

We have reached consensus on how to score projects. Please note that some of these still could change based on feedback from either the legislature or the Board of Transportation, so this is still essentially draft. Here is a summary of the scoring criteria:

**Highway Project Default Weights:**

|                            | Statewide | Regional | Division |
|----------------------------|-----------|----------|----------|
| Benefit-Cost               | 25%       | 20%      | 15%      |
| Congestion                 | 30%       | 20%      | 15%      |
| Economic Competitiveness   | 10%       | --       | --       |
| Accessibility/Connectivity | --        | 10%      | 5%       |
| Safety                     | 15%       | 10%      | 10%      |
| Freight                    | 15%       | 10%      | 5%       |
| Multimodal                 | 5%        | --       | --       |
| Lane Width                 | --        | --       | --       |
| Shoulder Width             | --        | --       | --       |
| Pavement Condition         | --        | --       | --       |

- Benefit-Cost =  $[(\text{Total Benefits over 10 years} / \text{Cost to NCDOT}) + ((\text{"Other Funds"} / \text{Total Project Cost}) \times 100)]$  (note: total benefits includes travel time benefits and safety benefits; "other" is non-DOT controlled funding sources (local, private, tolling, etc.))
- Congestion (Statewide) =  $[(\text{Peak ADT/Capacity}) \times 60\% + ((\text{Peak ADT}) \times 40\%)]$
- Congestion (Regional) =  $[(\text{Peak ADT/Capacity}) \times 80\% + ((\text{Peak ADT}) \times 20\%)]$
- Congestion (Division) = Peak ADT/Capacity
- Economic Competitiveness = Long Term Jobs Created (50%) + Value added in \$ based on % change in county economy (50%) (note: using TREDIS model)
- Accessibility/Connectivity = 50% county rankings used in "tier" designations (economic distress indicator) + 50% whether the project upgrades the function of the roadway (yes/no – if yes, then score based on per-user travel time benefits)
- Safety (segments) =  $(\text{crash density} \times 33\%) + (\text{crash severity} \times 33\%) + (\text{critical crash rate} \times 33\%)$
- Safety (intersections) =  $(\text{crash frequency} \times 50\%) + (\text{severity index} \times 50\%)$
- Freight =  $(\text{truck volume on the route} \times 50\%) + (\text{Peak ADT/Capacity only if the route is non-Interstate STRAHNET route or Future Interstate corridor} \times 30\%) + (\text{proximity to gate of freight terminal, max 20 miles} \times 20\%)$
- Multimodal =  $(\text{Peak ADT/Capacity only if the project is within 5 miles of a multimodal terminal} \times 40\%) + (\text{proximity to gate of multimodal terminal, max 5 miles} \times 60\%)$
- Lane Width = Existing lane width - DOT design standard lane width
- Shoulder Width = Existing shoulder width - DOT design standard shoulder width
- Pavement Condition = 100 - pavement condition rating

**Bike/Ped Project Default Weights:**

|                | Division (not eligible for Statewide/Region) |
|----------------|----------------------------------------------|
| Safety         | 15%                                          |
| Access         | 10%                                          |
| Demand-Density | 10%                                          |
| Connectivity   | 10%                                          |

|                    |    |
|--------------------|----|
| Cost Effectiveness | 5% |
|--------------------|----|

- Safety = 40% bike/ped crash history + 40% posted speed limit + 20% safety benefits
- Access = 50% number of destinations (different weights for primary and secondary) + 50% proximity to destinations (1 mile max for ped, 3 miles max for bike) *(note: similar to P3.0, but some changes to what count as destinations)*
- Demand-Density = number of households and employees per square mile within 1.5 miles for bike or within 0.5 miles for ped (also incorporate second homes & group quarters into the household calculation)
- Connectivity = measure of whether the facility connects with other facilities at its endpoints and the quality/consistency of those connections
- Cost Effectiveness = ((Safety + Access + Demand-Density + Connectivity) / Cost to NCDOT)

**Aviation Project Default Weights:**

|                              | Statewide | Regional | Division |
|------------------------------|-----------|----------|----------|
| NCDOA Capital Project Rating | 40%       | 30%      | 25%      |
| FAA ACIP Rating              | 10%       | 5%       | 10%      |
| Non-state Contribution Index | 30%       | 20%      | 5%       |
| Benefit-Cost                 | 20%       | 15%      | 10%      |

- NCDOA Capital Project Rating = state-developed rating based on priority of that project type
- FAA ACIP Rating = federally-developed rating based on priority of that project type
- Non-state Contribution Index = based on how much of the cost (%) is covered by non-state sources
- Benefit-Cost = (((Total \$ Economic Contribution of that Tier / Number of IFR Operations in that Tier) x NCDOA Capital Project Rating) / Project Cost)

**Public Transportation Project Default Weights:**

**TRANSIT – EXPANSION VEHICLES**

|                    | Regional | Division |
|--------------------|----------|----------|
| Access             | 10%      | 5%       |
| System Safety      | 10%      | 10%      |
| Impact             | 20%      | 15%      |
| Cost Effectiveness | 20%      | 15%      |
| Market Share       | 10%      | 5%       |

