

CMAQ Webinar for the System Performance/Freight/ CMAQ Performance Measures NPRM

**FHWA Office of Transportation Performance Management
May 3, 2016**

Presented by

Gloria Shepherd
Associate Administrator
Office of Planning, Environment, Realty

Emily Biondi
Office of Natural Environment

Rich Taylor
Office of Operations

Pete Stephanos
Office of Transportation Performance Management

Webinar Recording
<https://connectdot.connectsolutions.com/p8sxq8y02of/>

https://www.fhwa.dot.gov/tpm/rule/pm3_nprm.cfm

Operator: Ladies and gentlemen, thank you for standing by. Welcome to the CMAQ external webinar conference call. At this time, all participants are on a listen only mode. Should you require assistance on today's call, please press star then zero. I would now like to turn the conference over to our host, Ms. Jessica Baas. And please go ahead.

Jessica Baas: Thank you. And good afternoon, everyone, and welcome to the CMAQ webinar for the System Performance Freight and CMAQ Performance Measures NPRM. My name is Jessica Baas. I am with the U.S. DOT's Volpe Center in Cambridge, Massachusetts, and I will be moderating today's webinar as well as facilitating our question and answer session, and helping to troubleshoot any technical issues you may have. Before we begin, I'd like to quickly orient everyone to the web room. On the top left side of your screen, you will find the audio call in information. Please note that that information was just updated a couple minutes ago. We expect that most of you are listening over your speakers, but for the highest audio quality, we recommend that you mute your computer speakers and dial in with your phone. Below that is a list of attendees, including your host and presenters for today. Finally, on the bottom left is a chat box that you can use to submit clarifying questions for our presenters throughout the webinar. In the chat pod, we can only answer clarifying questions about the content of the NPRM. We encourage you to submit any comments you have to the docket. A PDF copy of the slide presentation will be available for download at the end of the webinar. If you have any technical questions during today's webinar, please use the chat box to send a direct chat to me, Jessica Baas. Finally, today's webinar is being recorded. A copy of the recording and the presentation and the chat pod transcript will be posted to the docket after the webinar. And with that, I'd like to turn the webinar over to Pete Stephanos from the FHWA Office of Transportation Performance Management to begin our presentation and discussion. Pete, please go ahead.

Pete Stephanos: Thanks, Jessica, and good morning or good afternoon depending where you're calling in from. Today's webinar provides an overview of the Third National Performance Measure rulemaking that we have just proposed in April. This is a part of a series of webinars that we're presenting to cover the entire NPRM. And so, you can find a full list of the webinars and the recordings from the webinars that we had held, that we will hold on our office website, which is available at www.fhwa.dot.gov/tpm, and we'll actually have that URL reference at the end of the presentation. Today we're going to cover in detail the proposal elements that are the measures to assess traffic congestion and on road mobile source emissions, and those are used to carry out the Congestion Mitigation and Air Quality Improvement Program, which we'll refer to as CMAQ for the remainder of this webinar today. Please note that in our proposed rulemaking we discuss that we received input through stakeholder listening sessions and various letters suggesting that we add a greenhouse gas emissions measure because greenhouse gases are correlated with fuel use and they are toxins. But please note that today's webinar, we are not going to focus on the questions we asked in the proposal about the development of such a measure. However, we do encourage you to comment via the docket on the potential establishment and effectiveness of such a measure, and to address the specific questions we listed in the proposal around a greenhouse gas measure. And you can find those on page 23831 on the proposal posted in the Federal Register Notice. Finally, as a reminder, to let you know that this NPRM does cover all the aspects of performance for the elements we're talking about today that are under MAP-21, and as well as the FAST Act. So it is MAP-21

and FAST Act compliant. And as Jessica noted, please put your questions in the chat pod and that we will have recordings available on our website for this webinar as well as the other webinars. Before we get started, I'm pleased to introduce you to Gloria Shepherd, our Associate Administrator for the Office of Planning Environment and Realty. She's here with us today to give us some opening remarks. Gloria.

Gloria Shepherd: Thank you, Pete. I'm very pleased to introduce the Congestion Mitigation Air Quality specific webinar for System Preservation, Freight Movement and CMAQ Program NPRM. This webinar provides an in-depth review of the two proposed measures to access the CMAQ program, traffic congestion and on road mobile source emissions. FHWA staff, specifically in my office, the Office of Planning Environment Realty, have worked very hard on this. Along with Peter and the people we work with, I want to recognize Emily Biondi, who's led this effort on our behalf, and Cecilia Ho and John Davies for their technical expertise. Throughout this process, we sought to balance the direction received from Congress with implementation concerns and costs. We expect to hear feedback from stakeholders on whether we have been successful or not. Performance management increases the accountability and transparency of the Federal-aid highway program, and provides for a framework to support improved investment decision making. This NPRM supports the key national transportation goals of congestion reduction, system reliability, freight movement and economic vitality and environmental sustainability. The NPRM proposes requirements for the establishment of targets and reporting of performance in a consistent manner. The measures you will hear about today include annual hours of excessive delay for capital, and total emissions reductions for the traffic congestion and on road mobile sources emissions measures respectively. One final note. This rule is a very large and complex rule. We are recording this webinar in case you miss some of the details. We thank you for your participation in this webinar today, and welcome your comments to the docket. Thank you.

Pete Stephanos: Thanks, Gloria. Now I'll go over what we're going to talk about today. Today's presentation will be covered in six parts as you can see on the slide right now. The first part will illustrate FHWA's approach to implement the performance provisions under MAP-21 and the FAST Act. The second part will focus on key concepts on which the performance measures are based. Part three is going to go over the specific calculations to calculate the measure of proposing for traffic congestion. Part four will go over the specific calculations for the measure of proposing to calculate on road mobile source emissions. Part five will provide an overview of the proposed requirements for target setting and reporting. And finally, we'll wrap up the presentation with the discussion of next steps. We did have covered part one, part two and part five in other webinars, and so today we are giving an overview and we will refer you back to prior webinars for more details. So let's get started with part one, which is an overview of the performance provisions in MAP-21 and the FAST Act and our approach to implementation. Performance management isn't new, and it's not even new to transportation, but it is new for the Federal Highway Program. We hope that the changes that we're presenting you today will maximize the return on investment of the public dollars entrusted to transportation agencies and the planning organizations. This slide provides an overview of where we are with implementation. We are carrying out six rulemakings in total in the Federal Highway Administration to implement the performance requirements in MAP-21 and in the FAST Act. As a quick overview, the final rules for safety performance measures and the Highway Safety Improvement Program were published in March of 2016 and they were effective April 14th, 2016. So those are in place and effective. The final rulemaking for our planning rule is

anticipated soon. And then, our infrastructure proposals, which are for pavement and bridge condition and for asset management, though the comment period has closed for the proposal and we're finalizing the document now and going through the clearing process, and we hope to publish that in the fall. The rule we're talking about today is the performance of the NHS freight movement and the CMAQ measures NPRM. It was published in the Federal Register on April 22nd. It has a comment period of 120 days, which will close on August 20th, 2016. Through this rulemaking and through the three rulemakings that established performance measures, we established a new part 490 in the Code of Federal Regulations for Title 23. When the final rules are completed, they'll have all these subparts that you see, subpart A through subpart H. Today's presentation is going to focus on subparts G and H, subpart G focusing on the CMAQ measure for traffic congestion, H the CMAQ measures for on road mobile source emissions. And then we'll also discuss some elements of subpart A which cover data requirements that are common to all measures, retarget setting and reporting. I'm going to turn it over to Rich Taylor, who's going to give us an overview of the proposed performance measures and concepts. Rich.

