COMMONWEALTH of VIRGINIA
Office of the
SECRETARY of TRANSPORTATION

2023 VASITE Annual Meeting
SMART SCALE Round 5 Overview and Lessons Learned

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Agenda

- Round 5 Summary
- Lessons Learned and Feedback
- Screening and Validation Improvements
- Congestion Mitigation Overview
- Congestion Mitigation Improvements
- Implementation Timeline

SMART SCALE Round 5 – Summary

Funds available: $1.9 Billion

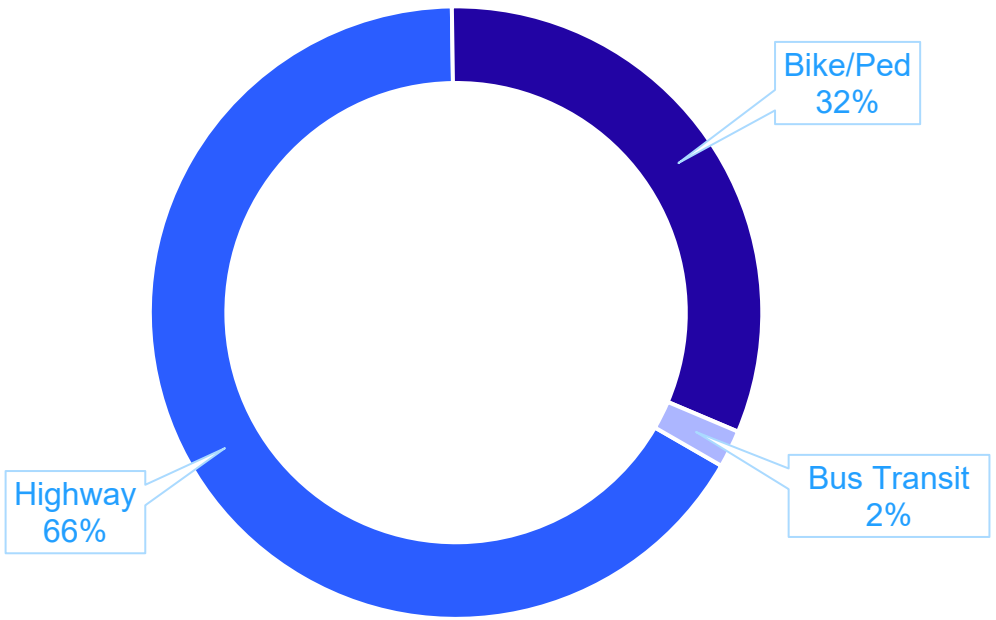
$1.6B allocated to 165 applications

$252M used for inflation adjustments

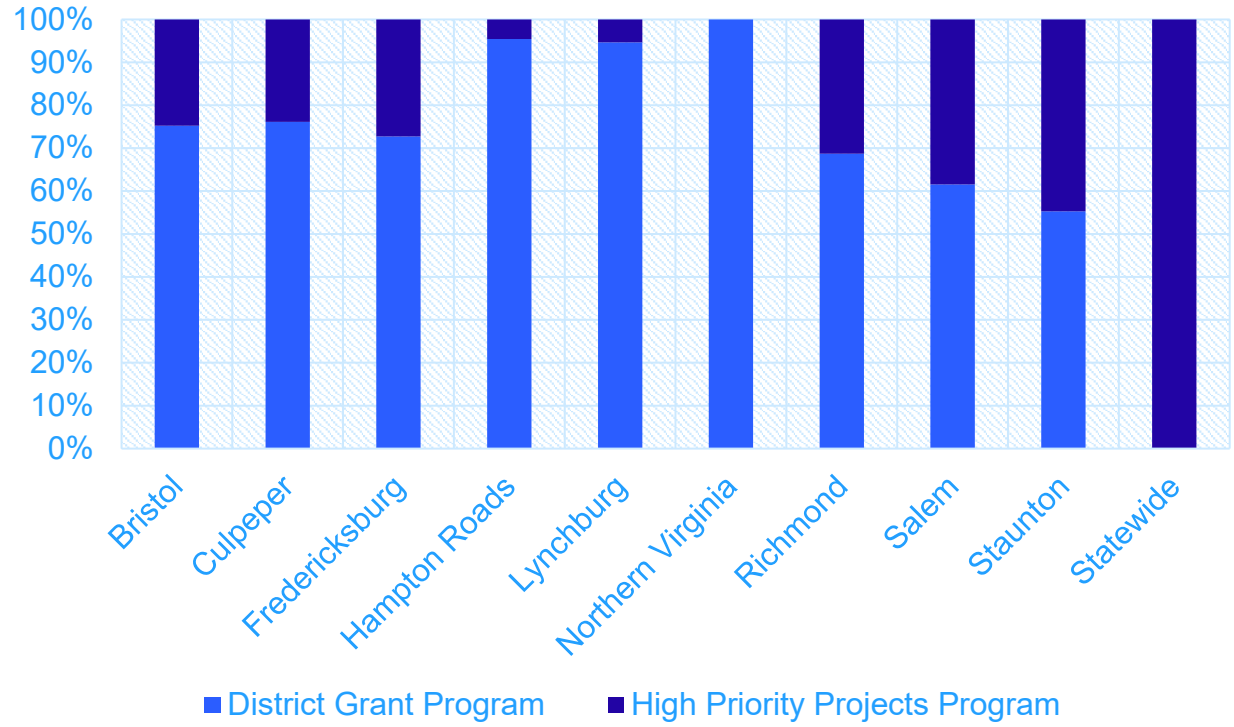
Largest SMART SCALE round since the program's inception