- Access = annual OpStats reported hours / vehicles in fleet
- System safety = OpStats reported miles / 3 year average of incidents
- Impact = (unlinked annual passenger trips + projected new unlinked annual passenger trips) / unlinked annual passenger trips
- Cost Effectiveness = projected new unlinked passenger trips for the life of the vehicle / cost to the state
- Market share = (unlinked passenger trips + projected new unlinked annual passenger trips) / service area population

**TRANSIT - FIXED GUIDEWAY**

|          | Regional | Division |
|----------|----------|----------|
| Mobility | 20%      | 15%      |

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|                      |     |     |
|----------------------|-----|-----|
| Cost Effectiveness   | 15% | 15% |
| Economic Development | 20% | 10% |
| Congestion Relief    | 15% | 10% |

- Mobility = estimated annual trips (1 point per 250,000)
- Cost effectiveness = cost of the trip over the life of the project (max points if \$1.00 or lower, zero points if \$4.00 or higher)
- Economic development = 1 point per 1,000 new employees and 1 point per 500 new residents
- Congestion relief = (Guideway passengers per day x 290 days x 30 years x average time of trip x value of time) / \$10,000,000

**TRANSIT – FACILITIES**

|                           | Regional | Division |
|---------------------------|----------|----------|
| Impact or Age of Facility | 20%      | 15%      |
| Cost Effectiveness        | 20%      | 15%      |
| Market Share              | 15%      | 10%      |
| Ridership Growth          | 15%      | 10%      |

- Impact = (Additional capacity + existing capacity) / Existing capacity
- Age = age / 45 years
- Cost effectiveness = estimated trips for the life of the facility / cost to the state
- Market Share = (unlinked passenger trips + projected new unlinked annual passenger trips) / service area population
- Ridership growth = ridership growth trend for the previous 5 years

**Ferry Project Default Weights:**

|                             | Regional | Division |
|-----------------------------|----------|----------|
| Asset Condition             | 15%      | 15%      |
| Benefits                    | 10%      | 10%      |
| Accessibility/ Connectivity | 10%      | 10%      |
| Asset Efficiency            | 15%      | 15%      |
| Capacity/ Congestion        | 20%      | --       |

- Asset Condition = 100 - asset condition rating
- Benefits = monetized value of number of hours saved due to VMT reductions
- Accessibility/Connectivity = number of points of interest within 3 concentric rings of the route, scaled by factor for each ring (75% for ring 1, 50% ring 2, 25% ring 3)
- Asset Efficiency = 3 year maintenance cost / prorated 3 year replacement cost
- Capacity/Congestion = % of number of vehicles left behind for any given run compared to total number of vehicles carried by the route (annual)

**Rail Project Default Weights:**

|                      | Statewide | Regional | Division |
|----------------------|-----------|----------|----------|
| Cost Effectiveness   | 35%       | 25%      | 20%      |
| System Health        | 35%       | 20%      | 10%      |
| Safety & Suitability | 20%       | 15%      | 10%      |
| Project Support      | 10%       | 10%      | 10%      |

- Cost Effectiveness = ((Monetized Benefits / Cost to NCDOT) x 75%) + ((Long-term Jobs Created in Year 20 \* Weighted County Unemployment Rate) x 25%)

- System Health (Passenger Station) =  $((\text{Volume} / \text{Capacity}) \times 75\%) + ((\text{Points of Interest within 10 miles of this station} / \text{Average Points of Interest within 10 miles of existing stations in state}) \times 25\%)$
- System Health (Rail Improvements) =  $((\text{Volume} / \text{Capacity}) \times 75\%) + ((\text{Percentage of project that improves the NCTN statewide rail system}) \times 25\%)$
- System Health (Grade Crossings) =  $((\text{Volume} / \text{Capacity}) \times 75\%) + ((\text{Employment density by grade crossings}) \times 25\%)$
- Safety & Suitability = SARAH Investigative Index x Mitigation Factor (1.0 for grade separations, 0.5 for at-grade improvements)
- Project Support = Outside (non-state) Contributions / Cost to NCDOT

