COMMONWEALTH *of* VIRGINIA

Office of the

SECRETARY *of* TRANSPORTATION

SMART SCALE Round 3 Review

SMART SCALE and Other Policies Over Past Five Years

Summary

SMART SCALE
Funding the Right Transportation Projects in Virginia

- Indirect Benefits of SMART SCALE
- Review of application intake, screening and validation
- Review of Cost Estimation and Program Performance
- Discussion of Analytical methods, scoring results, and possible process improvements

Policy Reforms Related to SMART SCALE

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Funding the Right Transportation Projects in Virginia

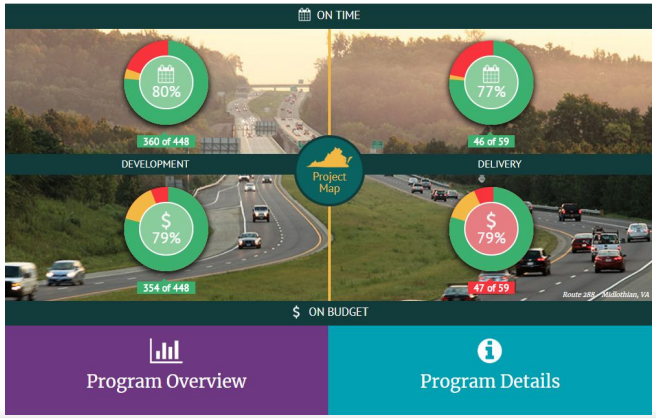
- **The positive effects of full funding cannot be overstated**
- **53 of 163 projects selected in Rd 1 (included in the FY 2017-2022 SYIP) had been partially funded projects in the previous year FY 2016-2021 SYIP**
  - As of June 2015: $1.49 Billion in total project costs
    - $450 Million in identified allocations
  - As of June 2016: $1.87 Billion in *fully funded* total project costs
    - $1.05 Billion in leveraged funds
    - $824 Million in SMART SCALE allocations
- **Well Known Examples:**
  - Rappahannock River Crossing - SB (Fredericksburg): $9.5M allocated
  - Warrenton Interchange (Culpeper): $1M allocated
  - RTE 277 Widening (Staunton): $6.7M allocated
  - I-64 Widening from 295 to Exit 205 (Richmond): $1.8M allocated

SMART SCALE Dashboard

Changing how we track performance

SMART SCALE
Funding the Right Transportation Projects in Virginia

- **SMART SCALE Dashboard was launched in January 2017**
- **Changed how we track project development**
  - 10 milestones in project development as opposed to just advertisement date
  - Track through project award - to close gap between ad and award
  - Rules designed to encourage early start/finish
- **What has been the impact?**
  - Overall, milestones are being completed earlier
  - Localities struggle to meet targets



SMART SCALE Dashboard

Changing how we track performance

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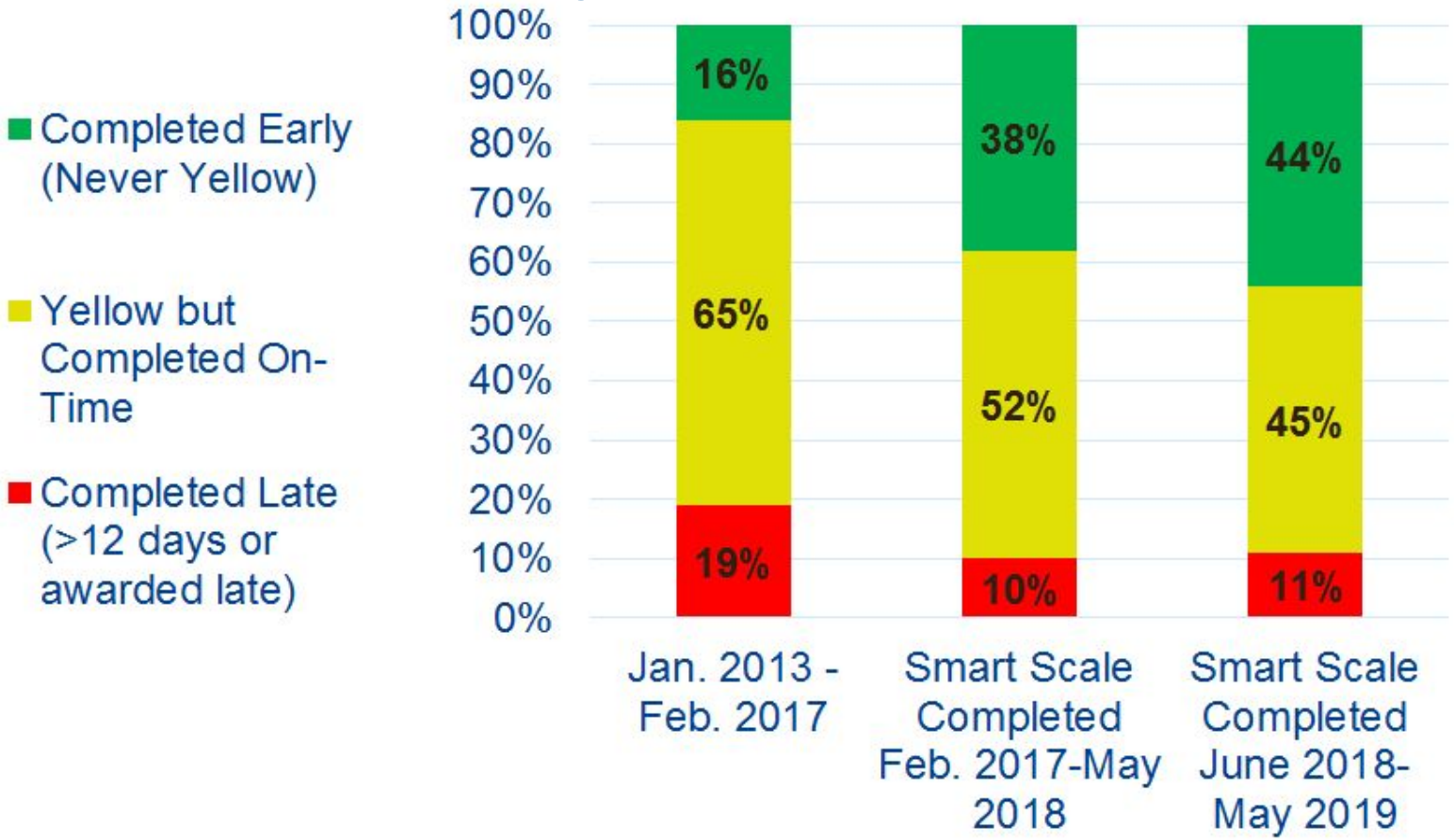
Impact of business rule changes on performance