Rich Taylor: Thanks, Pete. Good morning and good afternoon, everyone. In this section, we're going to cover the following topics. The two proposed measures, the concepts of the metrics, thresholds, measures and targets, and last, we will discuss the applicability of these measures, including their relationship to the CMAQ program. All right. So just to get you on board here, FHWA is required under section 23 of the U.S. United States Code section 150(c) to establish performance measures for state DOTs to use to assess the Congestion Mitigation and Air Quality Improvement program or CMAQ program. The first measure is to assess traffic congestion. FHWA proposes in subpart G an excessive delay measure for state DOTs and MPOs to use. The proposed measure is annual hours of excessive delay per capita. The second measure is to assess on road mobile source emissions. FHWA proposes in subpart H a measure for state DOTs and MPOs to use to estimate the reduction of the applicable criteria pollutants and applicable precursors under the CMAQ program. The measure is total emission reductions, which is the two year and four year cumulative estimate emission reductions for all projects funded by CMAQ funds. For each criteria pollutant and applicable precursor for which the area is designated non-attainment or maintenance. The traffic congestion measure applies to urbanized areas over one million that are in all or part designated as non-attainment or maintenance areas for ozone, carbon monoxide or particulate matter. And that includes PM2.5 and PM10. The on road mobile source emissions measure applies to all non-attainment or maintenance areas for those same criteria pollutants and precursors. All right. Before we review the measures in more depth, we want to give you-- review a few key terms. If you heard our other webinars, these will be familiar to you. So the measures in subparts E, F and G are comprised of a metric, a threshold by which the metric is measured, and the ultimate measure. So a metric is a quantifiable indicator of performance or condition as defined by FHWA and is applied to each travel time segment. Using a freight movement example, a metric would be average truck speed, you can see in the lower left corner of the slide. Now a threshold is the level at which the performance of a reporting segment is included in the measure or not. In this example, a threshold of 50 miles per hour is applied to each road segment, so that when average truck speed is above this threshold for a given segment of the interstate highway, that segment is considered uncongested. FHWA is requesting comment on the thresholds used in each metric calculation. And finally, a measure is an expression based on a metric that is used to establish targets and to assess progress towards chief-- excuse me-- and to assess progress towards achieving the established targets. In this example, the

measure would be the percent of the interstate system mileage uncongested. By dividing the total number of uncongested miles, which is 2510 in this example, by the total 3000 system miles, the measure is calculated as 83.7 percent uncongested miles. The metric and threshold are applied to each individual travel time segment, while the measure applies to the entire applicable network. We'll go into more detail when we discuss the calculations of the traffic congestion measure. So the state DOTs and MPOs would use this information in establishing their targets and evaluating if the targets have been achieved. All right. So we're going to go ahead and move on to measures versus targets. So a target is a quantifiable level of performance or condition expressed as a value for the measure to be achieved within a time period required by Federal Highways. So in this example, the state DOT or MPO has established its targets as 80 percent of the road miles defined as uncongested. And as we found on the previous slide, 83 percent of the road network is uncongested. The state DOT or MPO achieved its target. Unlike metrics, thresholds or measures, which are defined by Federal Highways, targets are established by state DOTs and MPOs. FHWA would require state DOTs and MPOs to work together to establish targets that would support a national transportation goals while improving investment decision making processes. All right. So these next few slides are going to talk about the geographic areas that are used by each of the proposed measures under the CMAQ program here. So there are going to be four primary geographic areas that determine where targets for the CMAQ measures would apply. And these are state boundaries, MPOs metropolitan planning areas, urbanized areas with populations over one million, and non-attainment-- excuse me-- non-attainment or maintenance areas for certain criteria pollutants. So FHWA is proposing that state DOTs and MPOs establish targets that represent performance outcomes of the entire transportation network or area required for the proposed measures regardless of ownership, including NHS bridges that cross a state border. This map shows Illinois in green and two MPOs in Illinois in blue. Please note that Illinois has additional MPOs, but this example is focusing only on these two MPOs. The MPO in the northeast, which is in the Chicago region, is completely within the state. And the MPO on the south, which is in the St. Louis region, is a two state MPO that crosses into Missouri. The interstate system is highlighted in dark blue on these maps, and the remaining NHS is in gray. So in the following slides, we'll zoom in on Illinois to see how state DOTs and MPOs establish targets in the Chicago and St. Louis areas based on the extent of the interstate system, the non-interstate NHS, urbanized areas with populations over one million, and non-attainment and maintenance areas. So St. Louis would have to establish applicable targets for their entire metropolitan planning area regardless of state boundaries, while individual state DOTs would establish targets for only the area within their state boundaries. So areas with multi-state MPOs like the St. Louis area would require additional coordination between the multiple state DOTs and the MPOs in establishing targets that are consistent and reasonable for each entity. MPO targets would cover the entire metropolitan planning area, while each state DOT would adopt targets for the area within their state boundary. This map shows how the St. Louis area MPO crosses the Illinois-Missouri state boundary. In this example case, the MPO in St. Louis would establish a target for its entire metropolitan planning area, which crosses into both states. Illinois would adopt a statewide target that takes into account only the Illinois portion of St. Louis's metropolitan planning area, and Missouri would adopt a target, taking into account the Missouri portion. And I think FHWA recognizes the challenges in coordinating targets between state DOTs and MPOs, especially in cases where urbanized and metropolitan planning areas cross multiple state boundaries. FHWA intends for state DOTs and the MPOs to collectively consider boundary differences when establishing both state DOT and MPO targets. So the traffic congestion measure in subpart G involves establishing single targets within

the boundaries for urbanized areas with populations over one million if those urban areas include in whole or in part an applicable non-attainment or maintenance area. So the yellow portions on this map illustrate the full extent of the urbanized areas in St. Louis and Chicago, and display how large urbanized areas cross state boundaries. The FHWA recognizes that for these large urbanized areas, performance is not constrained by political boundaries, and that performance should be addressed regionally. Strategies taken in one political jurisdiction can have direct and indirect impacts when measuring performance in another approximate political jurisdiction. FHWA felt that this approach would increase the potential for coordination across jurisdictions to manage the overall performance of the region. FHWA chose to limit the measure to urbanized areas with populations over 1 million as agencies in these large urbanized areas typically have more capability and experience. Coordination on this measure is particularly important, since state DOTs and MPOs would establish and identically report a single unified target for each applicable urbanized area. All right. So let's take a little closer look at the Chicago region to discuss the geographic applicability of the traffic congestion measure. The proposed measure would be applicable to those portions of the NHS in urbanized areas with populations over one million that are in all or part designated as non-attainment or maintenance areas for ozone, carbon monoxide, PM2.5 or a PM10. Here he has that designated as non-attainment or maintenance for one or more of the applicable and national ambient air quality standards. Pollutants are shown on the map as the overlay, and the urbanized area over one million is again in yellow. In this example, Illinois, Indiana and the two Chicago area MPOs would all need to coordinate and agree on a single, unified target for the traffic condition measure for the full extent of the NHS within the Chicago urbanized area. MPOs in these areas are expected to be the same MPOs that are required to report on this measure as part of the CMAQ performance plan requirements. State DOTs and MPOs would report on each urbanized area and would not report cumulative delay. Of course, some urbanized areas with populations over one million do not intersect with non-attainment or maintenance areas for the criteria pollutants. State DOTs and MPOs would not establish targets for these urbanized areas for the traffic congestion measure. All right. So for the on road mobile source emissions measure in subpart H, it is applicable to all projects funded through the CMAQ program as apportioned to state DOTs for the use within non-attainment or maintenance areas for ozone, carbon monoxide and particulate matters. As proposed under this NPRM, the state DOTs would establish statewide targets for the on road mobile source emissions measure for all attainment and up to date for all non-attainment and maintenance areas for each of the applicable criterion pollutants and precursors. The NPO would establish targets for each of the applicable criteria pollutants and precursors for which it is in non-attainment or maintenance within its metropolitan planning area boundary. States with applicable areas are highlighted in green in this map. Assuming the same areas are applicable after the final rule is released, the state DOT for each state would establish targets for the on road mobile source emissions measure. MPOs with applicable CMAQ program projects within their metropolitan planning areas would also establish targets for this measure, but are not highlighted on this slide. MPOs without non-attainment and maintenance areas would not need to establish targets for this measure. All right. So before we go into the measures, we want to quickly review the sources of data needed for calculating the performance measures in subparts G and H. The measures in today's presentation draw from the following data sources. The National Performance Management Research Data Set or NPMRDS and the U.S. Census are key data sets for the subpart G traffic congestion measure. The NPMRDS is a data set that includes travel times representative of all vehicles using the highway system. State DOTs may choose to use an equivalent data set if they choose, with the approval from FHWA. The U.S. Census