SMART SCALE Round 5 – Summary

Primary Improvement Type



Funding Distribution



SMART SCALE Round 5 – Lessons Learned and Feedback

Internal Lessons Learned Process	• Meetings with consultants and staff, stakeholder surveys, and letters from applicants and organizations to identify process improvements across SMART SCALE
SMART SCALE Program Review	• CTB-initiated program review including surveys, third-party analysis, and executive stakeholder meetings
Improvement Implementation Subcommittees	• Small working groups to refine specific improvements for implementation in Round 6

SMART SCALE Round 6 – Readiness Gates

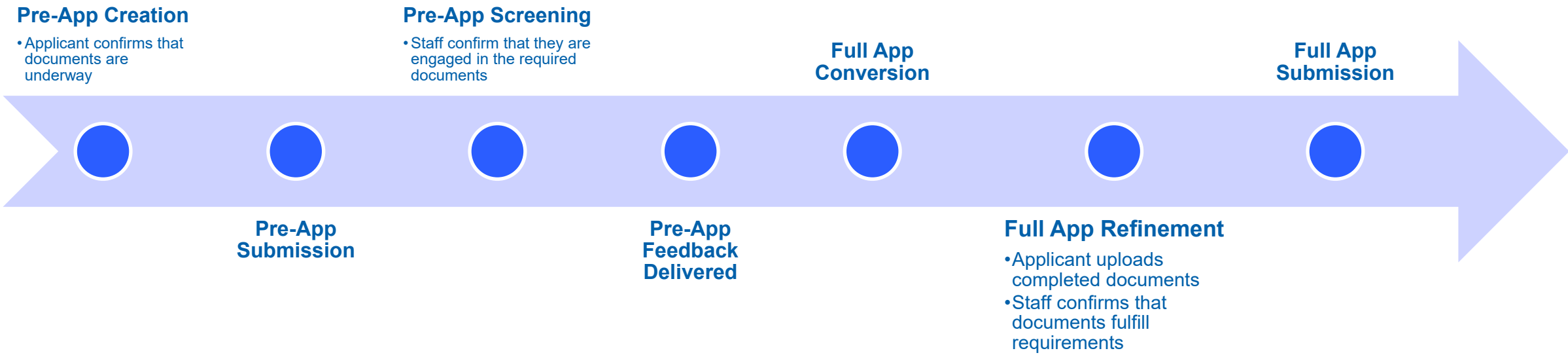
Round 5 Feedback

- Communication between applicants and district staff regarding readiness requirements
- Process delays due to late or insufficient required documents
- Lack of consistency in review process for critical documents

Round 6 Improvement

- Create gated document checkpoints
- Applications cannot move forward unless the required documents are on track
- Applicants must engage VDOT staff at the appropriate time to ensure screen-in

SMART SCALE Round 6 – Readiness Gates



SMART SCALE Round 6 – Bike and Pedestrian Readiness

Round 5 Feedback

- Bike and pedestrian features have very low readiness requirements
- New bike/ped policies within VDOT
- Executive focus on bike/ped projects

Round 6 Improvements

- Rework bike/ped readiness requirements to ensure all relevant information is being captured
- Create a new document which fulfills IIM-TE-384.1
- Review logical termini and PROWAG requirements and incorporate where necessary (in process)