SMART SCALE Dashboard

Changing how we track performance

SMART SCALE
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- Impact of business rule changes on performance

Project on Development Time - SMART SCALE

SMART SCALE projects scheduled to award through June 30, 2019

ADMIN BY	%ON TIME (OT)	#OT	$OT	%ON BUDGET (OB)	#OB	$OB	TOTAL PROJECTS	TOTAL BUDGET
Locally	48.0%	12	$111.4 M	68.0%	17	$221.7 M	25	$340.8 M
VDOT	80.0%	44	$1.22 B	74.5%	41	$753.3 M	55	$1.38 B
Total	70.0%	56	$1.34 B	72.5%	58	$971.0 M	80	$1.72 B

- Milestones are being completed earlier but challenges to meeting established targets exist
- Localities awarded 48% of projects on-time (33% of award dollar value)
- VDOT awarded 80% of projects on-time (89% of the award dollar value)

SMART SCALE Dashboard

Changing how we track performance

SMART SCALE
Funding the Right Transportation Projects in Virginia

- Impact of business rule changes on performance

Project Delivery - SMART SCALE

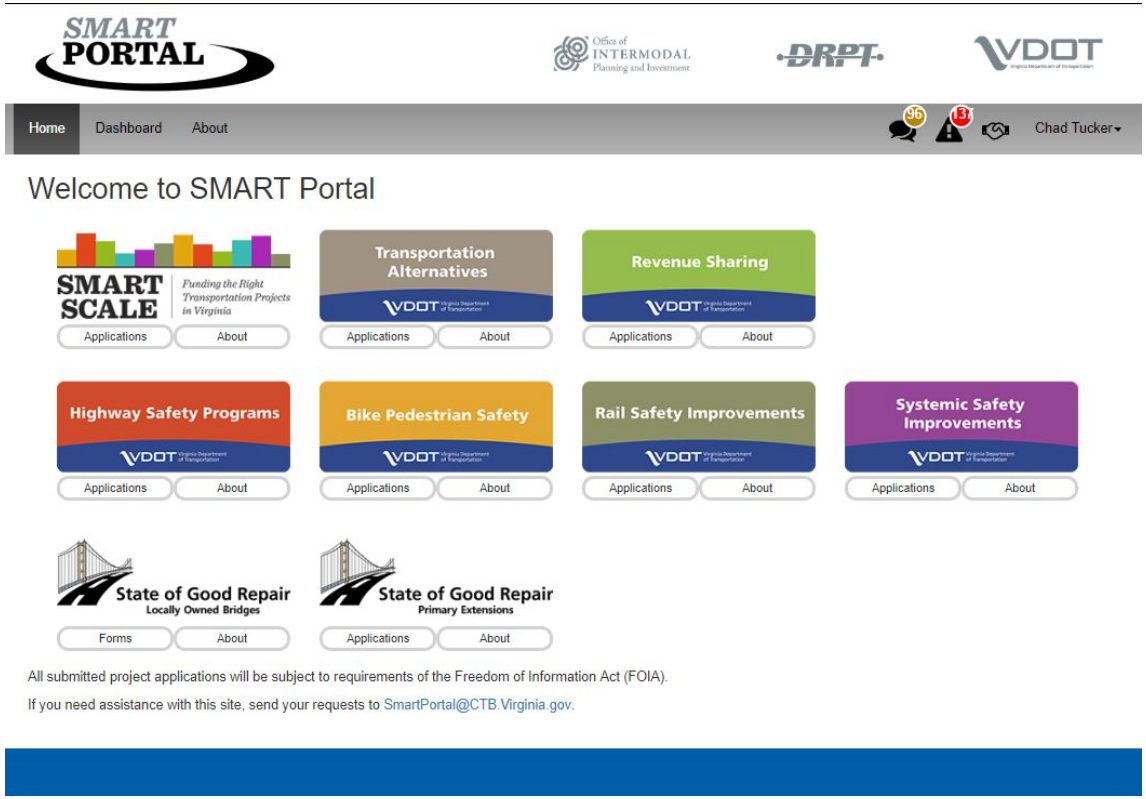
SMART SCALE projects scheduled to award through June 30, 2019

ADMIN BY	% ON TIME (OT)	# OT	$ OT	% ON BUDGET (OB)	# OB	$ OB	TOTAL CONTRACTS	TOTAL AWARD
Locally	57.1%	4	$11.8 M	57.1%	4	$11.8 M	7	$87.8 M
VDOT	87.0%	20	$176.5 M	82.6%	19	$117.1 M	23	$222.8 M
Total	80.0%	24	$188.4 M	76.7%	23	$128. 9 M	30	$310.5 M

- Localities completed 57% of projects on-time (13% of dollar value scheduled for completion)
- VDOT has completed 87% of projects on-time (79% of the dollar value scheduled for completion)

SMART Portal

Goodbye paper, hello web-based convenience



- Portal originally developed for SMART SCALE
- Due to positive feedback the Portal was expanded to other funding programs
- Just a few years ago we were still mailing paper applications
- One-stop shop
- Portal is now a repository of useful info - even for projects not funded

Performance-Based Planning and Programming

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Funding the Right Transportation Projects in Virginia

- Performance based programming
  - SMART SCALE
  - SGR
  - HSIP
- Performance Based Planning/Project Development
  - Philosophy
  - Rethinking how to solve transportation problems

Cost Matters

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Funding the Right Transportation Projects in Virginia

- SMART SCALE requires projects to be assessed based on benefits relative to cost
- Impact of this policy alone cannot be understated
- Incentive to be cost effective

- Official SMART SCALE Score is → $\frac{\text{Benefit}}{\text{Requested \$}}$

Performance-Based Planning

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Does this decision tree make sense?