would be the source of urbanized area populations. The traffic congestion measure is applicable is applicable to urbanized areas over one million in population. The census would be the primary source to determine the size of an urbanized area. At the start of each four year reporting period, state DOTs would be required to submit the boundaries of urbanized areas and their populations based on the latest census to the HPMS. As applicable, state DOTs and MPOs could adjust the census-defined boundaries and submit them for approval by Federal Highways. Once approved by Federal Highways, these boundaries would apply to the subpart G traffic congestion measure. HPMS or the Highway Performance Monitoring System is also the source of the Annual Average Daily Traffic or AADT, which may be used as a starting point for hourly traffic estimates for calculating the traffic congestion measure. The applicability of the CMAQ measures as based on the effective date of the EPA non-attainment and maintenance designations at the time when the baseline performance report is due to FHWA. And lastly, state DOTs and MPOs would use data from the CMAQ Public Access System, which contains data on estimated emissions reductions from projects funded under the CMAQ program. To calculate the subpart H on road mobile source emissions measure. We will review the NPMRDS and the CMAQ Public Access System data in depth as we delve into the applicable measure. All right. So moving ahead, we'll go ahead and move on to the first of the two measures, and that's the traffic congestion measure. In this section, we'll walk through the steps for calculating both the metric and the measure, and we will base our examples on the data types and structure described in the last section. Note that examples are only intended to illustrate how the metric and measure are calculated, and are not represented of actual data or performance. All right. So the proposed traffic congestion measure is again annual hours of excessive delay per capita. State DOTs and MPOs would use metric, threshold and measure information in establishing and evaluating if their targets are met. This proposed measure would be limited to segments of the mainline NHS in urbanized areas over one million in population, because state DOTs and MPOs in these areas are seen as having more capabilities to develop the measure than the agencies in smaller urban or rural areas. Many traffic congestion reduction projects that seek CMAQ funding use a form of a delay measure to show the benefits of traffic reduction as well as emission reductions. This led FHWA to focus on the delay measure for the traffic congestion measure so that existing and future projects would use similar measures for analysis by establishing where and when delay occurs on the NHS facilities. In large urbanized areas where air quality is a concern, state DOTs and MPOs can better plan investments that address excessive delays and thereby reduce emissions. So the metric, again, is total excessive delay for each reporting segment on the NHS in vehicle hours. In this example, we can see the state DOT calculating its total excessive delay for a single half-mile segment of the interstate as 863.025 vehicle hours. The threshold for this measure is the excessive delay travel time at the threshold speed. The threshold speed proposed in this rule is 35 miles per hour for interstates, highways and expressways and 15 miles per hour for principal arterials and all other roads that are part of the NHS. So for the example half-mile segment of the interstate in this example on the slide, the excessive delay travel time at the threshold seat is 51 seconds. This would be the travel time of a vehicle traveling 35 miles per hour across a half-mile distance. The measure, again, is the annual hours of excessive delay per capita. The calculation of the measure would be the sum of all excessive delay for each segment of the NHS within the urbanized area boundary divided by the total population. So in this example, it is 4.3 hours per capita. So we already mentioned the National Performance Management Research Data Set, so we wanted to give you a little bit more information on what it is. The NPMRDS is a travel time data set that is provided by Federal Highways in monthly historic data sets to state DOTs and MPOs for their use in performance

management activities. It includes travel times representative of all traffic using the highway system for each segment of road. The highway network is broken into contiguous travel time segments. The average travel times are derived from all vehicle probes traversing each travel time segment every five minutes throughout every day of the year. The five minute time period is referenced in the proposed rule as a five minute bin. In addition to recording travel times of all traffic, which is a combination of freight and passenger vehicles, the NPMRDS also includes a breakdown of travel times for just freight vehicles. So just to provide a sense of scale, there are over 100,000 five minute bins for each road segment over the course of a year. That's a lot of data. So again, in the NPMRDS, the travel time segments are defined by the TMC, which stands for Traffic Message Channel, code. It's a location referencing system used by the private sector data probe providers. And again, just to remind you that when no probes are detected during a specific five minute bin, no data is included in the NPMRDS. We'll discuss later how to handle times for these bins when calculating the metrics and measures. Now, I did want to highlight that the proposed rule allows for the use of an equivalent data set in place of or in addition to the NPMRDS. State DOTs and applicable MPOs would need to agree to use the same equivalent data set for all applicable travel time segments for the calendar year. The state DOT would need to submit the data set they would like to use and request FHWA's approval by October 1st prior to the beginning of the calendar year in which the data set would be used to calculate metrics. State DOTs and MPOs would not be able to use the data set until FHWA approves it. For full details on the equivalent data set requirements, please refer to the proposed rule. In general, the equivalency requirements follow those of the NPMRDS, with a focus on the data being actual observed travel times and not travel times derived from imputed methods, such as historical travel times or other estimates. All right. Now let's move on for reporting segments. State DOTs in coordination with MPOs should define a single set of reporting segments of the interstate system and non-interstate NHS for use in determining each of the applicable measures within this NPRM. The reporting segments should cover the full extent of the main lines of the interstate system and non-interstate NHS required for reporting a given measure. Now, mainline highways include only the through travel lanes of any highway and specifically exclude ramps, shoulders, turn lanes, cross overs, rest areas and other pavement surfaces that are not part of the roadway normally traveled by through traffic. Separate reporting statements are needed for each direction of travel as well. Now, the travel time segment links as defined in the NPMRDS, which again are based on TMCs or TMC codes, they vary in length based on road features such as interchanges, intersections or other considerations. They can be shorter than one-tenth of a mile in an urban area, and much longer in rural areas. As proposed in this NPRM, state DOTs and MPOs can aggregate travel time segments provided by the NPMRDS into reporting segments, although they do not have to. It is their choice. Reporting segments in urbanized areas would have a maximum length of one-half mile unless an individual travel time segment is longer. The maximum length in rural areas would be ten miles, unless an individual travel time segment is longer. All right. So let's look a little bit at the data requirements. So the traffic congestion measure is reflective of the excessive delays experienced by all users of the NHS in the urbanized area. FHWA has proposed that state DOTs assemble and organize a complete year of travel time data for each reporting segment to calculate the metric. The assembled data would include for each reporting segment in each travel direction average travel times for all traffic to the nearest second for five minute periods of the day or as referred to them in the rule, five minute bins. The information in those five minute bins would be collected for every hour of every day from January 1st through December 31st of the same year. And looking at the example table on the slide, this is showing data for only one road segment, you can see a sample of

travel times from time periods on February 3rd and November 7th, a portion of the travel times covering the entire year. Average travel times are those travel times in seconds for all traffic, in this case, traveling eastbound on this road segment as shown to the column in the right. So, moving on with data requirements, to calculate the metric proposed in subpart G, state DOTs would need to provide actual or estimated hourly traffic volumes that could be applied to portions of the NHS in the areas applicable to this measure. Traffic volumes would be needed to estimate the accumulated delay experienced by all users of the highway system. FHWA is proposing that state DOTs could use a number of methods to count or estimate hourly traffic volumes for each reporting segment. State DOTs may use hourly traffic volume counts collected by continuous count stations and apply them to one or more reporting segments. Or, state DOTs may use average annual daily traffic or AADT that is reported to the HPMS to estimate hourly traffic volumes where no hourly volume counts exist. In these cases, the AADT data used should be the most recently available, but no more than two years older than the reporting period, and should represent the appropriate direction and travel of the reporting segment. So for example, if the reporting calendar year is 2018, the AADT should be from 2016 or '17. State DOTs can use any combination of these methods to provide the hourly traffic volumes for each segment of the NHS, within the applicable areas of this measure. The hourly traffic volumes do not have to be submitted to FHWA, but the state DOT would need to report to FHWA the method or methods they used to estimate traffic volumes for each reporting segment. FHWA elected to propose the use of vehicle counts, as this is the most accurate and widely available information on nationwide use of the system. Including vehicle counts in this measure helps insure the measure reflects the actual number of vehicles delayed as closely as possible from available data. All right. So let's look at how we calculate the metric. So the state DOTs would first need to determine the excessive delay threshold travel time for each segment of the NHS within the applicable urbanized area. The formula on the top of this slide shows the excessive delay threshold travel time, which is the excessive delay threshold travel time is the travel time segment length divided by the threshold speed, multiplied by 3600. Excessive delay threshold travel time is defined as the time of travel to the nearest whole second, since you reverse the travel time segment at which any longer measured travel times would result in excessive delay for the travel time segment. This is calculated as the travel time segment length divided by the threshold speed, as applicable to the given segment. So in the example on the slide, we are calculating the excessive delay threshold travel time for five segments shown as a half a mile-- there are a couple of them are half a mile length, and a couple of them are one mile length, and one of them is five miles in length. So let's assume this example is an interstate highway, so the threshold speed would be 35 miles per hour. To calculate the excessive delay threshold travel time in seconds, we simply divide the length to the nearest thousandth mile of each segment by the speed of 35 miles per hour, then multiply by 3600 to convert from hours to seconds. This number is then rounded to the nearest whole second. This step is shown under the label calculation. So for the .5 mile or the half-mile long segments, the accessibility threshold travel time is 51 seconds. It is more than the 3 seconds for the one mile segments, and 514 seconds for the five mile segment. As we continue on calculating the metric, we have that excessive delay threshold travel time, and the hourly volume estimations have been provided, so now we can calculate the metric. As a reminder, the metric is total excessive delay in vehicle hours for each reporting segment on the NHS for the entire calendar year. First, as shown on this slide, and we'll calculate the travel time segment delay, also known as Reporting Segment Delay or RSD, for each five minute bin to the nearest whole second. The travel time segment delay is simply the difference between the travel time and the excessive delay threshold travel time. In this example, we'll consider one