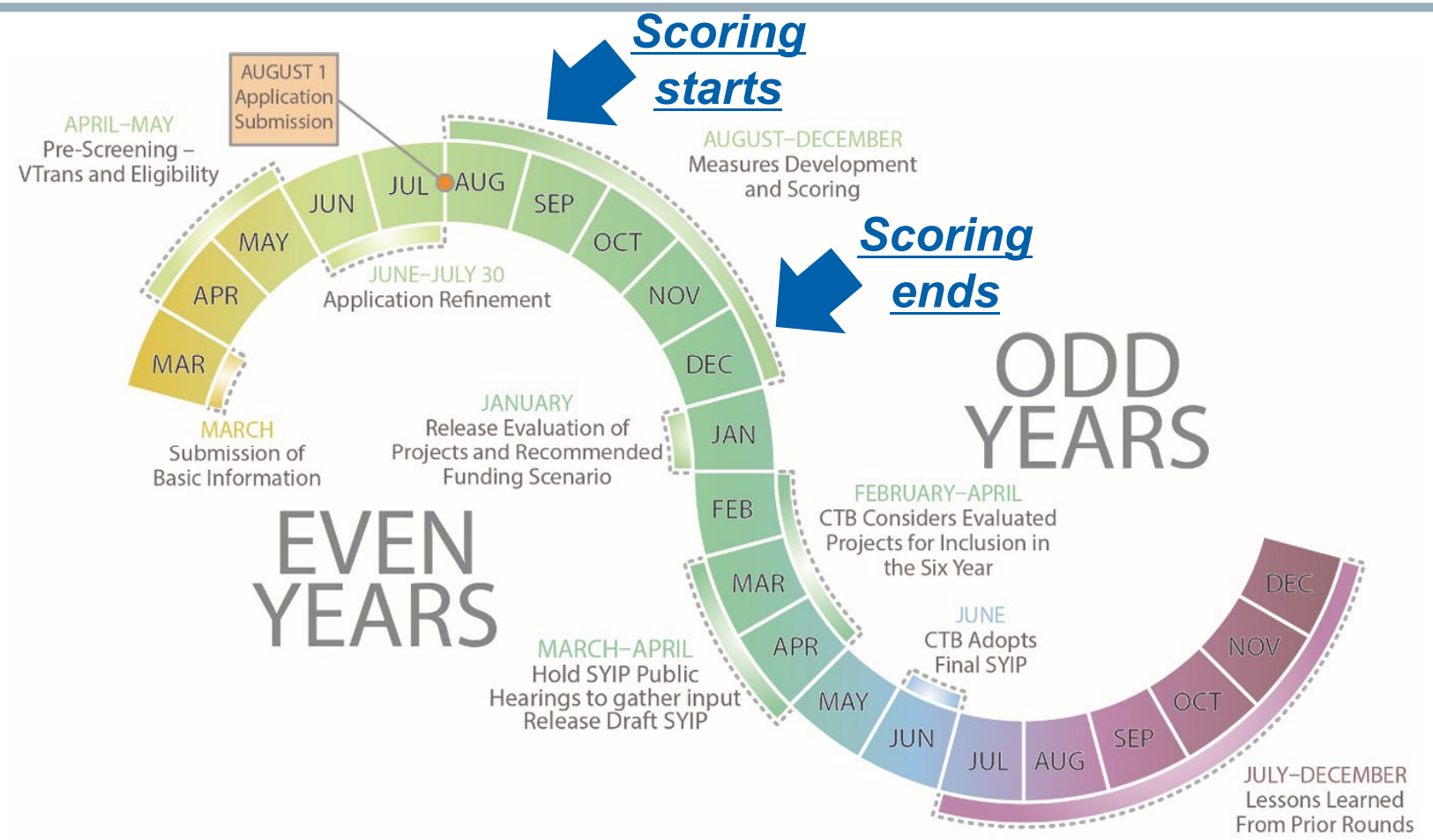
Congestion Mitigation Measures

Factor Area	Evaluation Measures
Safety	• EPDO of fatal and injury crashes • EPDO rate of fatal and injury crashes
Congestion Mitigation	• Person throughput • Person hours of delay
Accessibility	• Access to jobs • Access to jobs for disadvantaged populations • Access to multimodal choices
Environmental Quality	• Air quality and energy environmental effect • Impact to natural and cultural resources
Economic Development	• Project support for economic development • Intermodal access and efficiency • Travel time reliability
Land Use	• Transportation efficient land use • Increase in transportation efficient land use

