



NORTH CAROLINA

Department of Transportation



P5.0 Scoring (Approved by the BOT): High-level Summary

June 29, 2017

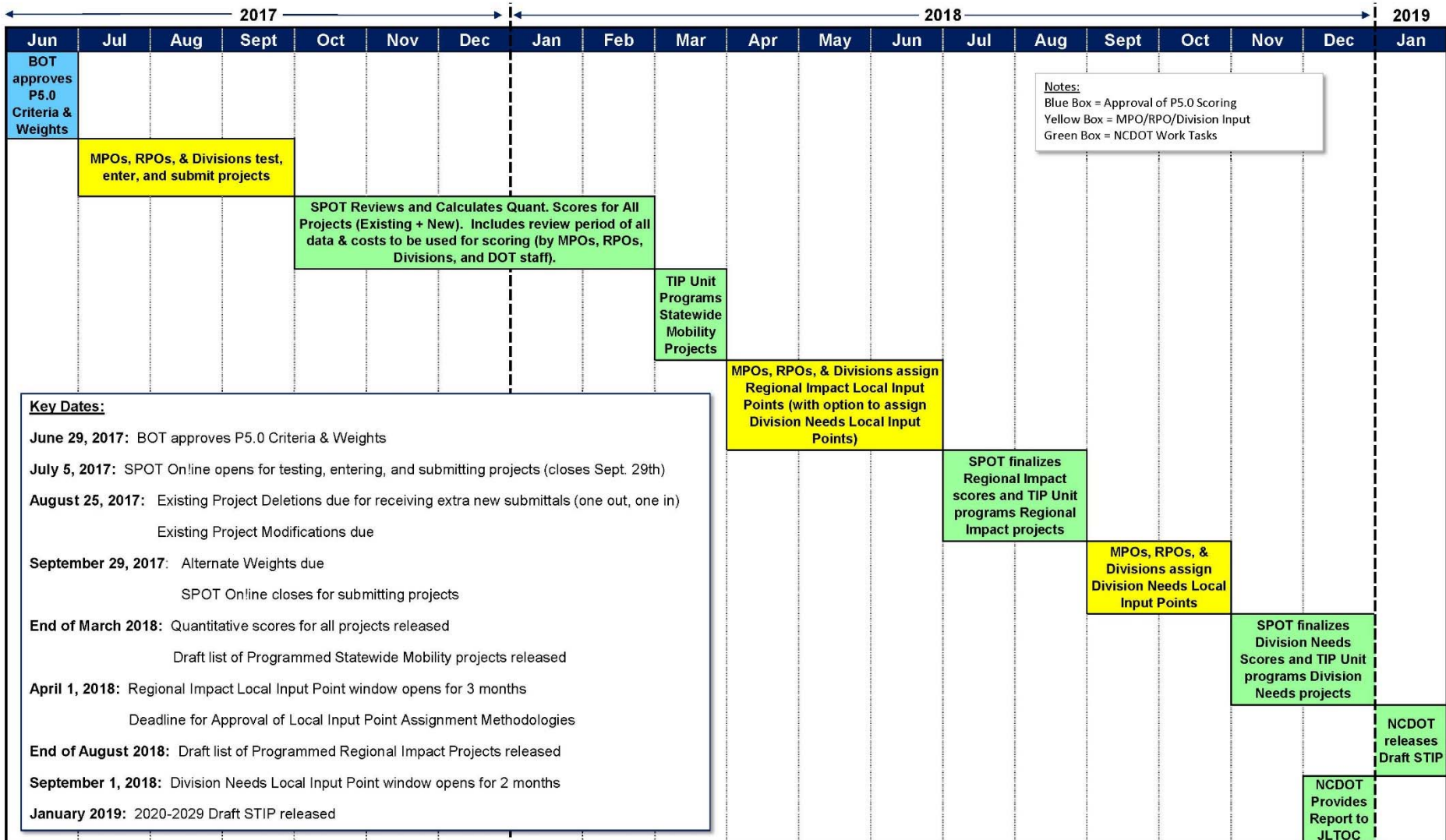
Today's Roadmap

- 1. P5.0 Schedule**
- 2. Projects to Evaluate**
- 3. Non-Highway Scoring**
- 4. Highway Scoring**
- 5. Local Input Points & Normalization**