New Engine

New Car

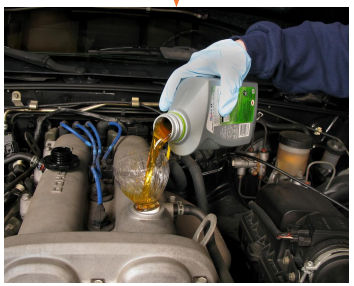
Performance-Based Planning

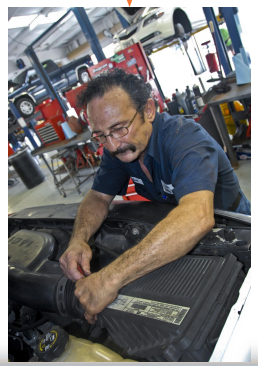
SMART SCALE
Funding the Right Transportation Projects in Virginia

Or is this more logical...

Understand the problem

Develop/Test Solutions





Performance-Based Planning

SMART SCALE
Funding the Right Transportation Projects in Virginia

Key Principles

- Identify need to address
- Consider options to preserve and improve existing transportation system
  - Operational improvements
  - Transportation demand management
  - Innovative intersection treatments
- If these are not able to address problem then consider projects that expand the system

Needs → Solutions

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Funding the Right Transportation Projects in Virginia

Need in search of a solution as opposed to solution in search of a need

- Much more focus on process of developing and planning the solution be performance driven - to improve success in getting project funded
- More focused planning and project development is feeding better, more cost effective solutions into the project evaluation process
- Are there existing projects that need to be re-examined or re-scoped - is there a more cost-effective way to solve this problem?

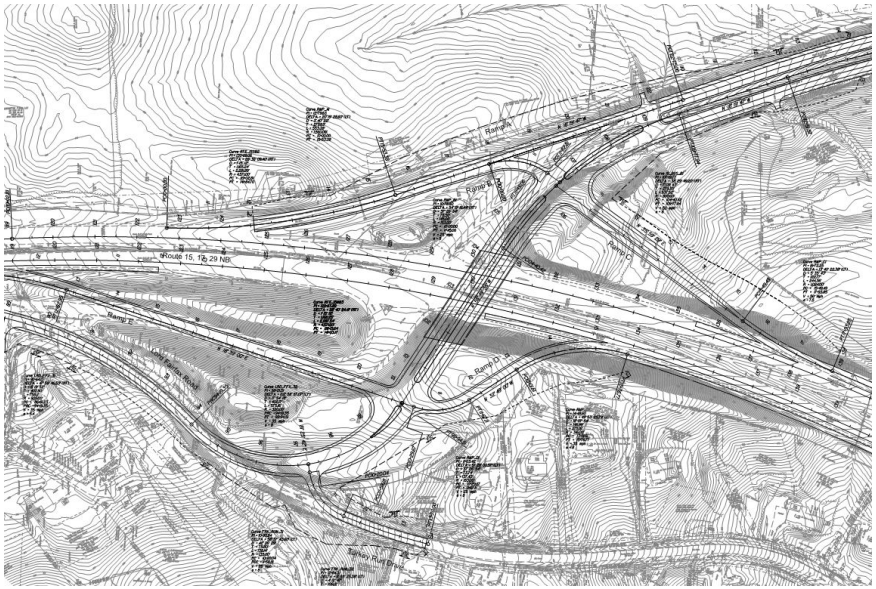
Culpeper District Success Story
Case Study - Warrenton Southern Interchange

SMART SCALE
Funding the Right Transportation Projects in Virginia

Round 1 Budget Reduction Success

- Initial project full diamond interchange with >$45M estimate
- Significant Bridge Costs (5 Lane)
- Significant Width Ramps to accommodate volumes
- Project was selected but budget was reduced to $27M - but still needed to maintain benefits