Congestion Mitigation Measures

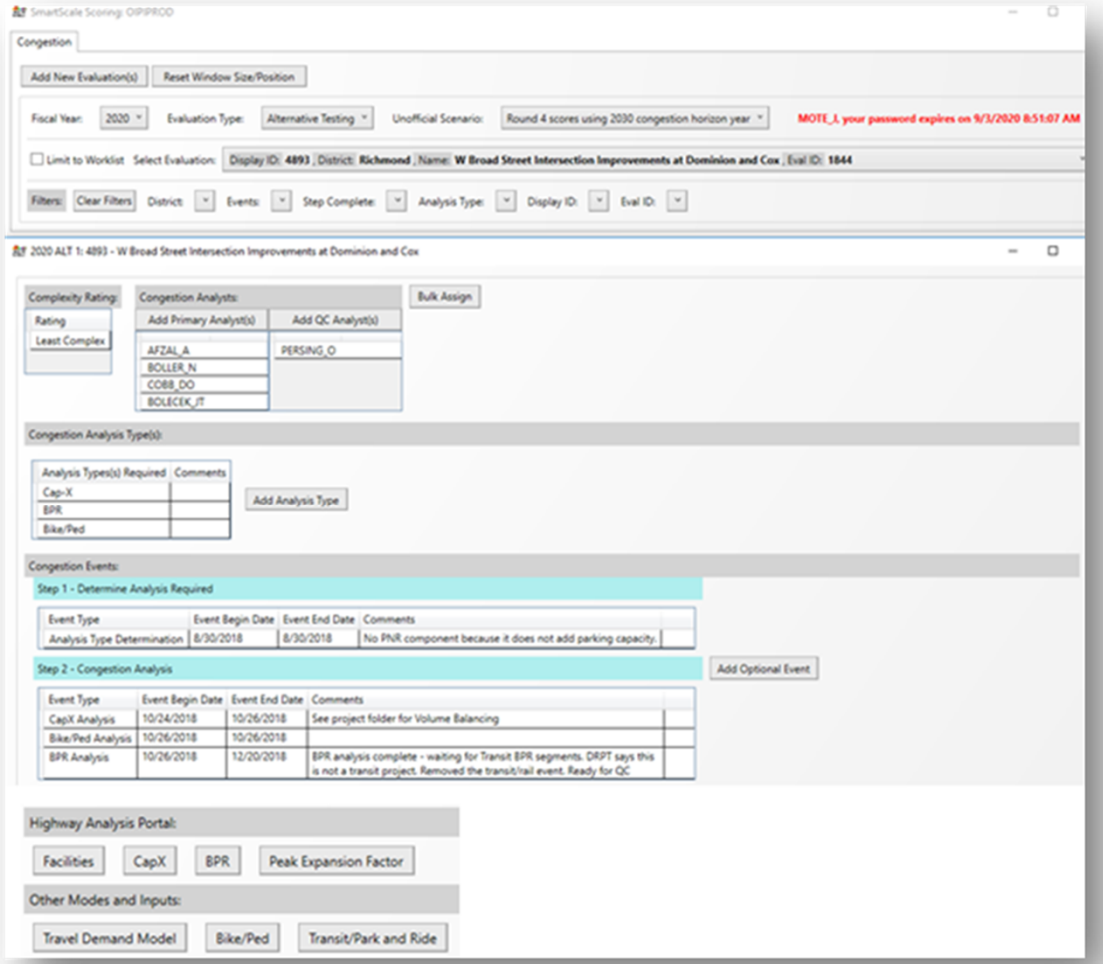
ID	Measure Name	Weight	Description
C.1	Person Throughput	50%	Increase in corridor total (multimodal) person throughput attributed to the project
C.2	Person Hours of Delay	50%	Decrease in the number of person hours of delay in the corridor

Congestion Analysis Timeline

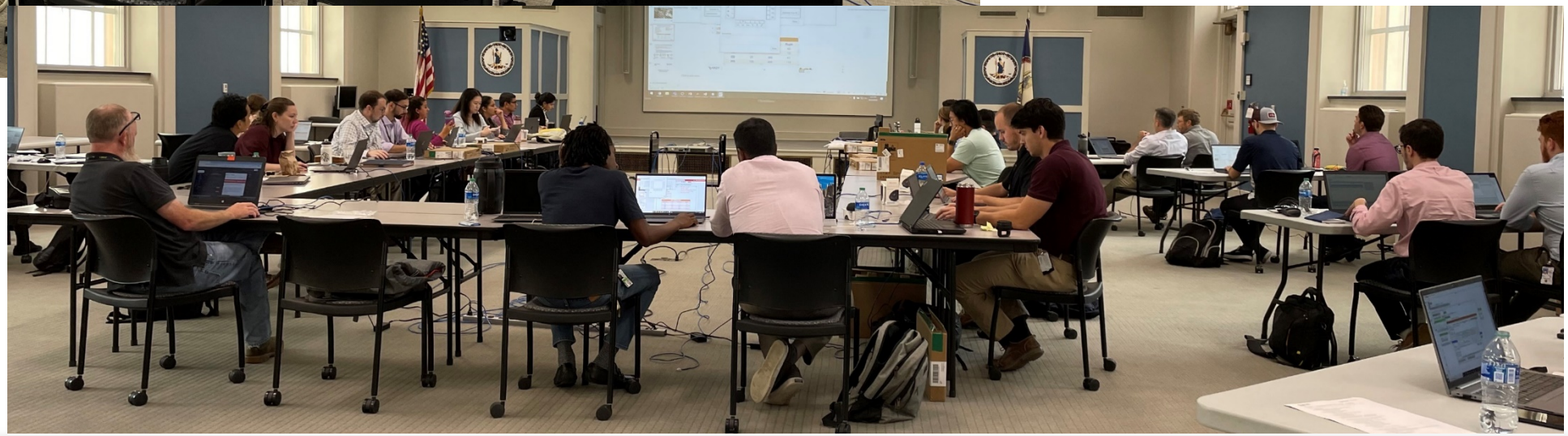


Congestion Analysis Process

- Collaborative process with many team members
  - 30+ congestion scorers
  - Scoring tool (OIPI)
  - Highway (consultants and VDOT/OIPI staff)
  - Bike/ped (consultants)
  - Transit (DRPT)
  - Park and Ride (OIPI)
  - Travel Demand Model (VDOT TMPD)
- Two levels of review (scoring team and VDOT Districts)
- Coordination with safety, environmental, and accessibility teams
- 10% blind scoring