P5.0 Schedule

Prioritization 5.0 Schedule

May 23, 2017





Projects to Evaluate

Committed Projects

Projects **NOT** subject to re-evaluation in P5.0

- Right-of-Way OR Construction date in 2018-2022 based on Final STIP (first 5 years of STIP)

- Committing on R/W date also locks in future construction dollars
- Commits projects based on first year STI dollars are programmed
- Applies to all modes

Projects to Evaluate in P5.0

Carryover Projects

Projects that automatically carry over from P4.0 for evaluation in P5.0

- Programmed in the Final 2018-2027 STIP, but not considered a Committed project
- Sibling of a programmed project
- The project has a NEPA document completed within the last 10 years or the NEPA document was actively being worked on

Projects to Evaluate in P5.0

Project Submittals

MPOs and RPOs:

- Base of 12 submittals, plus:
 - One additional submittal for every 50,000 in population
 - One additional submittal for every 500 centerline miles

Divisions:

- 14 submittals each

Above applies to each mode



Non-Highway Scoring

Aviation Scoring

Criteria	Measure	Statewide Mobility (100%)	Regional Impact (70%)	Division Needs (50%)
NCDOA Project Rating	NCDOA Project Rating	40%	30%	25%
FAA ACIP Rating	FAA Airport Capital Improvement Plan (ACIP) rating	10%	5%	10%
Non-State Contribution Index	% of Local Contribution vs State Contribution	30%	20%	5%
Benefit/Cost	Total Economic Contribution / Cost to NCDOT	20%	15%	10%

Bicycle & Pedestrian Scoring

Criteria	Measure	Division Needs (50%)
Safety	(Number of crashes x 40%) + (Posted speed limit x 20%) + (Crash severity x 20%) + (Project safety benefit x 20%)	15%
Access	(Destination Type x 50%) + (Distance to Prime Destination x 50%)	10%
Demand/Density	# of households and employees per square mile near facility	10%
Connectivity	Degree of bike/ped separation from roadway, connectivity to a similar or better project type, part of/connection to a national/state/regional bike route	10%
Cost Effectiveness	(Safety + Access + Demand + Connectivity) / Cost to NCDOT	5%

Ferry Scoring

Criteria	Measure	Regional Impact (70%)	Division Needs (50%)
Asset Condition	100 - Asset Condition Rating	15%	15%
Benefits	Number of hours (in \$) saved compared to driving	10%	10%
Accessibility/Connectivity	# of nearby Points of Interest	10%	10%
Asset Efficiency	3-year maintenance cost / 3-year replacement cost	15%	15%
Capacity/Congestion	% of vehicles left behind at each departure compared to total carried by the route	20%	-

Rail Scoring

Criteria	Measure	Statewide Mobility* (100%)	Regional Impact (70%)	Division Needs (50%)
Benefit-Cost	Benefit-Cost score	35%	25%	10%
System Opportunities	(Accessibility/Connectivity score x 50%) + (Multimodal score x 50%)	15%	10%	15%
Safety	Safety score	30%	15%	10%
Capacity and Diversion	(Volume/Capacity score x 75%) + (Highway Diversion score x 25%)	10%	10%	10%
Economic Competitiveness	Economic Competitiveness score	10%	10%	5%

*Only Class I Freight projects eligible in Statewide Mobility

Passenger Rail only eligible for Regional Impact and Division Needs

Public Transportation Scoring - Mobility

Criteria	Measure	Regional Impact (70%)	Division Needs (50%)
Impact	Number of trips affected by project	15%	10%
Demand/ Density	Total Trips / Service population	20%	10%
Efficiency	Total trips / Total revenue seat hours	10%	10%
Cost Effectiveness	Additional trips / (Cost to NCDOT / Lifespan of project)	25%	20%

Project Types:

- Route-specific vehicles (for new or expanded service)
- Fixed guideway (Light Rail, Commuter Rail)
- Bus Rapid Transit (BRT)
- Boss-on-shoulder-system (BOSS) / Busway