of the half-mile segments from the last slide, which you'll recall having a threshold travel time of 51 seconds. Any segments with travel times less than 51 seconds are not considered to have excessive delay as defined by the Federal Highway threshold. Any travel times that are not reported are not counted as part of the metric nor the measure. In this example, the bin from 6:10 to 6:15 AM on February 3rd did not report an average travel time, so no delay is included for this bin. So before we move on, one important note about travel time segment delay. So travel time segment delay, like the threshold travel time, is calculated to the nearest whole second. It is also capped at 300 seconds, as 300 seconds is equal to five minutes, the amount of time in each bin. Any values above 300 should be replaced with 300. This will prevent excessive delay from being counted twice in two or more sequential five minute bins. All right. So now that we have the travel time segment delay for each five minute bin, state DOTs and MPOs would calculate the total delay in vehicle hours. This is a somewhat complex calculation, so let's walk through it step by step. So first, the travel time segment delay in seconds for each travel time would be multiplied by the average vehicle count for a five minute period. Since there are 12 five minute bins in each hour, the vehicle count would equal the hourly volume divided by 12, and it would be rounded to the nearest tenth. So for each hourly period, the vehicle count would be the same for each five minute bin. Then to calculate total delay in vehicle hours, we divide this number by 3600 to convert back from seconds to hours, and the result is calculated to the nearest thousandth. In the column at the right, we find the total delay for each five minute bin within our example. Note that the total delay for the bin is zero, if the travel time delay segment says zero. So finally, the last step in calculating the metric, the total excessive delay for each reporting segment on the NHS, is to sum the total delay to the nearest thousandth for each five minute bin on every day throughout the year. This would be a far larger number of additions than we are able to show on the slide, so here we are using an illustrative number to estimate the sum. So let's assume that total delay for all five minute bins on the single half-mile segment is 865.025 vehicle hours. Again, this would be the sum of all travel time segment delay values for all five minute bins in every hour, every day for the full calendar year. State DOTs and MPOs would report this metric to FHWA, as described in subpart A of the proposed rule, and we'll review that at the end of this presentation. All right. Now we'll move on to calculation of the traffic congestion measure. The traffic congestion measure is defined as the annual hours in excessive delay per capita for the full extent of the NHS within the applicable urbanized area. The first step in calculating the measure is to first add up the excessive delay metrics for all segments of the applicable NHS within the applicable urbanized area. The total would be calculated to the nearest thousandth of an hour. In the example, looking at that same 8 mile section of roads, the total excessive delay for all five segments would be 11,900.000 vehicle hours. The last step to calculate the measure is simply to convert the total excessive delay to a per capita number. This is done by dividing the total excessive delay in an urbanized area by the total population of that urbanized area. Let's take for this example that the full extent of our system is 3000 miles and that the 8 miles we looked at were consistent with the average delay over all 3000 miles. Under these assumptions, the total excessive delay for the full extent would be 4,462,500 vehicle hours. The total population of the urbanized area in this example is 1,047,102. So to calculate the excessive delay per capita, you would divide the total excessive delay by the total population. The resulting calculation is rounded to the nearest tenth. The excessive delay per capita in this example is therefore 4.3 vehicle hours. This example, again, is only for illustration and does not represent actual data, so the amount of delay may be higher or lower in the urbanized areas in your states. All right. So let's move on to the target. So once the measure has been calculated for all NHS mileage within the urbanized area

boundaries, state DOTs could compare the calculated measure against the associated target for the measure to determine if the target has been met. In the illustrative example on the slide, the measure was calculated as 4.3 vehicle hours of excessive delay per capita, to the nearest tenth of an hour. The state DOT established a target of less than 5.0 hours in excessive delay per capita annually. Thus, the state DOT achieved its target for this example. Remember that state DOTs and MPOs will establish single targets for each urbanized area within their boundaries. State DOTs with multiple urbanized areas would have multiple targets for each of those areas. Urbanized areas across state DOT or MPO boundaries would have single targets shared by each of the applicable state DOTs and MPOs. All right. Now that we've talked about the measure, let's quickly review a couple of the proposed data submittal requirements for the metric. So for the traffic congestion measure, state DOTs would need to provide estimates of hourly traffic volumes that can be applied to some or all portions of the NHS in areas applicable to the measure. The hourly traffic volumes do not have to be submitted to FHWA, but once again, the state DOT would need to report to Federal Highways the method they used to estimate traffic volumes. State DOTs would need to report the methods they will use for all reporting segments to FHWA no later than 60 days prior to the submittal of the first baseline reports. You'll hear more about that later. By June 15th of each year, state DOTs would submit the following to HPMS for the previous calendar year. The total excessive delay metric in vehicle hours would be reported for each reporting segment. All reporting segments of the NPMRDS should be referenced by NPMRDS TMC codes. If a state DOT elects to use in part or in whole an equivalent data set, all reporting segments should be referenced by HPMS location referencing standards. So that concludes our discussion of calculating the traffic congestion measure. Let's move on, and I'll turn it over now to my colleague, Emily Biondi. Emily.

Emily Biondi: I believe, Pete, do you have a quick comment?

Pete Stephanos: Yeah, I have-- Yes. I just want to make a quick note before we go into subpart H. And that's that as we discussed in our proposal for this traffic congestion measure, we did indicate that we received a lot of input from stakeholders in our listening sessions on moving to a measure that would reflect multimodal transportation and also reflect all travelers, not just vehicles. So we discuss in our proposal our desire actually to have a multimodal measure, but indicate why we felt like we weren't able to propose one in this NPRM. We do identify a number of questions that would help us better understand what is possible today to have a multimodal measure that does account for all travelers. So we encourage you to look at those questions. They are in the discussion of the preamble for the part that Rich just talked about, subpart G. We also have invested in research that's underway right now that Rich Taylor is leading on exploring possible multimodal measures for system performance. And that work is underway, and it's a three year project that will include evaluation of different possible measures, and will also include pilots where we'll test out those measures, with the conclusion to develop an action plan that we can follow for further implementing a multimodal performance measure. So I just wanted to make sure to point that out to you and to take a close look at that discussion in those questions, and please, I encourage you to respond to those questions by submitting comments on the docket. So I'm going to turn it over to you for subpart H.

Emily Biondi: Thanks, Pete, and thanks, Rich. So next, we're going to review the on road mobile source emissions measure. As we discussed earlier, this proposed measure is applicable to state DOTs and

MPOs whose boundaries include areas designated as non-attainment or maintenance for the criteria pollutants listed under the NPRM. In this section, we'll walk through the steps for calculating both the metric and measure. We will base our examples on the data types and structures described in the last section. Note that examples are only intended to illustrate how the metric and measure are calculated, and are not representative of actual data or performance. Oops. Too many people are moving my slides.

Emily Biondi: I am sorry, guys, about that. Well, everybody's excited to move my slides.

Emily Biondi: The proposed measure for on road mobile source emissions in subpart H is total emission reduction. The measure will be the two year and four year cumulative estimated emissions reductions resulting from CMAQ projects for all applicable criteria pollutants and precursors for which the area is non-attainment or maintenance. So what are those criteria pollutants? They are ozone, carbon monoxide or CO, and particulate matter, both PM_{2.5} and PM₁₀. The precursors that we're concerned about are Volatile Organic Compounds or VOCs and nitrogen oxides or NO_x. Federal Highway elected to base the proposed measure on the estimated emission reduction reported in the CMAQ public access system. This establishes a measure that relies on the existing processes state DOTs are already using to report projects. The metric to calculate this measure would be the conversion of emission reductions from kilograms per day, as reported currently in the public access system, to short tons per year for each applicable criteria pollutant and precursor. In the example shown in the slide, the conversion of carbon monoxide reductions for a project in a single year calculate to 0.856 short tons per year. The measure is simply the sum total of cumulative emission reductions per each criteria pollutant or precursor for two and four physical years. With the example on the slide, let's assume there are two projects that reduce CO emissions, the one we just converted to short tons per year, and another project that is estimated to reduce CO emissions by 0.940 short tons per year. This adds up to a total of 1.796 short tons of CO emission reductions over two physical years. Hold on a second. I'm having a page turning problem. Okay.