Warrenton Interchange Final Design



Culpeper District Success Story
Warrenton Southern Interchange

SMART SCALE
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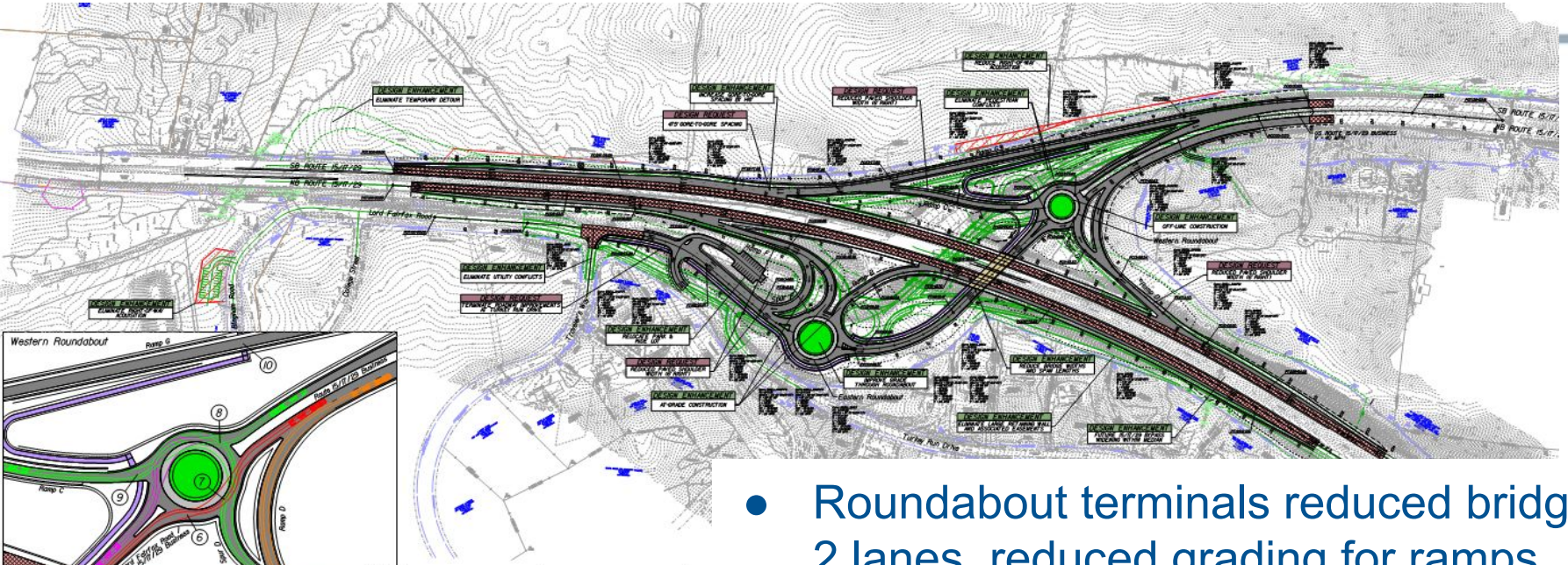

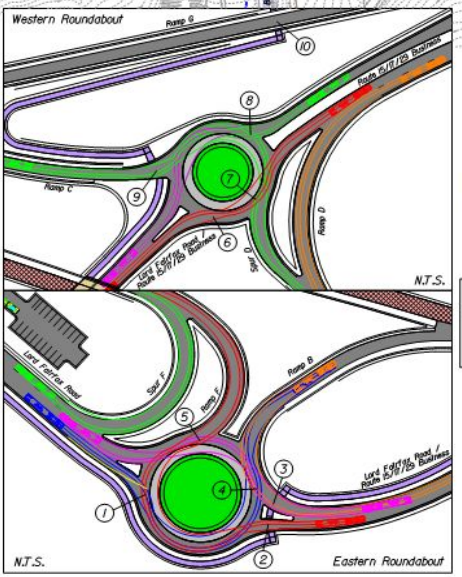

Eastern Roundabout	Western Roundabout
Level of Service, Delay (sec.)	Level of Service, Delay (sec.)
AM Peak: B, 11.4	AM Peak: A, 6.5
PM Peak: A, 7.5	PM Peak: A, 4.4
SAT Peak: A, 9.6	SAT Peak: A, 4.7

(See Operational Analysis Technical Memorandum)

- (X) Denotes Conflict Points
- Denotes Proposed Full Depth Pavement
- Denotes Proposed Bridge
- Denotes Proposed Truck Apron
- Denotes Proposed Central Island
- Denotes Proposed Milling and Overlay or Variable Depth Overlay
- Denotes Proposed Shared Use Path
- Denotes Area of ROW Reduction
- Denotes RFP Concept Plan
- Denotes RFP Concept Plan Proposed Right-Of-Way
- C..... Denotes Construction Limits In Cuts
- F..... Denotes Construction Limits In Fills

SHIRLEY CONTRACTING COMPANY, LLC
Warrenton Southern Interchange US 15/17/29
ATC OGI Modified Barbell Interchange Concept
Dewberry
Date 10/25/2017
Scale 1"= 100'
NOT FOR CONSTRUCTION
SCALE 0' 100' 200'

- Roundabout terminals reduced bridge to 2 lanes, reduced grading for ramps
  - better long term level-of-service
  - improved safety and reduced maintenance costs
- Final cost anticipated to be $23-25M
- $47M → $27M → $23-25M

Strengthening the Planning Process

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- Question: Would previous success been realized if project had been funded at full amount?
- Approach every transportation problem with goal to find the most cost-effective solutions
- Easy for local/regional decision makers or public to see innovation as:
  - Settling for a less than optimal project
  - 'Bubblegum' or 'Bandaids'
- Performance-based programming processes must be fed by performance-based planning process

