleum products: gasoline, diesel, and kerosene.

If the petroleum-to-ZEV transition is successful, it is likely that petroleum extraction will significantly decline or perhaps cease. Therefore, transportation professionals at the federal, state, and local levels must consider and prepare for a future without asphalt, a petroleum product. As we transition away from petroleum-based transportation fuels, there must be a simultaneous transition away from petroleum-based pavements.

New York roadway owner-agencies, for various reasons, have developed an over-reliance on asphalt. To maintain economic competitiveness and minimize potential economic shock, the transition from asphalt pavements must be gradual and well-conceived. If we act now, this transition can be seamless. But the longer we delay, the more abrupt the transition will become and the greater the likelihood of economic disruption.

ACPA-NYS suggests that Chapter 11 recommend a small, but growing, concrete pavement program for New York's infrastructure. Furthermore, owner-agencies need to continuously scan the horizon for future paving material developments that will help transition us from petroleum-based asphalt. In the interim, concrete pavement, which has a long, successful history of use in New York is the material of choice.

In addition to being consistent with the Plan's public positions, transitioning from asphalt to concrete pavement will provide numerous social, environmental, and economic benefits:

1. According to Yale University, [asphalt is a significant source of air pollution](#) in urban areas, especially on hot and sunny days. The mere existence of asphalt results in the formation of compounds that contribute to PM_{2.5} which affects public health. As the Plan suggest, these co-pollutants must be reduced in disadvantaged communities whose residents are more likely to have health-related issues such as heart disease, high-blood pressure, asthma, and diabetes.
2. City residents are [further stressed](#) by the heat retained in asphalt, the dark surface of which can approach 150° F on hot, sunny days. Concrete pavement, with a [higher albedo](#), reflects sunlight which creates a cooler environment, lessens global warming, and provides environmental, social, and economic benefits that contribute to healthier communities.
3. Concrete's higher albedo also means that less lighting is required to illuminate areas around concrete sidewalks, parking lots, tarmacs, and streets. This improves visibility, enhances safety, decreases energy consumption, conserves resources, and lowers emissions and utility bills.
4. A new concrete pavement [requires 80 – 85% less diesel fuel](#) to construct than a new asphalt pavement of equal thickness. This means less fuel and emissions.
5. Trucks realize 3 – 7% [better fuel efficiency](#) on concrete pavements than asphalt pavements in hot weather. Asphalt becomes softer with heat which increases the rolling resistance of the pavement and decreases vehicle fuel efficiency. Along with better fuel efficiency comes a reduction in emissions. No matter the fuel source, less resistance to rolling will result in fuel savings.
6. A properly designed and constructed concrete pavement will have fewer maintenance and rehabilitation treatments over its lifetime than a properly designed and constructed asphalt pavement. Repeated asphalt resurfacings increase fuel use, resource use, emissions, traffic delays, and [exposures](#) to anyone nearby. More maintenance and rehabilitation operations also mean greater safety risks to highway workers and drivers.

7. Properly designed and constructed concrete pavements last longer than properly designed and constructed asphalt pavements. Concrete pavements typically have a lower life cycle cost than asphalt pavements. Concrete's life cycle cost advantage will likely become more pronounced as we transition away from petroleum-based fuels.
8. Concrete pavement is a "carbon dioxide sink." Through a process called carbonation, it absorbs carbon dioxide from the atmosphere. An amount between 5 – 20% of the carbon dioxide emitted during its cement manufacture is re-absorbed by a concrete pavement.
9. Concrete and cement are locally sourced products that employ over 4,600 New Yorkers. Cement is not traded in global markets. Our over-reliance on petroleum puts us at physical and economic risk from the actions of oil producing countries with undiversified economies.
10. [Petroleum and asphalt prices are more volatile than cement and concrete prices](#). In fact, Chapter 11 of the Plan says the Council's challenge is compounded by "historically low motor fuel prices and individual consumers preferences for larger, less fuel-efficient vehicles." Seven months after the Plan was drafted, motor fuel prices are near a 50-year high when adjusted for inflation. This volatility hurts New York State's economic competitiveness because too many pavement owner-agencies are so reliant on asphalt that they are unable to adapt projects to changing economic conditions.
11. A two-pavement system will minimize financial risk and enhance economic competitiveness. A [Massachusetts Institute of Technology nationwide analysis](#) found that "if states spent 20% more of their paving materials budget on concrete, unit costs of both asphalt and concrete could fall by 8% and 29%, respectively. As a result, DOTs could purchase 6% more material, enabling them to improve more roads on a fixed budget." That same study found that two-pavement systems resulted in a 12% reduction in road quality induced emissions.
12. The Plan discusses the increase in number and duration of extreme weather events. A resilient infrastructure is essential during these events to evacuate and rescue citizens. After these events, a resilient infrastructure allows the affected areas to recover as quickly as possible. As a rigid system, concrete pavement distributes loads over a much wider area than flexible asphalt pavements. This ability to better distribute loads reduces stresses on the supporting soil layers. As a result, concrete pavements can be used more quickly after inundation and while supporting soils are saturated, unlike flexible pavements that rely more on the strength of those soils. Not only does this enhance New York's economic competitiveness, it may save lives.