Emily Biondi: So, FHWA proposes the CMAQ public access system as a data source for the measure based on data available as of July 1st of the calendar year in which the CMAQ performance plan or state biannual performance reports proposed in this rulemaking are due. The CMAQ public access system is populated from the state DOT annual reports, which includes project information submitted through the CMAQ project tracking system. On the slide, it shows the web address where you can locate the public access system. The CMAQ public access system includes estimated emission reductions for the criteria pollutants and precursors mentioned on the previous slide. As a reminder, those are CO, PM_{2.5}, PM₁₀, NO_x and VOCs. Emissions are reported the first year that a project is obligated, not each time the project receives CMAQ funds. This is to avoid double counting of benefits. State DOTs report by March 1st of the fiscal year following the year the project is funded. So, let's walk through an example based on a hypothetical state which has two areas subject to the measures for two different pollutants. The non-attainment and maintenance areas within the state are shown on the slide. The first area in purple is an ozone non-attainment area. The second area in orange is a CO maintenance area. The state DOT receives funding through the CMAQ program for five projects between fiscal years 2018 and 2020. Two of the projects are located in the ozone non-attainment area, a transit project in fiscal year 2018, and a traffic flow improvement project in fiscal year 2019. The three other projects are in the CO maintenance area, a project to provide bike and pedestrian project. Why a bike or pedestrian project in 2018-- a traffic

flow improvement project in 2019, and a transit project in 2020. Based on the project information from the previous slide, we'll now show an example of how to calculate the total emission reductions. This table shows the data from the CMAQ public access system for each of the five projects in the reporting period in kilograms per day. NO_x and VOCs are precursors to ozone, the criteria pollutant in one of the state's non-attainment and maintenance areas. Only those reductions in pollutants and precursors related to the pollutants for which the area is non-attainment or maintenance are reported. To calculate the metric for on road mobile source emissions, we convert emission reductions in kilograms per day to short tons per year. This is a straightforward calculation. We multiply kilograms per day by 0.4026 to convert to short tons per year. This table shows the converted amount from the last slide. For this metric, the state DOTs and MPOs report each value for each project and the associated fiscal year. The calculation of the measure which is total emission reductions for each applicable criteria pollutant and precursor over two and four years is just the sum of all emission reductions for all projects during the applicable fiscal years. The measures under this subpart would be each value in the total rows on this table. At the bottom of the table are totals for two year reductions and four year reductions for each pollutant and precursor. As you can see in red, the CO area transit projects are obligated under fiscal year 2020, which is the third fiscal year in the reporting period. As a calculation of the measure, this project's reductions in CO emissions would only be included in the total four year emission reductions. So as the last row shows, for the four year emission reduction, the project-- fiscal year 2020 is included in that total. You'll note the difference in the CO benefit column. Before moving on, let's consider one of the measures, so we can look at how the measure compares to the target. As you can see here, the calculated measure for two year emission reductions in CO is 1.796 short tons per year. As with the previous measures, state DOTs would compare the calculated measure with their target emission reductions for each applicable pollutant and precursor. Let's look at the example of how CO reductions compared to a state's target after two years. The measure was calculated for total emission-- total reduction in CO emissions to be 1.796 short tons of CO reduced for all projects over two fiscal years. Let's say the state DOT had established a target of 1.500 short tons in CO emission reductions. In the mid-year performance report, the state DOT would achieve its two year target for CO for the performance year shown, since 1.796 is lower than-- is better than 1.500 tons per year. The state DOT would report this target as well as all two year targets for the other applicable pollutants and precursors. It would also report four year targets for all applicable pollutants and precursors during this performance period. In the hypothetical statement of example, the state DOT would report a total of six numbers in reporting its targets: CO, VOCs and NO_x for two and four year period. Now let's take a-- Now we should talk about the measure. Let's quickly review a couple of proposed data submittal requirements for the metric. For the on road mobile source emissions measure, data reporting measures align with the CMAQ reporting requirements for CMAQ-funded projects. A couple of notes. State DOTs report emission reductions for CMAQ projects for the first year the project is obligated, and only the first time our project is entered into the system, not each time the project receives CMAQ funding. Again, this is to avoid double counting of benefits. The quantitative emission reduction estimates are reported for each CMAQ funded project in kilograms per day for applicable criteria pollutants and their precursors for which the area is not attainment or maintenance. Federal Highway is proposing a period of approximately 120 days for Federal Highway to review and approve the data for publication on the CMAQ public access system. State DOTs would enter all data into the project tracking system by March 1st for all projects obligated in the previous fiscal year. The measure would be calculated based on data

available in the public access system by July 1st of that same year. This concludes our discussion of the proposed measures and data submittal requirements. I will now turn it back--

Pete Stephanos: Okay.

Emily Biondi: Go ahead.

Pete Stephanos: <laughs> Hi. This is Pete again. I'm going to go over in this part five a quick overview of the target establishment and reporting requirements that are under subpart A. We've gone over these aspects in prior presentations, so I'm going to give a high level overview, but then focus on those aspects that are unique to subparts G and H. And as a reminder, in our prior presentations, we did also talk about how we would assess progress. For these measures, we do not assess progress, so we won't be talking about that today. So before we get into the details of target setting and reporting, we thought we'd provide you a high level overview of the different aspects of the proposal that we're going to discuss. As with our second rulemaking with pavement and bridge condition, we're proposing to use a four year performance period that would be used by states and MPOs to establish, report and assess performance. The state DOTs and the MPOs would establish targets for each measure as is applicable to the geographic area, their geographic area and network as Rich and Emily both discussed. State DOTs would be required to establish both in this four year period a two year and four year target. Those targets are going to be reported-- would be reported to FHWA at the beginning of a performance period and adjusted, if needed, at the middle of the period. State DOTs would also report to FHWA on their progress at the mid-point and at the end of the performance period. MPOs would establish-- all MPOs would establish four year targets. In some circumstances, MPOs-- that's been already discussed by Rich and Emily-- MPOs of larger urbanized areas that are applicable to the measures that we're talking about today would also establish two year targets. And I'll discuss it a little-- that a little bit more later on. They'll report their performance targets to the state, and they would report on their progress and their long range plan in a new system performance report that's discussed in our planning rule. So let's talk about the actual targets that would be established by the state DOTs and the MPOs. State DOTs and MPOs would coordinate with the-- state DOTs would coordinate with the relevant MPOs on the selection of targets to ensure consistency for all of the measure areas. For state DOT targets, under the NPRM, all state DOTs, as already mentioned, would establish both two year and four year targets for their respective geographic boundary that includes a portion of the transportation network applicable to the measure. State DOT targets would be established within one year of the effective date of the rule. State DOTs can adjust the four year target at the midpoint of a performance period in their mid-period report. Only the statewide targets, the targets that represent the entire statewide boundary, would apply, it wouldn't be required, under this proposed rule. However, states have the option to establish any number of additional urbanized area targets and/or non-urbanized area targets. And for today's discussion, it's really only applicable to the emissions measure. If a state DOT chooses to establish additional targets, it would increase the number of performance targets it would have to report in the reports I'll discuss in a minute. MPOs would be required to establish targets 180 days after-- within no later than 180 days after their respective DOTs establish their targets. For the traffic congestion measure that Rich talked about today, MPOs and state DOTs would develop a single two year and four year target for each urbanized area with a population over one million that contains all or in part designated non-attainment or maintenance areas for ozone, carbon