Public Transportation Scoring – Demand Response

Criteria	Measure	Regional Impact (70%)	Division Needs (50%)
Impact	Number of trips affected by project	10%	10%
Demand/ Density	Total hours with the project in place / Service population	20%	15%
Efficiency	Vehicle Utilization Ratio	15%	10%
Cost Effectiveness	Additional trips / (Cost to NCDOT / Lifespan of project)	25%	15%

Project Types:

- Vehicles

Public Transportation Scoring - Facilities

Criteria	Measure	Regional Impact (70%)	Division Needs (50%)
Impact	Number of trips affected by project	20%	15%
Demand/ Density	Ridership Growth Trend for the Previous 5 Years	10%	10%
Efficiency	Efficiency Score	15%	10%
Cost Effectiveness	Additional trips / (Cost to NCDOT / Lifespan of project)	25%	15%

Project Types:

- Passenger stations
- Stops/shelters
- Park and rides lots
- Administration/Maintenance buildings



Highway Scoring

Highway Scoring – Eligible Criteria

<u>Criteria</u>	<u>Existing Conditions</u>	<u>Project Benefits (Future Conditions)</u>
- Congestion (Volume/Capacity + Volume)		
- Benefit/Cost [(Travel Time Savings + Safety Benefits) / Cost to NCDOT]		
- Safety Score (Critical Crash Rates, Density, Severity, Safety Benefits)		
- Economic Competitiveness (% Change in Jobs + Economy)		
- Accessibility / Connectivity (County Economic Indicator, Improve Mobility)		
- Freight (Truck Volumes, Truck %, Future Interstate Completion)		
- Multimodal (Multimodal Benefits)		
- Lane Width (Existing Width vs. Standard Width)		
- Shoulder Width (Existing Width vs. Standard Width)		
- Pavement Score (Pavement Condition Rating)		

Highway – Congestion

<u>Funding Category</u>	<u>Criteria Weight</u>
Statewide Mobility	30%
Regional Impact	20%
Division Needs	15%

Purpose – Measure existing level of mobility along roadways by indicating congested locations and bottlenecks

Statewide Mobility	60% - Existing Volume/Capacity Ratio 40% - Existing Volume
Regional Impact	80% - Existing Volume/Capacity Ratio 20% - Existing Volume
Division Needs	100% - Existing Volume/Capacity Ratio

- Peak ADT will be used as the Existing Volume

Highway – Benefit-Cost

<u>Funding Category</u>	<u>Criteria Weight</u>
Statewide Mobility	25%
Regional Impact	20%
Division Needs	15%

Purpose – measure the expected benefits of the project over a 10 year period against the estimated project cost to NCDOT

$$\left[\frac{\text{(Travel Time Savings over 10 years in \$ + Safety Benefits over 10 years in \$)}}{\text{Project Cost to NCDOT at time of submittal}} \right] + \left[\frac{\text{Other Funds}}{\text{Total Project Cost}} \right] \times 100$$

- Cost can be lowered and score increased if other funds (non-federal or non-state funds) are committed

Highway – Safety

<u>Funding Category</u>	<u>Criteria Weight</u>
Statewide Mobility	10%
Regional Impact	10%
Division Needs	10%

Purpose – measure existing crashes along/at the project and calculate future safety benefits

Segments	20% - Crash Density
	20% - Crash Severity
	20% - Critical Crash Rate
	40% - Safety Benefits
Intersections	30% - Crash Frequency
	30% - Severity Index
	40% - Safety Benefits

Highway – Freight

<u>Funding Category</u>	<u>Criteria Weight</u>
Statewide Mobility	25%
Regional Impact	10%
Division Needs	5%

Purpose – Account for key indicators of freight movement

50% (Truck Volume) + 50% (Truck %) + Future Interstate Completion Factor

Future Interstate Completion Factor [Modernization Projects] = $((\text{Project Length} / \text{Miles Needed to Complete Future Interstate Corridor between NHS Routes}) \times 100) / 2$