Route 7 - Route 9 to Dulles Greenway Case Study

SMART SCALE
Funding the Right Transportation Projects in Virginia

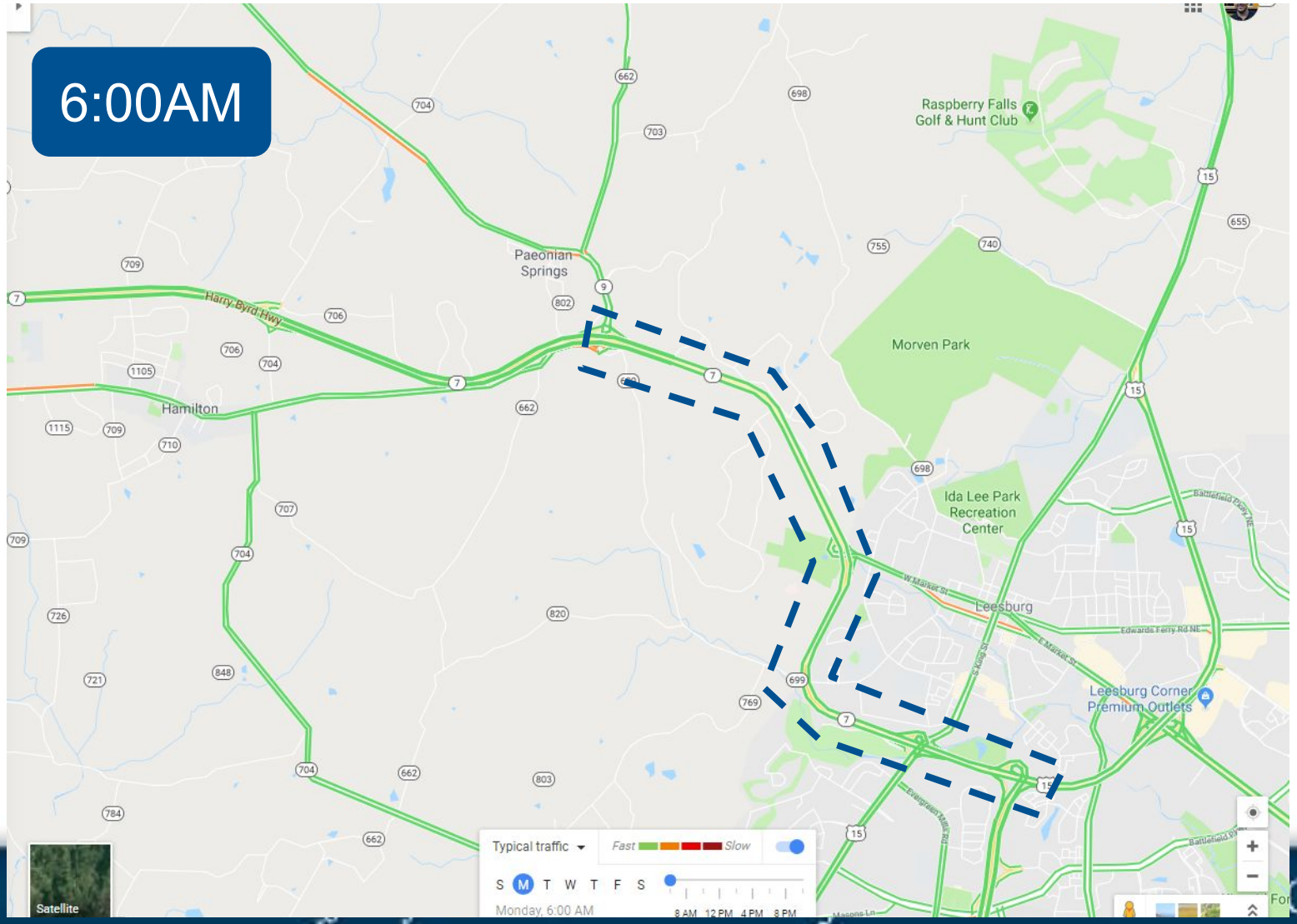
- STARS study was undertaken in 2017 to assess congestion and safety issues on Route 7 and to develop and analyze targeted improvements
- Preferred alternative from study recommended extension of acceleration lane onto EB Route 7 from NB route 9 by just under a mile
- Ramp extension would reduce friction through interchange as vehicles travel uphill and around a curve, reducing delay and mitigating sideswipe crashes
  - Also avoided costly RW and utility relocation

Route 7 - Route 9 to Dulles Greenway

Morning Peak

SMART SCALE

Funding the Right Transportation Projects in Virginia



Route 7 - Route 9 to Dulles Greenway

Morning Peak

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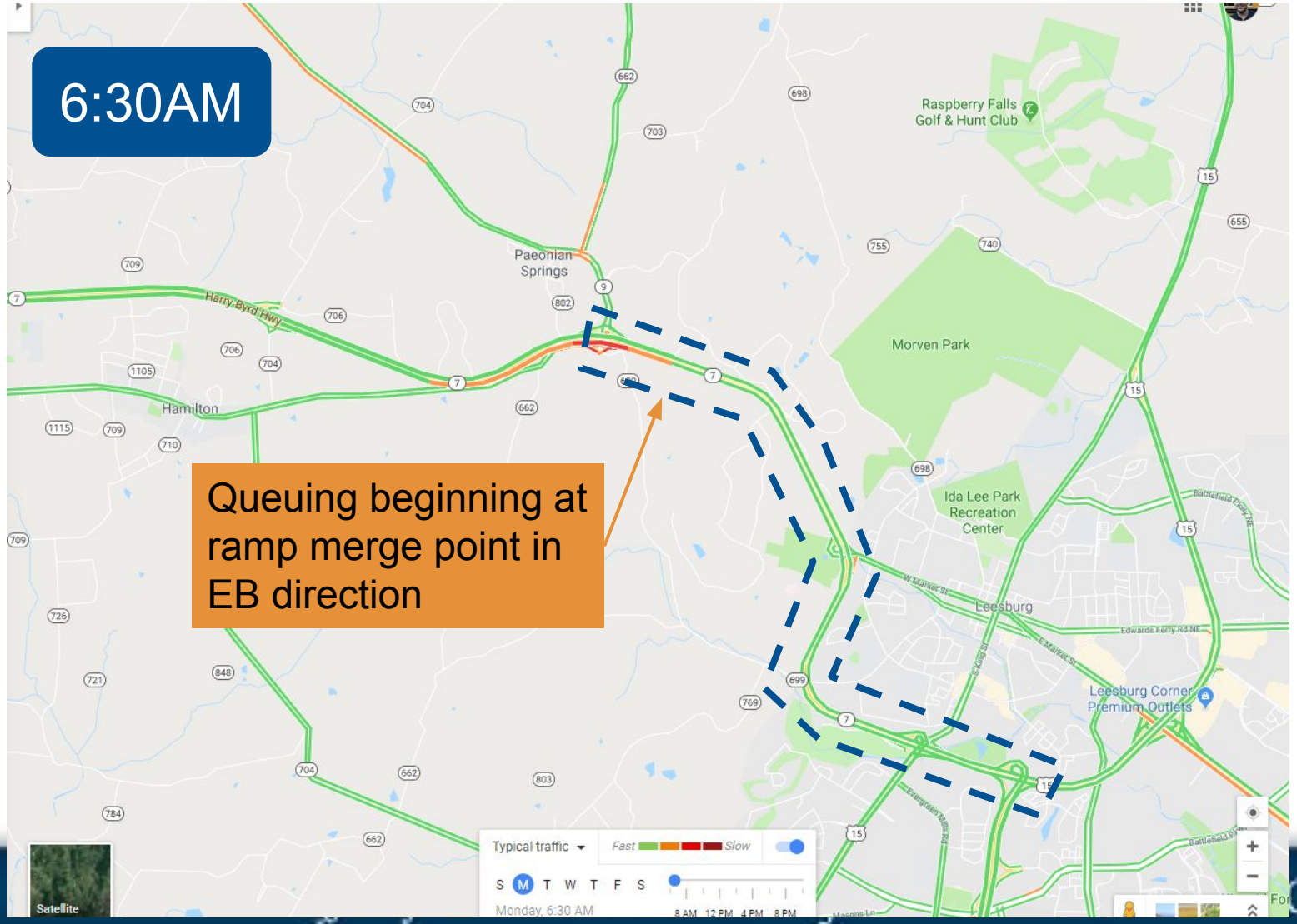