monoxide or particulate matter, and that Rich kind of covered that in the example he showed there in Chicago. To allow for phase in of this measure, the two year target would not be required for the first performance period. And I'll talk about that in a minute. For the on road mobile source emissions measure, the measure that Emily discussed today, MPOs would establish only four year targets. But a subset of those MPOs would also be required to establish two year targets if any part of a designated non-attainment or maintenance area is within their metropolitan planning area and it does overlap with the boundary of an urbanized area with a population more than one million. For those MPOs that are only required to establish the four year target, they have an option of either agreeing to plan and program projects so they contribute to the adjusted state target, or they can commit to a quantifiable target for its metropolitan planning area for the measure. And that's again for today's discussion, for those MPOs that are only establishing four year targets for the emissions measure. For those MPOs for the emission measure that are required to establish both two year and four year targets, those that intersect with an urbanized area of four million or more, would do so for their actual metropolitan area by defining a quantifiable target. For both of the measures, both traffic congestion and the emissions measure, the four year targets can be adjusted at the mid-point of the performance period by the state. So in summary, this slide shows a summary of the targets that need to be established. And there's lots of asterisks on here because there are different conditions of when a two year target is required. It does-- it summarizes what we've proposed, the state DOT and MPO target establishment requirements. You'll note that the on road mobile source emissions has an earlier start date for its performance period than the other measures. As Emily noted, it's a fiscal year reporting measure, where the rest of the measures are calendar year reporting. The subpart H on road mobile source emissions measure is unique, in that the target is a cumulative reduction in pollutants over a two year and four year period. Emily talked about that as well. We do have on our docket a document that does identify all of the states and MPOs that are applicable to the respective measures that we've talked about today. So I refer you to that docket document. And it's based on Census and EPA determinations as they are today. So let's talk about reporting. And I'll do an overview of this, since we have covered this in the past. There is a requirement in 23 U.S.C. 150(e) of MAP-21 that does require states to report by October 1st, 2016 the progress that they've made towards achieving their targets. We recognize that this proposal and in the final rule will not-- will still be out by the time that report is due, so we will be issuing guidance this summer to state DOTs to direct them on how they should submit a report to us by October 1st, 2016. Beyond that date, two year reporting will be required, as required in MAP-21. For each four year performance period, states would submit three types of reports. One that would be a baseline report that they would use to establish baseline conditions and to establish the targets, both the two year and four year targets. And then a mid-performance and a full performance report that would be due at the mid-point and at the end of the report which would discuss the progress that they've made towards achieving their targets and any adjustments they would have in their four year target. MPOs would report, as I already mentioned, their progress and their long range plan in a new system performance report. In addition, those MPOs that are required to establish both two year and four year targets for the emission measure, again, those MPOs that have non-attainment or maintenance areas and then also serve a TMA with a population over one million that or also have non-attainment or maintenance areas, they are required to report a CMAQ performance plan. That CMAQ performance plan would be submitted by the state DOT as an attachment in their biannual performance report beginning in 2018 and each two years thereafter. As I already mentioned, we are proposing four year performance periods that would be one after the other. The first one that we're proposing would start

on January 1st, 2018, and it would run through December the 31st, 2021. As I already mentioned, the on road mobile source emissions measure is the only measure that's unique in terms of the start and end date for the four year period because it's fiscal year-based, and we'll go over that in a slide coming up. As shown, on the timeline right now, reports would be due biannually on October 1st, starting with the first report in 2018 and every two years thereafter with baseline, mid- and full progress reports. For the on road mobile source emissions measure which I already mentioned, it's based on fiscal year, so you can see on the slide right now, it's four year periods, but at four year fiscal year periods. We're doing that to align with the reporting requirements currently in place for the CMAQ project obligations, as Emily already talked about, in the public access system. Although the performance periods are different for the on road mobile source emissions and all of the measures, the biannual performance periods, the cycles for reporting your baseline, mid- and end are the same, all on October 1st. As Emily already mentioned, that the measure for emissions is unique in that it's looking for cumulative reduction in pollutants from the CMAQ-funded projects over a two year and then over a cumulative four year period. So on the slide right now, in the mid-performance period report, it would show the cumulative total of reductions from projects starting from fiscal year 2018 into 2019. And then in the full progress report, it would show the cumulative reduction over that entire four fiscal year period. And also as I mentioned, for the measure for emissions, there's additional reporting requirements that the states would have to look at their baseline from the previous period. So for this first performance period, we do suggest that states go back and look at the projects reported in this public access system in the prior four years leading up to the first performance period to make sure that those projects accurately reflect the reductions that were achieved through those projects. Now we're going to walk through an example of how the reporting would occur. And the example we're using does show the emissions measure time frames, which are fiscal year-based, but there's a reference there to the calendar year base for the remainder of the measures in this proposal. But for today's discussion, we're going to talk about subpart H. So at the baseline period, at the beginning of the baseline in October 1st, 2018, the state would report both their two year and their four year targets, and they would report on baseline performance. And again, for emissions, they should be referring back to what they had in their public access system for those prior four year totals. At the midpoint, go two years further down the road, states would report in their mid-performance progress report the actual conditions at the mid-point. So at the two year point were the actual conditions. In the case her of emissions, they would look at the cumulative total reductions over that two fiscal year period. In the case of emissions, it would look at the total-- I'm sorry. In the case of delay or congestion, it would look at the total delay occurring over that two year period for an urbanized area. And at that point, they also, states would have the option to adjust their four year target at that mid-point. So in that mid-performance report, if the conditions warrant, they have the ability to adjust the four year target and they need to provide an explanation as to the basis for adjusting that four year target. At the end of the performance period after the four years, in this case for the first performance period October 1st, 2022, the state would report actual conditions through the full four years, and in the case of emissions, it's a four year total reductions from all projects over that four year period. And they would compare that to the actual target, and that would be done in the full progress report. And that actual condition would serve as the baseline for the next performance period. As Rich noted, we are proposing a phase in for the establishment of the traffic congestion measure, and it's for the first performance period only. So this phase in does allow or it does require-- it would require state DOTs and MPOs not to establish a two year target. They would only establish a four year target, and that would be done through the baseline performance report due on

October 1st, 2018 by the state DOT. So for that urbanized area that requires the traffic congestion measure and a target, they would be submitting one that represents the urbanized area for four years, not for two years. At the two year point, where they would be reporting the mid-performance progress report on October 1st, 2020, at that time, they would actually have actual performance. In this case, they would report the actual performance and that would become the baseline. So we're essentially shifting everything two years here for traffic congestion. It would shift the baseline to be starting at the end of 2019. Then at that time, they can adjust the four year target that they had already established earlier in the baseline performance report. At the end of the performance period, then the state would report the actual performance that occurred at the end of 2021 for congestion, and they would compare that to their target. And they could look at their progress based on the baseline, which was at the end of 2019, not at the end of 2017. So that's the phase in. We're shifting everything essentially two years. The reason we're doing that is that we wanted to provide sufficient time for state DOTs and MPOs to become more proficient in managing performance and for the travel time data coverage to be more complete for the entire National Highway System. We do anticipate that the data set will be more complete by this point in time two years down the road after this performance period starts. And that we do actually have a white paper on our docket that discuss the impacts of any missing data in the data set and how we're proposing that to be handled. So that's another view of the target setting requirements and the reporting requirements. Real quickly, go over what we found in our regulatory impact analysis. This rule was determined to be significant following the meaning that's in Executive Order 12866, and within the meaning of DOT regulatory policies and procedures. It was considered significant because of widespread public interest in the transformation of the Federal Highway program in the performance base. It was not considered to be significant economically, based on the Order of 12866. So in response to that, we did develop a regulatory impact analysis, and it is included on the docket for your review. And that analysis estimates the economic impact in terms of cost and required level of changes on federal, state and local governments, as well as private entities regulated under this action. The economic impacts are measured on an incremental basis, or basically what additional burden does those entities need to take on beyond the current practices that they currently use. To estimate the cost for the proposed rule, we completed a comprehensive regulatory impact analysis that assessed the level of effort expressed in labor hours and in labor categories, and the capital needed to comply with each component of the proposed rule. The full analysis document, it can be found on the docket as I mentioned. We did consider two scenarios in the analysis. One scenario where FHWA would continue to provide states and MPOs free of charge the travel time data set, the NPMRDS. And then a second scenario looked at a situation where we would not be able to provide that. The costs that you see on the slide right now actually are for metric calculation and measure calculation, and it doesn't include data collection. So the cost for each scenario, in this case what you see on the slide, is the same for both of those scenarios. So you could see the cost that we have right now. What we did to assess that cost was to do a break even analysis. In a break even analysis, we looked at the costs that would be burdened by those that had to comply with the requirements, and to see what would it take to have a benefits that would result in outweighing those costs. And so the NPRM does discuss that the analysis estimates would need at least a reduction in travel time over an 11 year period-- we looked at this over 11 years-- that represents less than .01 percent of the average annual hours of travel time for commuters in 498 urban areas across the United States today. Additionally, we would need to have emission reductions from CMAQ funded projects over an 11 year period that represents less than .01 percent of the average annual pollutant emission amounts

in the calendar year 2011 according to EPA data. So we believe that both of these benefits would be achieved and even exceeded by implementing this rulemaking. So that's an overview of the regulatory impact analysis. I encourage you to look at that. It's on our docket. It provides lots of detail, and if you have questions or comments, certainly submit those to the docket. So with that, I'll turn it back over to Jessica, and we're going to go through any questions that have come up that we haven't been able to answer through the chat pod. Jessica.