Future Interstate Completion Factor [All Other Projects] = $((\text{Project Length} / \text{Miles Needed to Complete Future Interstate Corridor between NHS Routes}) \times 100)$

Max Future Interstate Completion Factor = 25

Highway – Economic Competitiveness

<u>Funding Category</u>	<u>Criteria Weight</u>
Statewide Mobility	10%
Regional Impact	N/A
Division Needs	N/A

Purpose – measure the economic benefits the transportation project is expected to provide in economic activity (GDP) and jobs over 10 yrs

Score based on Output from **TREDIS[®] (Economic Impact Model)**

50% - % change in county economy

50% - % change in long term jobs

- Does NOT include contingent (prospective) development
- Criteria is not intended to evaluate projects for recruiting purposes

Highway – Accessibility / Connectivity

<u>Funding Category</u>	<u>Criteria Weight</u>
Statewide Mobility	N/A
Regional Impact	10%
Division Needs	5%

Purpose – Improve access to opportunity in rural and less-affluent areas and improve interconnectivity of the transportation network.

50% - County Economic Indicator – Points are based on economic distress indicators:

- property tax base per capita
- population growth
- median household income
- unemployment rate

50% - Improve Mobility – If project upgrades mobility of roadway (e.g. eliminating signals), points based on travel time savings per user

Highway – Accessibility / Connectivity

Improve Mobility (Does project upgrade the roadway facility type?)

- Focus on improving how the roadway functions, with emphasis on enhancing traffic flow, removing/bypassing traffic signals, and increasing access control
- Eligibility based on combination of Existing Facility Type and Project Facility Type (see below)

Existing Facility Type (From)	Project Facility Type (To)
Two Lane Highway	Freeway
Two Lane Highway	Multilane Highway
Two Lane Highway	Superstreet
Multilane Highway	Freeway
Arterial (Signalized Roadway)	Freeway
Arterial (Signalized Roadway)	Multilane Highway
Arterial (Signalized Roadway)	Superstreet
Superstreet	Freeway
Superstreet	Multilane Highway

New Location (Freeway, Multilane Highway, Superstreet) and Upgrade Intersection to Interchange/Grade separation projects also eligible)

- If project is eligible, travel time savings per user is the measure

Highway – Multimodal

Funding Category

Criteria Weight

Statewide Mobility
Regional Impact
Division Needs

-
-
-

Purpose – measure degree the highway project benefits other modes

Score based on sum of benefits to other modes

Benefit points awarded based on:

- Proximity to airports, ferry terminals, ports, intermodal terminals, passenger bus or rail stations, park & ride lots, military bases
- If project includes bicycle and/or pedestrian accommodations, transit roadway components (bus-on-shoulder, pullouts, signal prioritization, etc), managed lanes

Highway – Multimodal Benefits Table

Mode	Benefit
Aviation	Within 1 mile of commercial service airport (passenger & freight access points)
Aviation	Within 1 mile of red & blue general aviation airport
Bike/Ped	Includes sidewalks, pedestrian crossings, striped bicycle lanes, wide outside lanes (greater than or equal to 14 feet), OR 4ft paved shoulder
Ferry	Within 1 mile of ferry terminal access point
Port	Within 1 mile of Port of Morehead City OR Port of Wilmington access points
Rail	Within 1 mile of NHS truck / rail intermodal terminal
Rail	Within 1 mile of Amtrak Station access point
Rail	Includes new highway-rail grade separation (primary purpose of project is highway)
Transit	Includes bus pullouts, transit bypass lanes, OR transit signal prioritization
Transit	Includes bus-on-shoulder-system (BOSS) OR managed lanes
Transit	Within 1 mile of major passenger station access points
Transit	Within 1 mile of standalone park and ride lot (minimum # spaces)
Military	Within 1 mile of access point to major military base on STRAHNET / defense access roads

Each row in above table is worth 1 point. Project score = sum of points

Highway – Lane Width

Funding Category

Criteria Weight

Statewide Mobility
Regional Impact
Division Needs

-
-
-

Purpose – measure the existing lane width vs. DOT design standard

Existing Lane Width – DOT design standard Lane Width

- Greater the difference, the higher points the project receives
- Does NOT mean that project will be constructed to design standard