#### **OTHER IMPORTANT UPDATES:**

- **Timeline for submitting projects:** To allow more time for NCDOT's IT vendor to get the SPOTOnline website up and running, the window for submitting projects has been pushed back one month to **October 2015**. Nothing else on the schedule is expected to change – “regional” local points will still be assigned in April/May 2016 and “division” local points will still be assigned in Aug/Sept 2016.
- **Scaling of Scores:** In an effort to improve the distribution of project scores, the raw scores developed for each criterion will be scaled based on the results of scoring all the other projects (e.g. Project “Z” has a raw congestion score of 27.2, but that's actually the highest congestion score of any project, so it would be rescaled from 27.2 to 100. The same project has a raw benefit-cost score of 87.4, but that is actually the median Benefit-Cost score of any project, so it would be rescaled from 87.4 to 50.) We think this should do a lot to address issues we saw in P3.0 where certain criteria were carried much greater/lesser weight than they were intended to have due to poor distribution of scores.
- **Alternate Criteria:** As in P3.0, there will again be an opportunity for Divisions & Regions to diverge from the default weighting percentages.. Please note that the alternate criteria from Divisions 1-4 last time will not automatically carry forward, so if those areas (or any areas) wish to have alternative criteria this time, they will need to go through the process again. Any changes require unanimous agreement from all MPOs, RPOs, and Division Engineers within the affected area. The deadline for developing/approving these alternate criteria and submitting them to NCDOT will be **October 1, 2015**.
- **Normalization:** The Work Group has recommended handling normalization the same way it was handled in P3.0, as shown below:
  - No normalization in the statewide category – project selections are based on the scores
  - In the Region & Division categories:
    - Step 1: program 4% minimum for non-highways (this is done as a “statewide” competition)
    - Step 2: program 90% minimum for highways (this is done at the region/division level)
    - Step 3: program the remaining 6% that is flexible (highway or non-highway)(this is done at the region/division level with whatever money is left in that region/division)
- **Local Point Methodologies:** Once again, each MPO and RPO will have to submit its local point assignment methodology to NCDOT for approval (similar to P3.0). If there are no changes to your methodology, you will only need to send the SPOT office notification that there are no changes, but if you make any changes then it will need to be approved again. The deadline for

getting those in is when the window opens for local input point assignment (currently scheduled for April 2016).

- **SPOTOnline web tool:** NCDOT is working to make improvements to the SPOTOnline tool to incorporate changes for P4.0. As you may remember, in P3.0 you were able to see a draft score for many types of projects when they were submitted through SPOTOnline. In P4.0, it will not be possible to see a draft total score at the time you enter a project, because the scores will not be scaled until after all projects have been entered (see above for scaling explanation).. However, you should still be able to see raw (unscaled) scores for some of the components of the total score (as of now, we expect you should be able to see raw score components for congestion, freight, multimodal, pavement condition, lane width, shoulder width, and safety on the highway criteria). Please take these limitations into account as you think about your process for submitting projects.

### **BIG UNRESOLVED ISSUES:**

- **Cleaning Up the Existing Database, the Number of New Submittals Allowed, and the Number of Local Input Points:** these are all related issues, and we have not yet been able to reach consensus. In general, there is recognition that it would be helpful to clean some of the poor-performing projects out of the existing project database, but there is not agreement yet on how to proceed. There are a few concepts being floated:
  - Clean out everything except projects that are in second 5 years of STIP (non-committed STIP projects), sibling projects of projects that are in the STIP, and projects with completed NEPA documents (these would automatically be carried forward for consideration in P4.0). Everything else would be removed from automatic carry-over and instead placed in a “holding tank” where they could be resubmitted by MPOs/RPOs/Divisions without having to re-enter the projects from scratch. Under this scenario, we would probably want a relatively higher number of new submittals/resubmittals to be allowed.
  - Clean out some percentage of bottom-scoring projects based on P3.0 scores. There are many ways this could be done (bottom 1/3, bottom 1/2, is % based on pulling out the automatic carry-forward projects or not, etc.). The number of new projects necessary varies based on how much stuff is being removed.
  - Keep everything, but only allow new submittals if old projects are removed (“one in-one out”)
  - **We realize that it is getting very late in the process, and that this could have a very big impact on the processes each RPO will need to go through this summer as far as identifying projects to submit for P4.0. For this reason, we are working very hard to have a decision about this at our next meeting on May 18<sup>th</sup> so that we all know what the rules will be and can move forward with our respective processes as RPOs. Keep this in mind as you begin to prepare – depending on what decision gets made, you may have more work than you originally anticipated in terms of identifying projects to submit!**
- **Local Input Point Split between MPOs/RPOs and Division Engineers:** the Work Group has not yet come to consensus on the amount of weight that should be given to local input points from MPOs and RPOs versus those from Division Engineers. There are currently two options we are looking at:
  - Maintain even split (25/25 in Division and 15/15 in Region)
  - Give more weight to MPOs/RPOs (30/20 in Division and 20/10 in Region)

## 5/6/15 – Workgroup Update Scoring Criteria/Weights

- There does not appear to be support within the Work Group for removing Division Engineer points entirely
- **Use of the Statewide Travel Demand Model (NCSTM):** Parsons Brinckerhoff (who are developing the model) are still testing things within the model to make sure it works the way we expect. At this point, we are only proposing to potentially use the model for calculating direct travel time savings (for example, as used in the benefit-cost criterion). Also, the model can only be used for statewide and regional-level projects (not division) because most division-level roads do not show up in the model. We will need to make a decision at the next meeting on whether to use the model for this, or whether to revert to the way travel time savings were calculated in P3.0.
- **Legislative Changes?** As always, there could be changes that come out of the General Assembly that require us to reconsider things.. We are keeping an eye on HB 672, which includes some language about the criteria for safety, multimodal, and freight.

As always, please let us know if you have questions or comments. As of today, we only have one more Work Group meeting scheduled (on May 18<sup>th</sup>), and hopefully we will be able to wrap everything up at that time.

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RPO Representatives to Prioritization 4.0 Work Group