Jessica Baas: Great. Thanks, Pete. The first question we're going to cover is from Matt Hardy, and it reads, "For the CMAQ congestion measure, did you consider using a different denominator other than total population? I am thinking count of commuters using passenger cars could be better, since the data and calculations focused on commute trips by passenger vehicle and not all trips nor all-- and not all trip nor all commutes. It seems like larger urbanized area with large transit commuters, for example, New York, Boston, Washington, D.C., the measure would be skewed in some way. You could likely get the data from the Census of the CTPP program."

Pete Stephanos: I'll take that, 'cause I didn't hear anyone. <laughs> Matt, yeah, we discussed different denominators that could be used along the lines that you talked about, and we concluded that the total per capita would be most effective. But we certainly would encourage you to look at different alternatives and to see if there is a bias one way or the other in terms of how the measure would reflect actual delay, and if you believe that there's an alternative approach that's where data's available that is more effective, we certainly encourage you to submit that to the docket.

Jessica Baas: Thank you. The next question is from R. Clark, and it reads, "For reporting segments, would toll booth segments have to be included?"

Rich Taylor: This is Rich Taylor. I'll take a shot at that. Again, we define all contiguous travel segments on the National Highway System have to be included on the main line, and I assume toll booth segments would be considered main line since through traffic does travel through them, so I assume that that would be necessary to include those segments in the measure-- metric in the measure calculation.

Jessica Baas: Thanks, Rich. The next question is from Matt Hardy. "What does 'unless than individual travel time segment is longer' mean? I was looking at the NPMRDS data and many of the segments for I-66 inside the Beltway are much longer than .5 miles. If a roadway segment in the NPMRDS is longer than a half-mile for an urbanized area, will a state DOT or MPO have to establish smaller segments than are reported in the NPMRDS?"

Rich Taylor: This is Rich. I'll answer that for Matt. Again, this is a sorry for the tricky terminology there, but the point of the reporting segments is that one or more travel time segments can be combined if they make sense for reporting purposes. And that means that the travel time segments, which again would be the TMC codes in the NPMRDS, if you wanted to combine more than two of them, they could not be longer combined than half a mile in an urbanized area. That's the only thing that rules this. Again, those NPMRDS TMC code travel time segments that are longer than half a mile, they can't be combined at all, because they're already longer than half a mile, so that would be your reporting segment would be the

existing TMC code. So to answer your question, it just, it's just basically the half-mile and the ten mile are just limits for combining reporting segments, and again, if the existing travel time segments are longer, then you cannot combine it with any other travel time segments. So I hope that answers your question.

Jessica Baas: Thanks, Rich. The next question is from Abby, and it reads, "Did I hear this correctly? MPOs now need to work cross jurisdiction interstate to address congestion and air quality problems when they share pieces of large urbanized areas, and they need to present consistent performance measures and plans to FHWA? So then, how many subject urbanized areas are multi-MPO?"

Pete Stephanos: This is Pete. I'll take a stab at that. For the last part of that question, we do have, as I mentioned, a document on the docket that lists out for in urbanized areas the states and NPOs that would contribute to it that would be applicable to both the congestion and the admissions measure. And I think-- I think there's been some typing in some of the chat pod here where you can find that. But with regard to the first part of the question, for the congestion measure, yes, the NPOs that cover-- the metropolitan area covers more than one state, we are proposing that that MPO and any other MPO that contributes to the urbanized area, as well as the states contributing to the urbanized area, they all would have one target that would be established for the area that would be a measure for the entire area that would be assessed to see if that targets been met. For the emissions, it would be for-- for the congestion, it's for the urbanized area, and for the emissions, it would be the metropolitan planning area. So if the MPO covers or that metropolitan planning area covers more than one state, then they would be establishing a target for that metropolitan area, those areas that are non-attainment or maintenance and the projects within them. So, I don't know if I fully addressed all of that, so if you could, if not, if you could just ask another question or follow up with comments on the docket.

Jessica Baas: Thanks, Pete. The next question is from Guest 4, and it reads, "Has the FHWA estimated the error in the excessive delay measure using continuous count stations versus AADT estimates? It could be significant, given the variability of daily traffic. AADT will give reduced estimates."

Rich Taylor: This is Rich Taylor. I'll answer that question. So including the traffic volumes was a necessity to weight a delay-- travel time delay measure by vehicles. And obviously, there is not perfect volume or vehicle count information for all segments of roadway for all times of every day throughout the year. So Federal Highways is allowing the state DOT to determine the methodology they will use to estimate hourly traffic volumes to be used in the traffic congestion metric and measure development, and they do have to explain what that methodology is. So there, yes, there will be different methodologies potentially used across different states, but that was the approach that we proposed in the rule. So if you have any comments on that, please, please share them with-- put them in the-- on the docket and comment there. Thank you.

Jessica Baas: Thanks, Rich. The next question is from N. Mesick. "What if an area is limited maintenance for a pollutant? We don't have a budget, but what measures would apply to us?"

Emily Biondi: I'll take that. So right now, the way our proposal is written, we do not distinguish limited maintenance areas or area with insignificant findings or anything like that. Anybody who is designated as non-attainment or maintenance would be subject to the measures, the CMAQ measures as appropriate.

Jessica Baas: Okay. And the next question is from Matt Hardy. "How do TMC segments identified in the NPMRDS align with existing HPMS reporting segments for a pavement condition?"

Rich Taylor: This is Rich. I think someone answered that in the chat pod from NCDOT, North Carolina DOT, and his or her answer was correct. The location referencing system used HPMS and the TMC codes used in the NPMRDS are different, and they do require conflation. There is information that should be on the docket soon. I didn't see it earlier today, but it may be on the docket already. We actually have a step by step measure calculation guide, a white paper that sort of takes you through all the steps in using the MRDS to develop the measures in this NPRM, and we do talk about how one would conflate the NPMRDS TMC code location referencing to the HPMS. So there's a detailed-- not a real detailed, but a good example of how that would be done in that guide. And that will also be presented as part of the next NPMRDS technical users-- technical assistance for users webinar, which is next Tuesday, May 10th. And I don't have a link to the registration handy, but if Andrew or someone else does, they can include that in the chat pod. And we'll be talking specifically about how to use the NPMRDS data to develop the metrics and measures that are in this proposed rulemaking.

Jessica Baas: Thanks, Rich. The next question we're going to take is from Virginia DOT, and it reads, "Does the access congestion measure apply to an MPA or urbanized area greater than one million containing a non-attainment area?"

Rich Taylor: Yes. According to the proposed rule, an urbanized area greater than one million in population that does contain a non-attainment area would be required to develop a congestion measure.

Jessica Baas: Okay. And we're going to go back to Alex's question, and it reads, "For the congestion measure, how has FHWA demonstrated that delay for single occupancy vehicles effectively relates to congestion on the whole transportation system?"

Pete Stephanos: I'll take that. This is Pete. As I mentioned before at the end of Rich's discussion, that we are-- our desire is to get to a multimodal measure and one that reflects all occupants, all travelers. So if you have one vehicle with one person versus one vehicle with four people in it, it would reflect that difference. We did feel that, again, that we not have the data sources available today to implement a measure that would account for all travelers and all modes of transportation and that would apply across the country in a rulemaking that could be effective right away. We do have very specific questions we ask for that we thought we didn't have answers to that we hope that we will get answers to through the docket. And so I encourage you to look at that. We do believe, and we discuss it in the proposal, that actions and strategies that can be taken to get more people in vehicles, to remove vehicles from the roadway, those kind of strategies would be reflected in the measure we're proposing. If you believe that is not the case, we certainly encourage you to let us know and why as a comment to the docket.

Jessica Baas: Okay. Thanks, Pete. The next question we'll take looks like it's a follow-up from MDT. And it reads, "Can you specifically address where the greater than a million threshold applies at the state and MPO apply and by measure for emissions and congestion?"

Pete Stephanos: I'll take that, and Rich, if you have anything to add to that. Again, we have two documents that are on the docket, and I believe one is called "CMAQ: States and MPOs," and one might be called for a different part of the presentation, a different webinar we held for the peak hour travel time, States and MPOs. So there's two documents that if the rule were effective today, which states and which MPOs and which urbanized areas would all apply to the measures we propose. So to answer the question, you would go to that docket document and you would find your area, and it would tell you if that area does have all the attributes that would make it applicable to the requirements that we're proposing for emissions or proposing in this case for congestion. So I encourage you to look at that. It's a very good document. Actually, I refer to it all the time, and it would help you answer the question. If you have more questions after looking at that, certainly follow-up with us.