Highway – [Paved] Shoulder Width

Funding Category

Criteria Weight

Statewide Mobility

-

Regional Impact

-

Division Needs

-

Purpose – measure the existing paved shoulder width vs. DOT design standard

Existing Paved Shoulder Width – DOT design standard Paved Shoulder Width

- Greater the difference, the higher points the project receives
- Does NOT mean that project will be constructed to design standard

Highway – Pavement Condition

<u>Funding Category</u>	<u>Criteria Weight</u>
Statewide Mobility	-
Regional Impact	-
Division Needs	-

Purpose – measure the existing pavement condition along the project

100 – Pavement Condition Rating

- Based on 2016 Pavement Condition Survey
- Higher scores indicate poorer pavement condition

Highway Scoring Criteria & Weights (Default)

Funding Category	<u>QUANTITATIVE</u>		<u>LOCAL INPUT</u>	
	Data		Division	MPO/RPO
Statewide Mobility	Congestion = 30% Benefit-Cost = 25% Freight = 25% Safety = 10% Economic Comp. = 10%	100%	--	--
Regional Impact	Congestion = 20% Benefit-Cost = 20% Safety = 10% Accessibility/Connectivity = 10% Freight = 10%	70%	15%	15%
Division Needs	Congestion = 15% Benefit-Cost = 15% Safety = 10% Accessibility/Connectivity = 5% Freight = 5%	50%	25%	25%

Note: Region(s) _____ and Division(s) _____ use Alternate Criteria & Weights

Highway Scoring – Alternate Weights

Available for Regional Impact and Division Needs scoring

Requirements:

1. All MPOs/RPOs/Division Engineers unanimously agree on Alternate Weights by funding category (inaction doesn't mean non-agreement; action required for disagreement)
 - Alternate Weights from P4.0 will not carry to P5.0
 - Within respective Paired Funding Region(s) or Division(s)
2. Memo to SPOT from each MPO/RPO/Division Engineer – reference TAC Chair(s) agreement
 - Memo must be received by **September 29th, 2017**



Local Input Points and Normalization

Local Input Points

Use in Regional Impact & Division Needs categories only

→ **All Modes**

of Points per Area = Base of 1,000 points

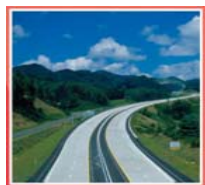
+ 100 additional points for every 50,000 in population

- Max 2,500 points per area
- Same allocation of points for Regional Impact and Division Needs
- 100 point max per project per category

MPOs, RPOs, & Divisions required to have approved methodology for assigning local input points

Normalization

Intent of STI legislation is to fund best transportation projects, regardless of mode



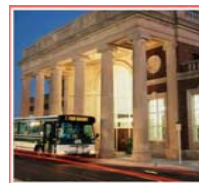
VS



VS



VS



VS



VS



Challenges:

- Different criteria and weights used for evaluating projects in each mode
- No “best practice” from national review – Peer Exchange in Dec. 2014 confirms this

Objective/Definition:

Allocation of funds between Highway and Non-Highway projects

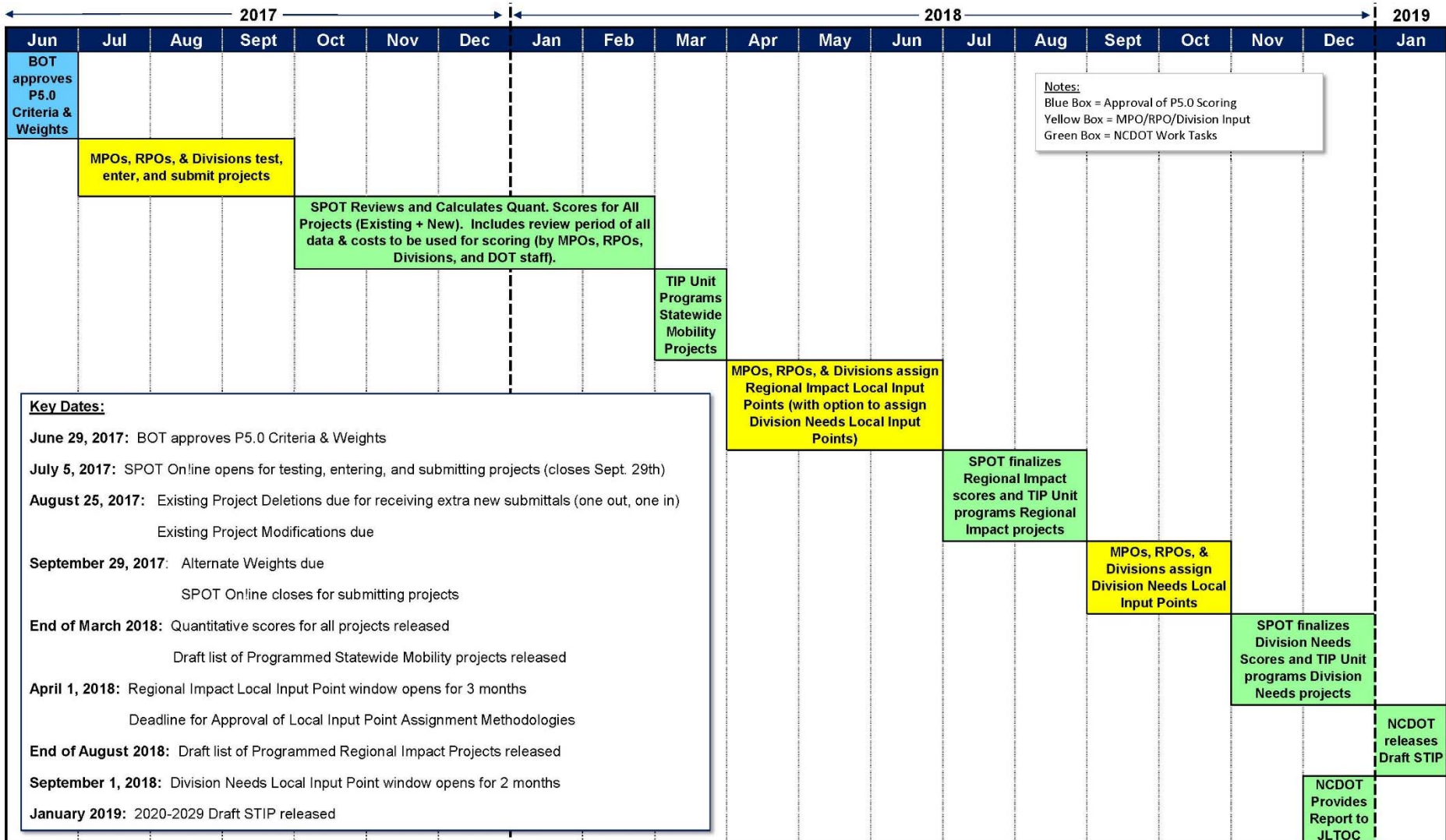
Normalization

Mode	Regional Impact	Division Needs
Highway	90% (Region competition)	90% (Division competition)
Non-Highway	4% (Statewide competition)	4% (2% Statewide competition, 2% Division competition)
Flex	6% (Region competition)	6% (Division competition)

P5.0 Schedule

Prioritization 5.0 Schedule

May 23, 2017



Contact Information

STRATEGIC TRANSPORTATION INVESTMENTS

Smart decisions to keep North Carolina moving.

Van Argabright, P.E.
STIP and Feasibility
Studies Manager
(919) 707-4622
vargabright@ncdot.gov

David Wasserman, P.E.
Prioritization Office
(SPOT) / STIP Western
Region Manager
(919) 707-4743
dswasserman@ncdot.gov

Sarah E. Lee
Prioritization Office
(SPOT)
(919) 707-4742
selee@ncdot.gov

Jason Schronce, P.E.
Prioritization Office
(SPOT)
(919) 707-4646
jschronce@ncdot.gov

<https://www.ncdot.gov/sti>