



Commonwealth Transportation Board Environmental Committee

VDOT Central Office
1401 East Broad Street
Richmond, Virginia 23219

October 19, 2021

Minutes

The meeting was called to order at 8:36 a.m.

Members of the Committee in Attendance: Rob Cary, Chair; Mary Hynes, Scott Kasprovicz, Mark Merrill

Welcome

Rob Cary, Chief Deputy Commissioner, VDOT

Overview of Environmental Quality Measures for SMART SCALE Round 5

Brooke Jackson, Office of Intermodal Planning and Investment

- The presentation covers proposed changes to environmental quality measures E.1 (air quality) and E.2 (impact to natural and cultural resources), land use measure, and cost estimates for SMART SCALE Round 5.
- SMART SCALE score = benefit score over funding requested. Scoring is based on outcomes, not the size of the problem.
- At the request of CTB members, we explored enhancing E.1 Quantify Greenhouse Gas (GHG) Emissions and increased scrutiny of E.2 measure as a negative measure.
- The intent of the E.1 measure is to reduce GHG emission. Can the process be improved or benefits better quantified? The primary strategy to improve air quality and reduce GHG is to reduce Vehicle Miles Traveled (VMT)/ increase non-Single-Occupancy Vehicle (SOV) VMT
- Currently, applicants can check off which non-SOV project characteristics are included in a project.
- Points are assigned to various components.

- Freight transportation projects: This number comes from congestion measure (does the project reduce traffic delay?).
- We had to find a way to compare both on the same level.
- We're proposing removing the Special Accommodations category because it does not have a specific user category.
- Kasprovicz: What can we use to rate the performance of an applicant stating an intention to increase non-SOV users?
- Jackson: This will be validated by both DRPT and VDOT.
- **Potential Qualitative Improvements**
- Change how points are calculated to reflect increase in users by type/mode, rather than multiplying every category by the total number of increased users. This will generate a more precise calculation and increase accountability.
- The increase in non-SOV users will be kept separate from freight. Quantifying how much delay is reduced (by person hours of delay) vs. a binary "yes" or "no" (is delay reduced?).
- The mode factor score and the freight score would each be weighted at 50%.
- We are also changing this factor to normalize scores (the maximum is 100). All projects now compared on a 100-point ranking system.
- **Potential Quantitative Improvements: Calculate CO2 Offset**
- Use existing collected data for high-level analysis
- We are adding trip length.
- Two parts: Non-SOV CO2 offset + reduced truck delay CO2 offset
- Non-SOV CO2 offset – users will be multiplied by trip length for VMT. Pedestrians are multiplied by the national average of 0.67 miles. Bicyclists are multiplied by the national average of 3.54 miles. Will be tracked separately and summed.
- Freight CO2 offset – reduced truck delay and heavy vehicle CO2 offset
- Final measure is sum of two values: non-SOV CO2 offset + freight CO2 offset
- The number of kilograms of GHG reduced is being estimated.
- **E.1 Proposal:** Combine qualitative and quantitative methods. Weight them together (at 50% each) to get a new measure.
- Deputy Secretary of Transportation Nick Donohue: Using the tools we have today, this refinement is manageable, replicable, and defensible. There is logic behind each step. We would like to incorporate this into the SMART SCALE Round 5 methodology.
- Length is considered, which will create some changes.
- Merrill: Will jurisdictions be able to understand this?