Jessica Baas: Thanks, Pete. And the next question we're going to take is from Bob Hart. And it reads, "Some areas will be in attainment status, I think by the end of this calendar year. Will they be subject to CMAQ performance measures and targets?"

Emily Biondi: I'm assuming that you're saying attainments as in, like, either, the end of the maintenance period or a standard has been revoked or something. If you are non-attainment or maintenance at the time that these first-- when the baseline reports for the states are due to Federal Highway, that is when we decide who is subject to the measures or not. So it's not based on this calendar year. It's based on when the first baseline report is due. And we don't know necessarily what that's going to look like, which is why-- and it will change every four years every time a new state baseline report is due to Federal Highway.

Pete Stephanos: Yeah, and to add on to Emily's, the response there that there is, you know, a new ozone standard that EPA has put in place, and some areas that are currently in attainment may no longer be in attainment under that new ozone standard. And as long as they stay in attainment before the date that Emily just talked about, the first baseline performance report which would be October 1st, 2018 as we're proposing, then the state or MPO would not be applicable to that measure for four years, even if the next year that EPA, that new EPA standard kicks in, and an area is no longer in attainment. So basically, you're in or out at the beginning of a performance period for that entire four years.

Jessica Baas: Thanks, Pete. The next question is from Keith Miller, and it reads, "For the emissions measure, if you have overlapping non-attainment maintenance areas for different pollutants, are you required to only report carbon monoxide emission reductions from CMAQ-funded projects in the carbon monoxide non-attainment maintenance area and VOC, NOx reductions from CMAQ-funded projects located in the ozone non-attainment maintenance area?"

Emily Biondi: This is Emily. Yes, that is correct.

Jessica Baas: Okay. It looks like the next question is from Dan Watts. "For urbanized areas that cross state borders, what is the responsibility of the state that contains only a small portion of the larger urbanized area?"

Pete Stephanos: I can cover that. So the example I think we give is Philadelphia, at least, we've shown it before on slides, where for that urbanized area, there's four states that contribute to the urbanized area, and one of those states contributes, you know, only in their mileage that contributes to that area is very small relative to the total mileage for the area, where other states have a large percentage of the mileage. So what we're proposing is regardless of how much of the area your actual entity has sort of the authority over for making investment decision making, that you have sort of equal responsibility for establishing targets for the entire area. So for the area for Philadelphia, there are actually four states and five MPOs, and that they all, regardless of how much they contribute to that entire area, they all would have come together, come with an agreement for one target for the entire area of Philadelphia. And then as they make investments, the investments they're going to be making would contribute in small or large part to the total area. But progress would be assessed based on the overall area. And that's actually only determined for measures that we're not talking about today, other-- And for the measures that we're talking about today, it would only be, you know, the state and the MPO themselves just sort of assessing did we make it, did we hit our target.

Jessica Baas: Okay, thanks, Pete. The next question is from Jay DeVierno. "On slide 24, FHWA acknowledges that the NPMRDS data that FHWA is providing and intends to continue to provide would have to be assembled by states and/or MPOs. Is FHWA willing to work with individual states on request to ensure that the states understand how to assemble the data into usable five minute bins portrayed on the slides? There is a concern that this may not be so simple."

Rich Taylor: This is Rich Taylor. I'll take a shot at this. So we are providing a number of opportunities. Both the aforementioned step by step calculation guide that it will be on the docket soon if it's not already. And if I can find it before the end of the webinar, I'll put a link up to it. But that sort of describes the process that involves, as you mention, the assembling of the NPMRDS data to actually calculate the measures. And again, the NPMRDS webinar for technical assistance that we do quarterly is next Tuesday, and we're actually going to be sort of going through some of those steps in that webinar. So that will start helping with the answer to the question that you have about how to assemble the data. And yes, we will certainly continue to provide technical assistance as necessary to help folks understand how to calculate the proposed metrics and measures.

Pete Stephanos: I just want to add to Rich's comments that just to clarify from the question how it was asked, the question said for the states to understand how to assemble the data in the usable five minute bins. So make sure you understand that NPMRDS is already in five minute bins. So the average travel times are already organized in five minute bins as you get them. What Rich just talked about is then taking the five minute bins and then processing them to calculate the metrics and the measures.

Rich Taylor: Right, Pete. This is Rich. The assembling I believe is referred to in the rule as assembling a year's worth of data, of the five minute bin data, to then calculate the metrics. And that's the processing step that I reference, so that's correct.

Jessica Baas: Okay. The next question we'll take is from Charles. "For emissions reductions reporting, many projects take months or years to implement. How should this be reported?"

Emily Biondi: Charles, the emissions are reported the first year the project receives funding. So that's the first year you report it. And it's based on the open to traffic year. So you should estimate if a project's going to take two years, it's when it's actually going to be complete, because obviously you're not going to have emissions from operations of a project until after it's open to traffic, assuming it's an open to traffic type project. So that's how you do it. So it's report it when you first receive funding, but it's actually based on the emissions of when a project is complete or open to traffic.

Jessica Baas: Okay, thank you. It looks like that's all the questions we have for right now. Do we want to go back to the presentation?

Pete Stephanos: Sure, Jessica. And if more questions come in, we can catch those as we go to the final slides here. Okay. So that we went over how to calculate the measures and the metrics, and the reporting and the target establishment process that's proposed in the NPRM. We want to just review quickly how you can submit dockets to the document, and where you can get more information. So at our Office of Transportation Performance Management website, which you can see on the URL in the slide right now, we do have additional resources to assist in understanding the proposed rules. The past webinars describing the previous two NPRMs, as well as webinars on target establishment, nontraditional performance measures and linking performance measures to improve performance outcomes are archived on the Office of TPM website. We've offered an overview presentation and additional in-depth presentations on other measures that we're proposing in this NPRM to describe in greater detail the specific metrics, measures and reporting requirements as they relate to each of the measure areas. These are also available as recordings on our office website. So basically, if you go to the website that's showing up here on the URL, we have all the recordings of the webinars, but we have in addition some good short fact sheets and other presentations that are related, and links to all the information on the docket that is accessible right through that one source. All public comments on the NPRM must be submitted to the docket at www.regulations.gov using Docket Number FHWA 2013-0054. Comments should be submitted by August 20th. Also be sure to check our website and our both the FHWA website and the TPM website that are referenced in the previous slide for additional materials. And we're going to have the recording posted there shortly, and you'll get an email if you registered for this event also with the link. If you have any follow-up questions or would like any additional information, please contact Francine Shaw Whitson. And her information and contacts are shown on the slide right now. So with that, Jessica, do we have any other questions that we'd like to address?

Jessica Baas: It looks like another question came in. And so if you have any final questions, please do enter them now. But the question that came in is from David McMaster, and it reads, "If the first year a project is CMAQ-funded is prior to the beginning of the first performance period, is it excluded from the

measure, even though it continues to be funded by CMAQ?" And then he wrote, "Think a TBM project, non-construction."

Emily Biondi: Depending on what year it was first funded, it may be included in the baseline or, yes, if it's more than I guess five years old since it was first started, then it would not be included in this performance period. If you have other thoughts on how we should do that, please submit those to the docket.

Jessica Baas: Okay, thank you. And it looks like we have a couple people typing. We'll give them just another moment. Oh. We have another question from Metro. "If a region is in attainment status by October 1st, 2017, would we need to address CMAQ targets?"

Pete Stephanos: Again, the date we're using is the status as of October 1st, 2018, which would be the first as we're proposing right now, the first baseline performance report that would be due. And so the sort of determinations at that point would determine if you're in or if you're out. So if they're in attainment status October 2017, it doesn't guarantee. You have to-- it would be a whole another year after that. So if you have any comments on sort of that date and that time, then we encourage you to submit those to the docket.

Jessica Baas: Okay. And it looks like we have another question from David McMaster. "Does exclusion of older projects that are ongoing from the performance measures not encourage MPOs and states from abandoning projects that may be valuable?"

Emily Biondi: Again, we had to sort of make a decision on how we would include certain projects. And since emissions are only counted once, we had to figure out a way not to continue to double count them or quadruple count them as they keep showing up in the database. If you have any suggestions on how-- a different approach, please send those to the docket.

Jessica Baas: Okay. Thank you to all our presenters. It looks like that's all the questions we have for today. So this concludes the CMAQ performance measures NPRM webinar, and we invite you to close out of the web room at this time. Have a good afternoon.

Operator: Ladies and gentlemen, that does conclude our conference today. We'd like to thank you for your participation.