Route 7 - Route 9 to Dulles Greenway

Morning Peak

SMART SCALE

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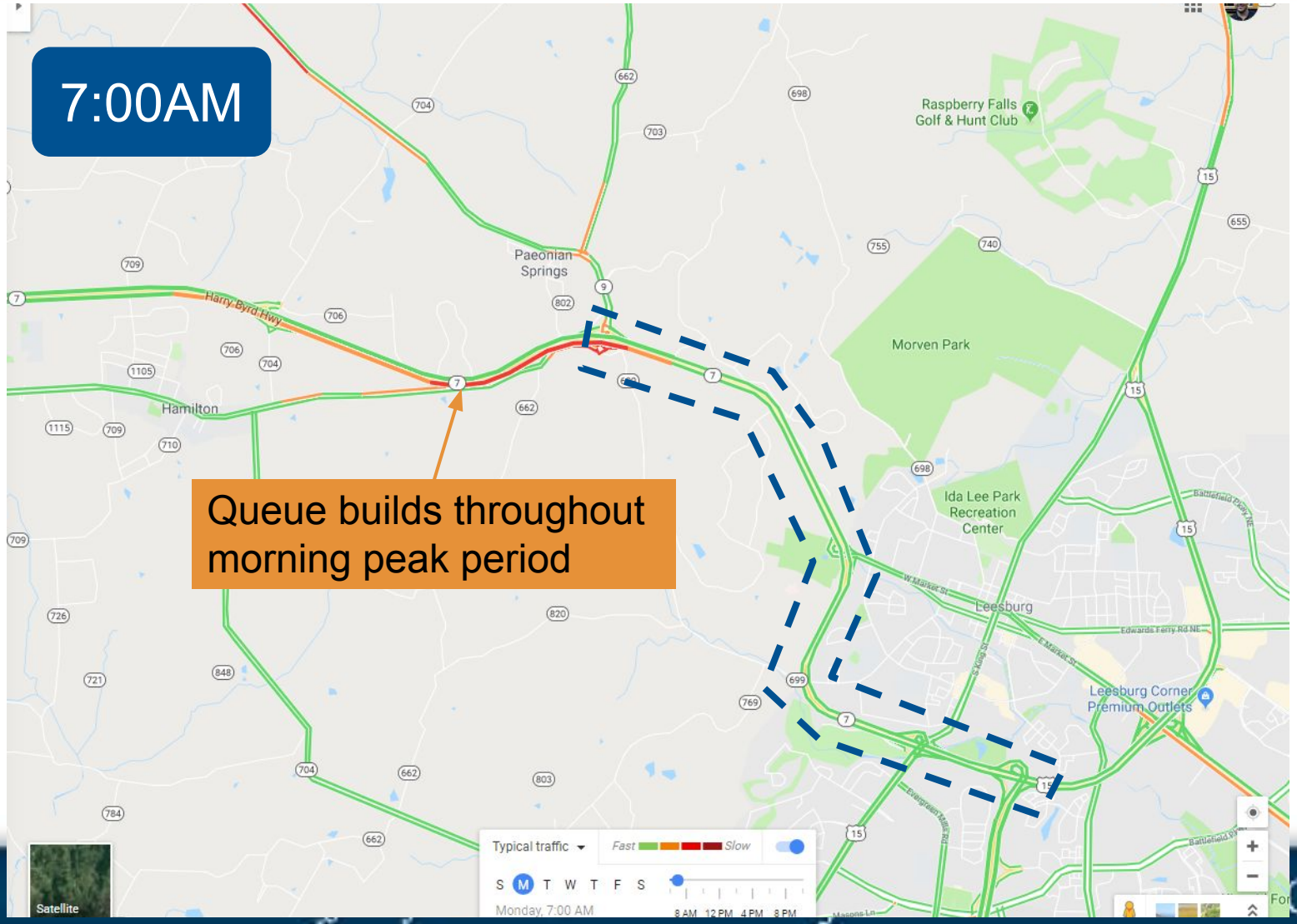