Congestion Analysis Training



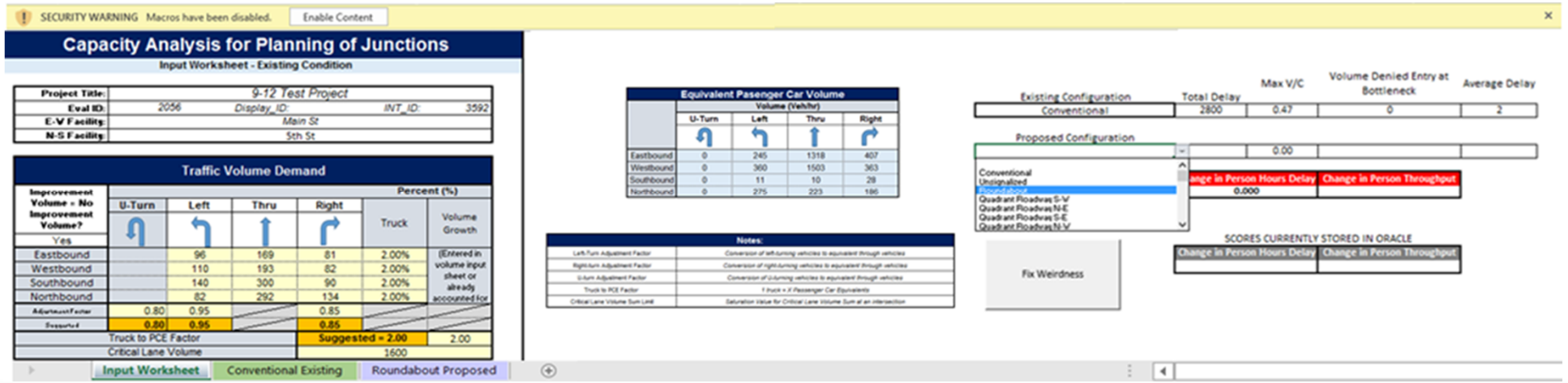
Congestion Analysis Methodology

- SMART SCALE congestion methodology was developed with these goals in mind
  - Repeatable and consistent
  - Based on established methods to greatest extent possible
  - Ability to analyze high volume of projects in a compressed time period
    - 400 projects in 3 months!

Source: www.fhwa.dot.gov

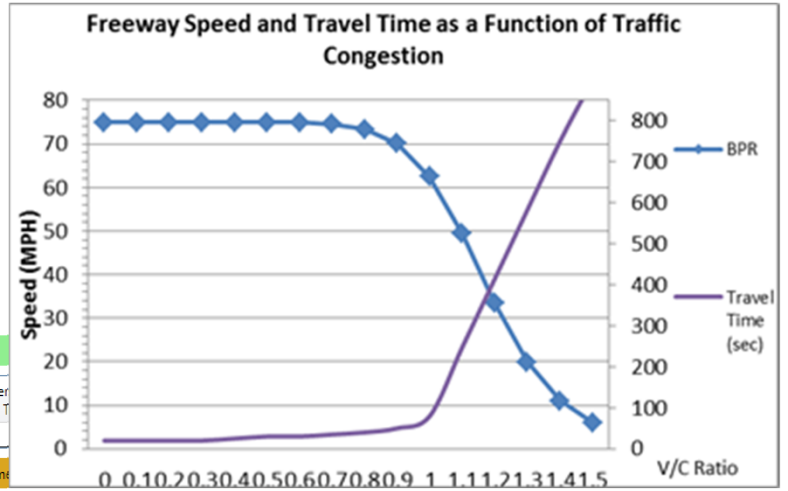
Congestion Analysis Tools – Intersections and Interchanges

- **CAP-X Tool (Intersection and Interchange Analysis):**
  - Modified Federal Highway Administration's (FHWA) Capacity Analysis for Planning of Junctions (CAP-X) Tool
  - Microsoft Excel-based
  - Uses critical lane volumes to provide a planning level capacity assessment
  - Calculates intersection/interchange improvement benefits (new turn lanes, installation of traffic signal, RCUT, etc.)



Congestion Analysis Tools – Roadway Segments

- **BPR Tool (Roadway Segment Analysis):**
  - Based on the Bureau of Public Roads (BPR) curves
  - Estimates speed as a function of volume-to-capacity ratio
  - Used to calculate segment improvement benefits (roadway widening, acceleration/deceleration lane extensions, transit, PNR, etc.)