- Donohue: They should be able to understand what we're doing. Some have staff who can't run congestion measures, so they may not be able to run the non-SOV user measure. But we can explain that we are trying to quantify GHG emissions reduction and reduce SOV VMT leading to **reduced fuel use** (our primary goal) and reduced delays.
- Jackson: The C1 and C2 analysis was done on actual segments of roads.
- People who submit transit projects already provide length of route and passenger increase.
- **E.2 Proposal**
- This measure looks at impact to natural and cultural resources.
- Currently, there is a ¼-mile project buffer put around every project. It is overlaid with sensitive areas. If people are making specific decisions to do a project with a less harmful impact, perhaps it is not necessary to apply a buffer of this size.
- Merrill: Why was ¼ mile chosen?
- Donohue: It was the best subjective decision at the time. A mile was too large. 1/8 of a mile didn't capture everything. If a project is within the right-of-way, it should not receive a negative point impact because it is not disturbing land or resources outside of that area. In other words, it hasn't left that built environment.
- Angel Deem: It is based on general best practices for project scoping. We sometimes look at a 2-mile radius. We realized we should be varying that buffer depending on what the project is to scale the buffer appropriately.
- Donohue: In the past, we were multiplying impacted acres by a percentage. We are trying to fix this without breaking it.
- Jackson: A category type is assigned. The different scaling factors are based on level of impact.
- OIPI and VDOT's Environmental Division had an idea – different project features could have different buffers applied to them, creating a tiered buffer system.
 - Tier 1 = 30 ft (considered within the right-of-way)
 - Tier 2 = 1/8 mile
 - Tier 3 = ¼ mile
- For projects that include multiple features, the buffer is calculated based on the largest component (e.g., a project that includes both road widening and a bus lane would use the buffer appropriate for the widening component).
- Kasproicz: Tiering makes sense. Should Tier 3 be greater than ¼ mile now?
- Deem: For larger projects, the assumption built in is that the NEPA process is complete. This is just another insurance.
- Projects receive the credit for right-sizing their projects in SMART SCALE.
- Merrill: Should a project be downgraded when they have no choice because of where the project is? (e.g., sensitive historical resources such as battlefields surrounding I-81)

- Jackson: We are trying to implement something that is automated on some level. The Environmental Division ensures that the GIS information we have is as up-to-date and as relevant as possible. They review projects to ensure everything that has to be included is.
- Deem: Battlefields along I-81 impact many projects. In our review of the GIS data being utilized, we found opportunity to focus on this type of review, using battlefield core areas as an example. DHR designated these core areas separate from layers that depict everything related to a battlefield.
- Donohue: The E2 measure was created so that if two projects have the same benefits relative to their costs, and one has negative impacts on the environment and the other does not, it can help distinguish between the two. No project is funded or not funded based solely on this. Other benefits (E1) must exist as well.
- Applying this improved distribution, statewide only 2 projects would be impacted under this funding scenario.
- Kasproicz: We are applying this to only 10% of improvements in SMART SCALE. I question whether that's appropriate in today's world.
- Donohue: As we've made changes to SMART SCALE, projects with many benefits that rank very highly do not change much when we use different measures and weights.
- Merrill: With the new E1 measure, are there redundancies?
- Donohue: It is also used in the accessibility score. However, while it's an input, there is still another factor (congestion output is not used directly). Where we use an output from one measure in another measure, we multiply it by something else to capture what we're trying to measure. Two projects with the same congestion score could have different freight scores and therefore have different E1 scores.
- Jackson: With non-SOV, we are adding the critical component of trip length.
- Land Use has two components: L.1 (Future Transportation Efficient Land Use) and L.2 (Increase in Transportation Efficient Land Use).
- Both consider the number of key non-work destinations that are accessible within a reasonable walking distance, scaled by population density.
- Is 3-mile buffer excessive? Should other area types be considered for Land Use?
- Cost Estimates
 - VDOT published Cost Estimating Manual and an associated implementation plan
 - Working with Cost Estimation Office on a consistent message broadcast across the SMART SCALE platform and on updated estimation tools
 - Implementing pre-application and full application consistency
- Next steps: public comment period in November; CTB action in sought in December.

Public Comment

- Trip Pollard: Overall, this seems positive. To the question about overall weighting getting us more accurate measures, it still doesn't reflect the importance about reducing GHG emissions.