According to the United States Environmental Protection Agency's *2021 United States Greenhouse Gas Inventory*, cement production accounts for 0.6% of the United States 2019 GHG emissions. This makes cement and concrete environmental bargains considering how much concrete is used in the United States. Even so, the cement and concrete industries are striving to lower their carbon footprints. The [cement industry has committed to becoming carbon neutral by 2050](#). The concrete pavement industry has taken or supports actions to reduce its carbon footprint:

1. More concrete pavement is produced using Portland-Limestone cement (PLC). By itself, PLC will reduce the carbon footprint of concrete pavement by 8 - 15%. This simple but effective tool is already in use in western New York. It is estimated that PLC use (from all applications) in western New York has already reduced carbon dioxide emissions by over 220 tons.
2. The concrete pavement industry has pioneered the use of performance engineered mixtures (PEMs) which will reduce our carbon footprint by 40% or more when compared to standard NYSDOT paving concrete. PEMs deliver superior durability with slightly increased strength.
3. The concrete paving industry has partnered with academia to develop design protocols to right-size concrete pavement thickness designs to efficiently use resources and cement.
4. The concrete pavement industry supports contracting practices that minimize GHG and GWP through financial incentives to contractors and material producers. The incentives, however, should be based on results achieved as opposed to "buy clean" contracting where discounts are applied to bids based on what a producer claims can be accomplished. The risk is that contracts are awarded without assurance of achievement.

ACPA-NYS's primary concern with Chapter 11 of the Plan is that it is more concerned with what is on the pavements as opposed to what is in the pavements. Chapter 11 tends to focus on changing the behavior and habits of the citizens of New York without exploring the behavior and habits of New York governments. It is inconsistent to maneuver citizens from their petroleum consuming behavior while pavement owner-agencies increase their petroleum consuming behavior.

ACPA-NYS suggests the following specific steps be taken:

1. Owner-agencies should announce and commit to a small but growing concrete paving program across all of New York state. The announcement will cause contractors to invest in equipment and training so concrete paving can properly scale up. Initially, 3% of all paving, by area, should be concrete. In 5 years, the square yards of concrete placed should equal the tons of asphalt placed.

2. Concrete should be the preferred pavement option for all new and reconstructed pavements and airport runways and tarmacs. This includes new alignment, lane additions, truck climbing lanes, intersections, roundabouts, ramps, and rest areas. If any owner-agency removes existing pavement to the unstabilized layers, the new pavement should be concrete.
3. Concrete overlays should be considered for
 - Existing pavement that has reached the end of its service life.
 - Any pavement that realizes less than 10 years of service life from typical thin-applied pavement preservation treatments.
 - Commercial and general aviation airport runways.
4. Concrete pavement should be proactively constructed in flood-prone areas and on evacuation routes where pavement resilience (the ability to efficiently return to use after hazard) is essential.
5. Concrete pavement should be proactively constructed in cities to mitigate the “heat island effect” of global warming.
6. Concrete pavement should be used for all dedicated bus lanes and other facilities that have channeled heavy loads. The superior load carrying capacity of concrete pavement will only become more advantageous as we place heavier electric vehicles in service.
7. Concrete pavement should be used for bike paths and shared use facilities to provide cooler surfaces to users while commuting or exercising.

ACPA-NYS is willing to discuss any or all these comments at your convenience. We look forward to providing resilient, long-lasting pavements that serve New Yorkers for decades on end while incurring the least social, environmental, and economic costs for current and future generations.

Warmly (personally, not globally),



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