BPR Results

Evaluation:

Display ID: Name: I-64 CORRIDOR - RC178EBINTA Eval ID: 3002

BPR Analysis Segment:

I-64E End of Proposed Accel Lane Taper Beginning of Decel Lane Taper

BPR Analysis Segment:

PHF	Length	Terrain	Speed Limit	% HV	Pop Factor	D-Factor	SPS Area Type	% Total Trips- P&R	Peak Hr Per Removed, T
0.96	0.70	Level	65	3	1	1	Urbanized		

No Improvement Scenario: No Improveme

No Build Facility Type	No Build Analysis Type	No Build PHV	No Build Number Weaving Lanes	No Build Weaving Volume
Interstate	Freeway	4,971		

Direction	Peak Traffic Direction?	# Lanes	Lane Width	Ramps Per Mile	Right Edge Clearance
	Yes	3	12	6	9

Improvement Scenario: Improvement Geometry:

Build Facility Type	Build Analysis Type	Build PHV	Build Number Weaving Lanes	Build Weaving Volume
Interstate	Freeway	4,971		

Direction	Peak Traffic Direction?	# Lanes	Lane Width	Ramps Per Mile	Right Edge Clearance
	Yes	4	12	6	9

No Improvement Results: Improvement Results:

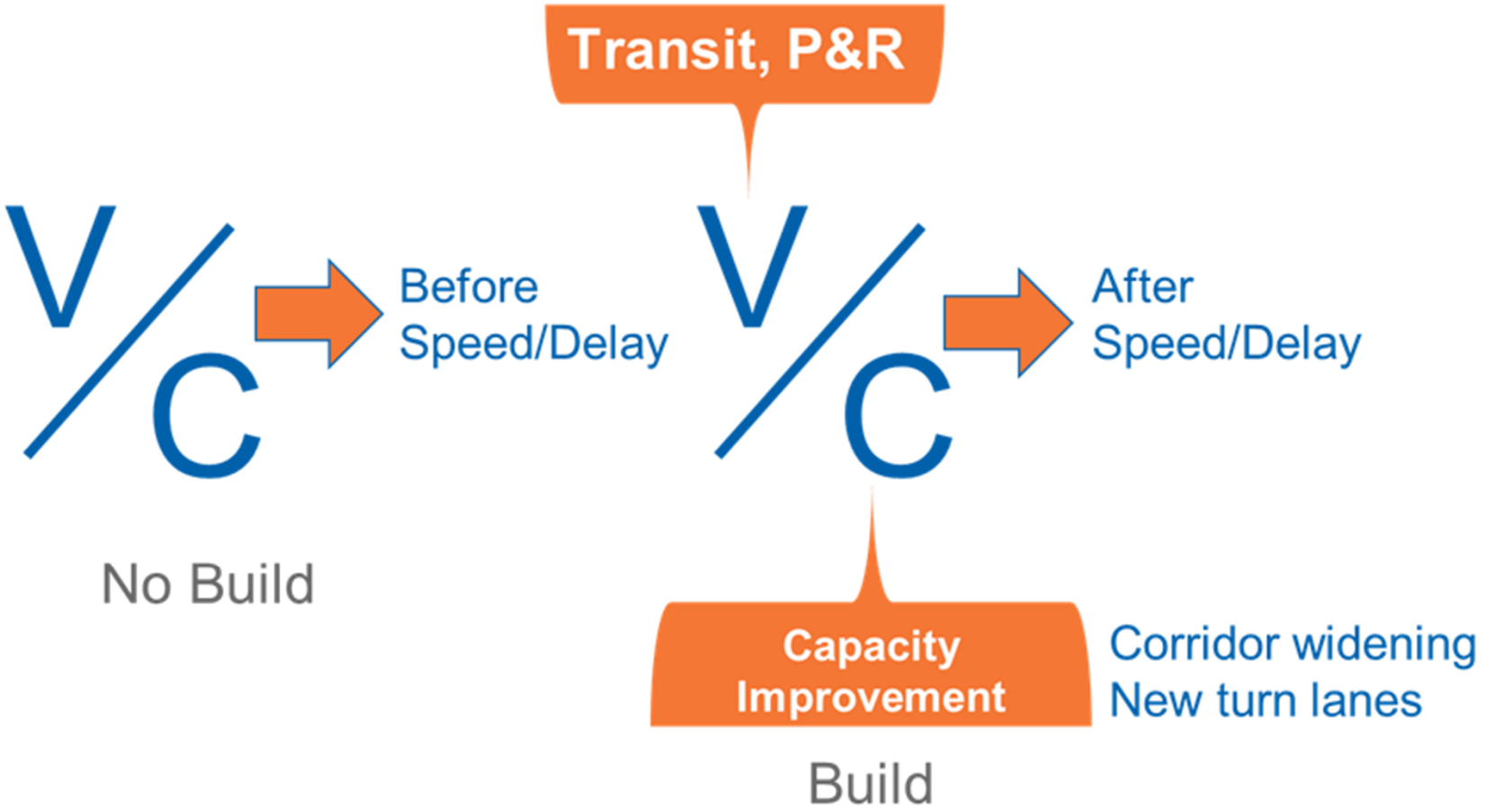
Peak Traffic Direction?	V/C	FFS	Peak Flow	Person Throughput	Person Delay	Congested Speed	Average Delay
Yes	0.90	60.9	1,751.9	5,965	16,865.2	57.0	2.8

Peak Traffic Direction?	V/C	FFS	Peak Flow	Person Throughput	Person Delay	Congested Speed	Average Delay
Yes	0.67	60.9	1,313.9	5,965	949.7	60.7	0.2