- We have continued to improve SMART SCALE over time. One of the successes is the continual feedback and improvements. I do have concern about the freight element not accounting for induced demand. We are looking only at reduced GHG emissions from congestion that a widening project would provide. But will that project lead to more trucks on the road and more emissions? Still, this is a step in the right direction.
- Hynes: When we look at these increases, are we looking at them in the moment, not projecting them out?
- Jackson: Yes, this is based on solving a serious problem today. Our average speeds aren't increasing much. We are trying to move the needle with the resources we have.
- Hynes: In my district, we have places where we can't widen anymore. But we also have places where new roads and widening are possible, and we have to consider what that does to traffic. There are places where transportation leaders want to add two more lanes. Ten years from now, we are going to be looking at another congested corridor. There needs to be a way to look at long-term GHG effect of projects.
- Donohue: We recognize the problem of induced demand and have seen it even in the I-95 corridor plan. For the next round of SMART SCALE, we may not be able to come up with a workload-manageable way of calculating induced demand. But for future rounds, we know that the Environmental Division is looking at NEPA when there is something that can be plucked out of NEPA and taken into account. OIPI can monitor the work the Division is doing with GHG and look at those outcomes to see if there is an output that could be considered for larger projects as a counterweight in SMART SCALE. It may change how we do their offset. We need to think about these unintended consequences.
- Kasprovicz: Could we study this retroactively and look back 20 years at what was projected in NEPA studies and what the actual outcome was?
- Donohue: An analysis like that could help inform the process.
- Kasprovicz: That would be valuable research we could do.
- Donohue: There is some cutoff that is of utility to which projects we look at. Is there comfort in waiting for future rounds as we try to do that analysis?
- Kasprovicz: Is this pace appropriate for the conditions we're facing? This is the time to evaluate the scoring. Anything in the top tier of projects should be even more critical now.
- Donohue: We will be asking the Board to take action on this in December or January. We are happy to take action on this, but I'm not sure past NEPA documentation can tell us all of this. It will give us information on what was studied and built. The question is whether we can apply the findings from one or two projects to all future projects for purposes of calculating induced demand.
- We are working on a before-and-after analysis of completed projects, focusing on measures where the projects got the greatest number of points. Looking at one measure doesn't give a good picture; we're hoping to look at 3-4 measures. We will come back in the next few months with what we find.

- Kasprowicz: Now that the pipeline is full, the hope is that this review will be recurring.
- Hynes: Would it be possible, after Round 5, to say here's what we expect the net GHG effect to be from implementing these projects?
- Donohue: We could calculate the CO2 reduction, but I'm not sure we could anticipate the net.
- Hynes: At some point, there is going to be a number assigned to the transportation sector. We should ensure we are ahead of the curve regarding how we talk about that (e.g., reduction in VMT and in GHG).
- Donohue: We may end up with a year and a target date. SMART SCALE and other programs will give us some sense of what we will see over the next few years. We can check each year to see if we're heading in the right direction and what changes we might need.

Update on VDOT Environmental Division GHG Reduction Efforts

Angel Deem, State Environmental Manager, VDOT

- 2018 GHG Emissions by Sector report shows 29% of emissions coming from the Transportation sector.
- VDOT's internal analysis essentially matches what DEQ inventory shows. DEQ is doing state's baseline inventories for 2005, 2010, and 2018. We have provided data to them recently for the updated inventory.
- Fuel efficiency is (almost exclusively) explaining the current GHG reductions.
- The Statewide Travel Demand model baseline is 2015, so that's what VDOT has used.
- DEQ will be publishing their inventory imminently. As we do calculations for scenarios, we have a good baseline for assessing that.
- Hynes: Does the transportation sector include only vehicles moving on the road, or does it also include construction, paving contributions?
- Deem: There is a small amount focused on things other than cars moving on roads.
- DEQ: The off-road emissions figure includes this granularity.
- Kasprowicz: Can we get that breakdown?
- Deem: There is a slide in the presentation last month that breaks it out. If you need additional data, we can request more.
- Hynes: It will help us understand exactly what we are contributing.
- Cary: The CAFÉ standards we can't influence. But the adoption of EVs we can influence.

Approval of September meeting minutes

The meeting was adjourned at 9:53 a.m.