# Senator Scott Wiener and Senator Angelique Ashby

## Senate Bill 312 – Low Carbon Asphalt

### SUMMARY

Senate Bill 312 establishes a 5-year pilot program to incentivize Caltrans contractors to pursue warm mix asphalt over hot mix alternatives. The legislation will authorize a payment of $3 per ton of asphalt mixed between 251 and 275 degrees Fahrenheit and $5 per ton of asphalt mixed at or below 250 degrees Fahrenheit.

This incentive will improve access to the myriad benefits of warm mix asphalt, including a more energy efficient production process, lowered carbon emissions, cleaner air, better working conditions for those paving roads, minimized impact on the neighborhoods where asphalt plants are located, and elongated life cycles of roads.

### BACKGROUND

Traditionally, asphalt is mixed at extremely high temperatures, ranging from 300 to 350 degrees Fahrenheit. These high temperatures are used to ensure all ingredients are mixed properly and to provide adequate workability of the material. This asphalt remains extremely hot during transport, placement and compaction. Each of these listed stages, from mixing to compaction, require high energy input to maintain these temperatures, causing increases in carbon and other associated emissions from energy production processes.

Additionally, traditional asphalt results in many other environmental hazards. Particulate matter, largely in the form of dust, is often emitted throughout the production process. Dust levels are highly dependent on working conditions, but can contain hydrocarbons depending on fuel sources used or heavy metals if waste oils are used, and can be exacerbated by the heating process.

Finally, $SO_2$, CO and $NO_X$, harmful pollutants that are a danger to both the environment and public health, are released during the production process. This occurs, in part, due to the usage of fuels to heat the asphalt to sufficient temperatures.

### PROBLEM

We are in the midst of a climate crisis. According to the state's Fourth Climate Change Assessment, average daily temperatures by 2100 are projected to increase between 5.6 and 8.8 degrees Fahrenheit. By the same date, water supply from snowpack is projected to decline by two-thirds and wildfires are expected to burn 77 percent more acreage. Thirty-one to 67 percent of Southern California beaches may completely erode in the next 80 years. California must continue to prioritize this growing crisis and take any action possible to mitigate the greenhouse gas emissions responsible.

In 2020 alone, Caltrans utilized 3,405,088 metric tons of asphalt across 443 construction paving projects. These projects have a significant impact on California residents, via the air pollution generated at mixing plants and during placement and compaction of this asphalt on roads. However, their larger impact is that on climate. Whether through production, transportation, or laying the asphalt, greenhouse gasses are released at every stage of the process. The state has a responsibility to act to reign in the impact of the both emission and GHGs from the millions of tons of asphalt utilized each year.

### SOLUTION

Warm mix asphalt (WMA) is a category of asphalt produced at a lower temperature, generally 30 to 70 degrees Fahrenheit below that of its hot mix

counterpart. This lower temperature remains during transport, placement and compaction. Engineers use several methods to achieve these reductions, including through the addition of a chemical additive to the asphalt mixture.

Due to the decreased need for high temperatures, WMA results in 20-35 percent less fuel consumption, with some estimates as high as 50 percent. These reductions not only result in an immediate reduction of $CO_2$ due to lower fuel consumption, but also result in decreases in other pollutants associated with the process. Depending on the type of warm mix asphalt, reductions can be over 50% of $SO_2$, $NO_X$ and CO.

Additionally, these lower temperatures are a benefit to the communities where asphalt plants are located, and for the workers producing, laying and compacting the asphalt. WMA allows for heat, emissions and odors reduction both at the plant and at the paving site, a major improvement over health risks posed by the traditional warm asphalt process. This is a direct benefit to the disadvantaged communities where these plants are commonly located, and to the workers who are exposed to far less fumes and heat during the production and paving process.

WMA also offers engineering and cost benefits for road pavement. In a 2021 report from Caltrans, the agency noted that warm mix asphalt results in better compaction on the road. This type of compaction can result in easier pavement processes, shortening the time and lowering the cost of labor required by traditional asphalt. This better compaction can also result in longer road life cycles, meaning re-pavement is not required as often.

Savings from WMA also extend to the time of year when paving is possible. Paving is typically done depending on the season and time of day due to the sensitivities around temperature and moisture. WMA is less impacted by these variables, and as such, can be utilized well into winter and during the night. Aside from the general savings that are allowed due to this flexibility, WMA also provides far fewer hindrances to traffic flow, as nighttime paving causes less disruptions.

Warm mix asphalt has been used in nearly every state, with dozens of State Highway Agencies adopting guidance to accommodate warm mix asphalt. The National Asphalt Pavement Association claims over 40% of current asphalt market in the United States is served by WMA. WMA is not a new technology, nor is it untested. Rather, it is one of many technologies California must embrace to help address the growing climate crisis.

**FOR MORE INFORMATION**

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