Results

Change in Person Throughput	Change in Person Hours Delay
	4.4

Congestion Analysis in Summary



Congestion Mitigation Process Improvements

- Background
  - Collected continuous feedback during Round 5 scoring
  - Collected additional feedback during two lessons learned sessions
    - Scoring team
    - District points of contact
  - Compiled feedback and developed workplan
- Top priorities
  - Traffic analysis tool modification feasibility
  - Future analysis year

Congestion Mitigation Process Improvements: Traffic Analysis Tool Feasibility

Round 5 Feedback

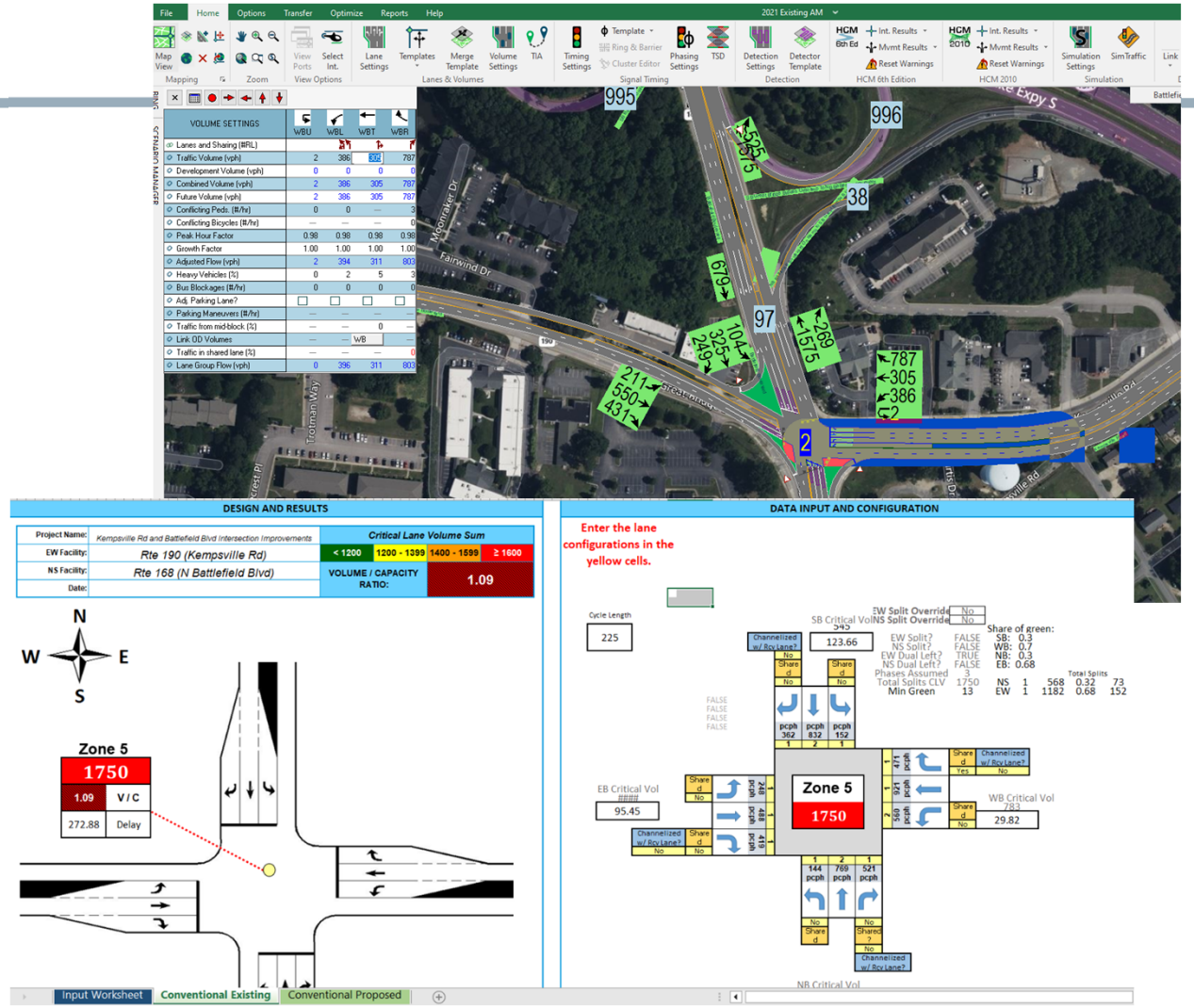
- VDOT is spending $$$ on studies where we already have analysis results – why re-analyze projects in SMART SCALE using pseudo-HCM methods?
- Can we incorporate results from Synchro, SIDRA, and HCS into the congestion scoring process?