Route 7 - Route 9 to Dulles Greenway

Morning Peak

SMART SCALE

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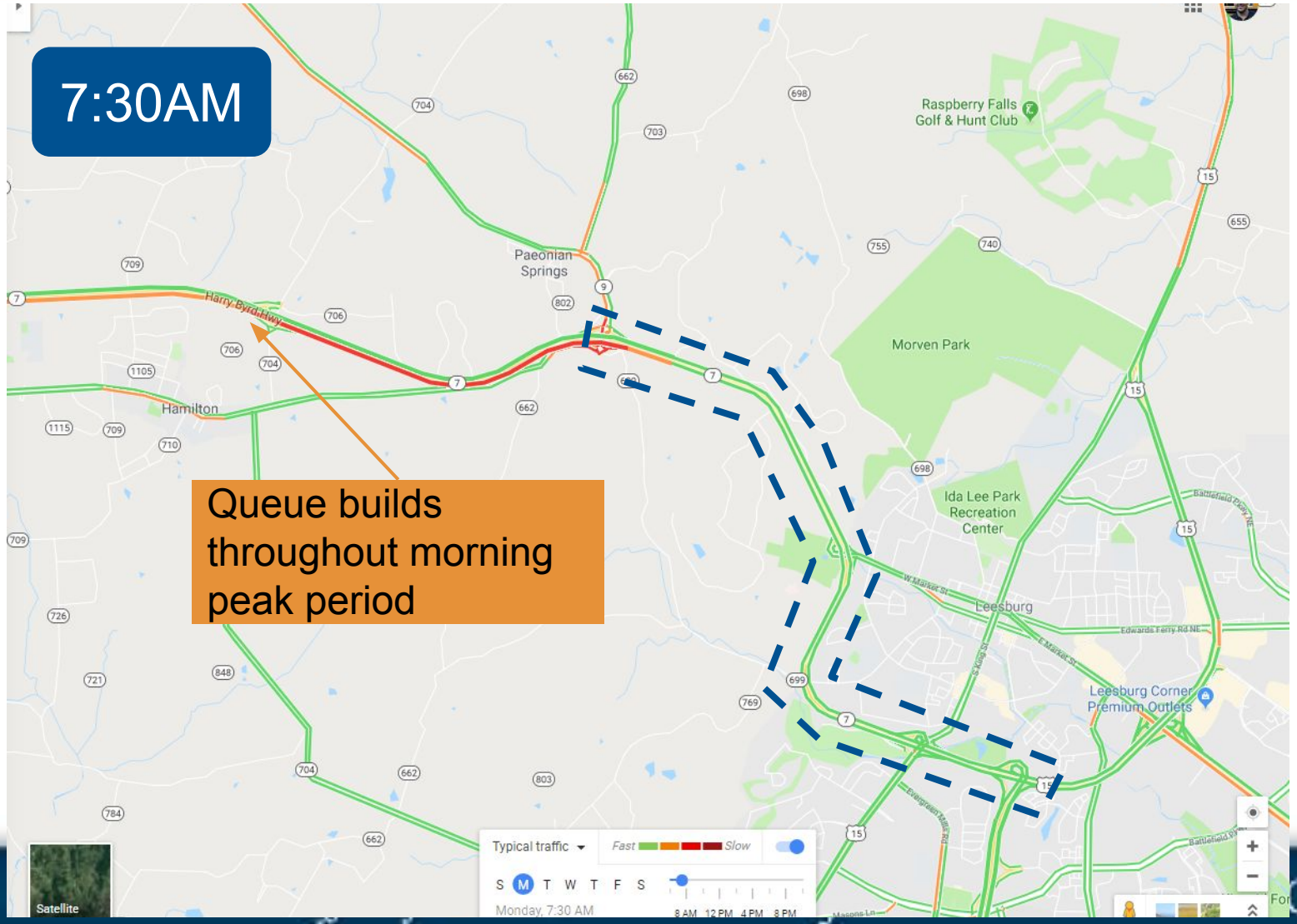
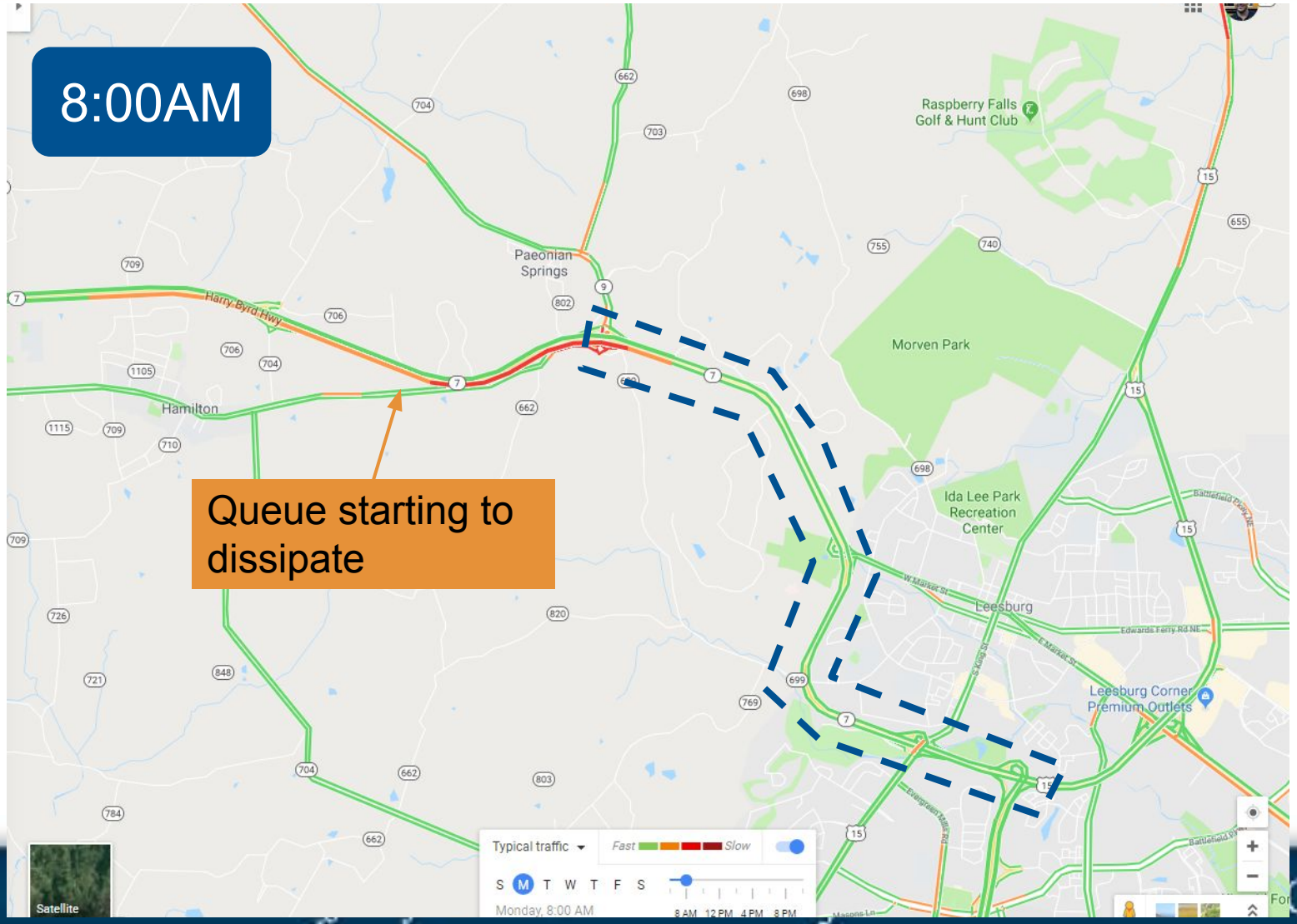