Round 6 Improvement

- Determine the feasibility of using traffic analyses from completed studies for SMART SCALE congestion scoring
- Phase 1: Testing and Analysis
- Phase 2: Implementation

Congestion Mitigation Process Improvements: Traffic Analysis Tool Feasibility

- Identify a diverse cross-section of RD5 SMART SCALE projects for testing
- Compile CAP-X and BPR results from congestion scoring tool
- Update traffic analysis files for comparison to CAP-X results
- Identify list of required analysis tool assumptions
- Develop throughput methodology and conduct sensitivity analysis of assumptions
- Develop comparison table of results and identify impacts to funding scenario



Congestion Mitigation Process Improvements: Analysis Year

Round 5 Feedback

- Projects aren't receiving the full projected benefits because they're analyzed under existing year conditions
- Future year analysis better aligns with current VDOT planning and design practices, supports land use, and considers local economic development goals

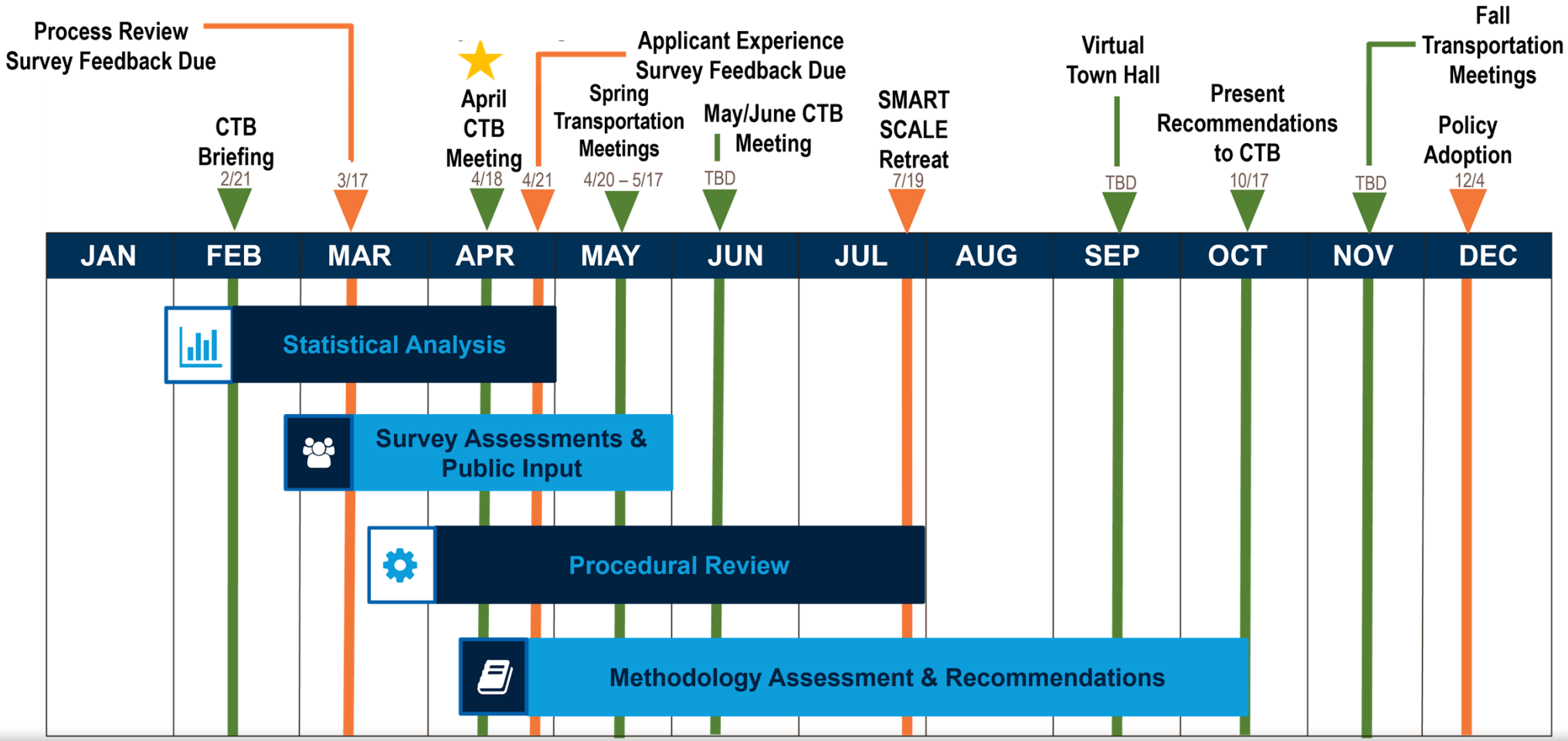
Round 6 Improvement

- Consider using opening or design year for SMART SCALE analysis
- Test Round 5 projects using a future year to understand how it impacts scores

Congestion Mitigation Process Improvements: Analysis Year

- RD1 (FY2017): 2025 future year volumes
- RD2 (FY2018): 2025 future year volumes
- RD3 (FY2020): 2017 existing year volumes
- RD4 (FY2022): 2019 existing year volumes
- RD5 (FY2024): 2019 existing year volumes
- RD6 (FY2026): ??

Implementation Timeline



SMART SCALE Round 5 Overview and Lessons Learned

Questions?