Route 7 - Route 9 to Dulles Greenway

Morning Peak

SMART SCALE

Funding the Right Transportation Projects in Virginia

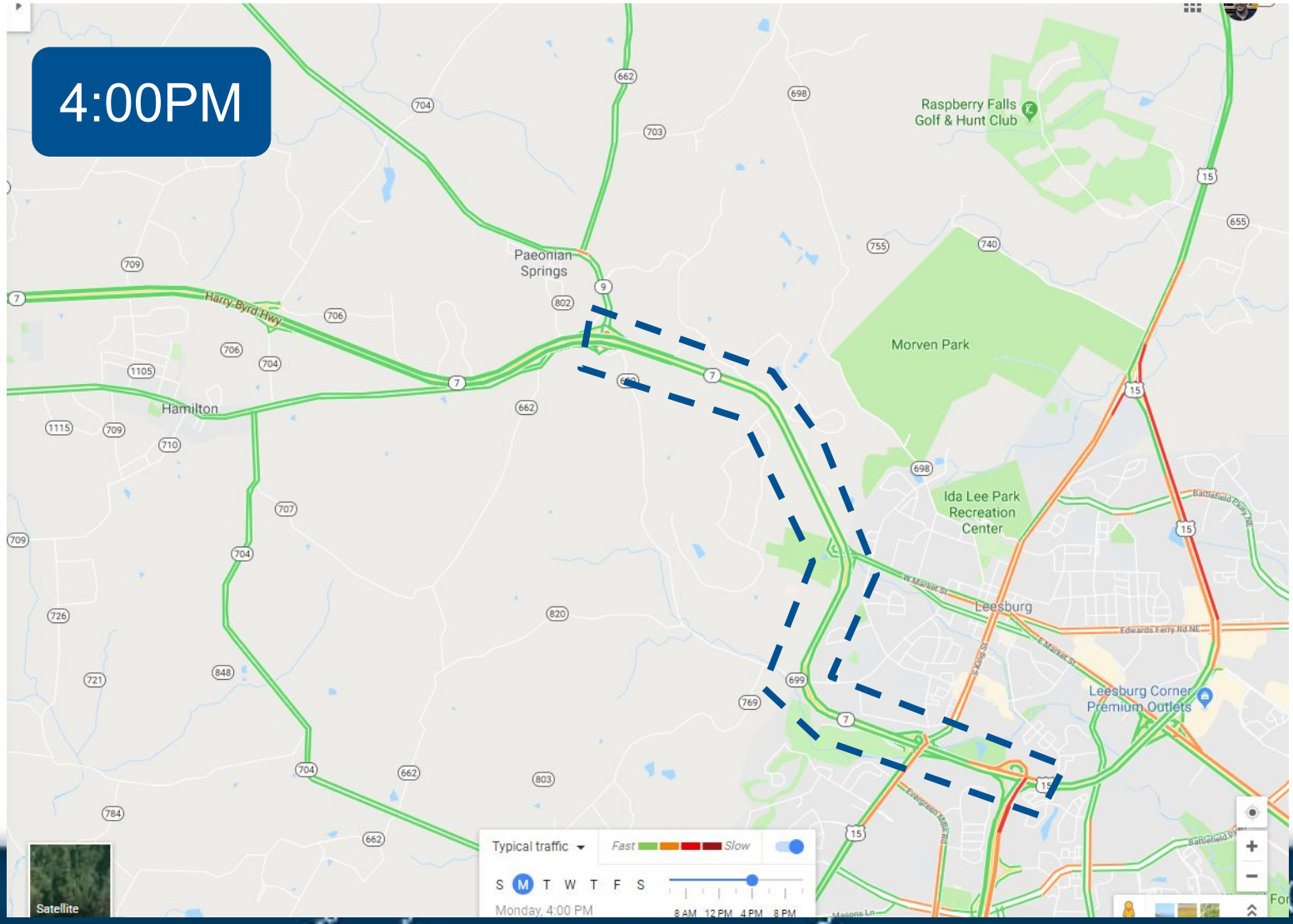


Route 7 - Route 9 to Dulles Greenway

Evening Peak

SMART SCALE

Funding the Right Transportation Projects in Virginia



Route 7 - Route 9 to Dulles Greenway

Evening Peak

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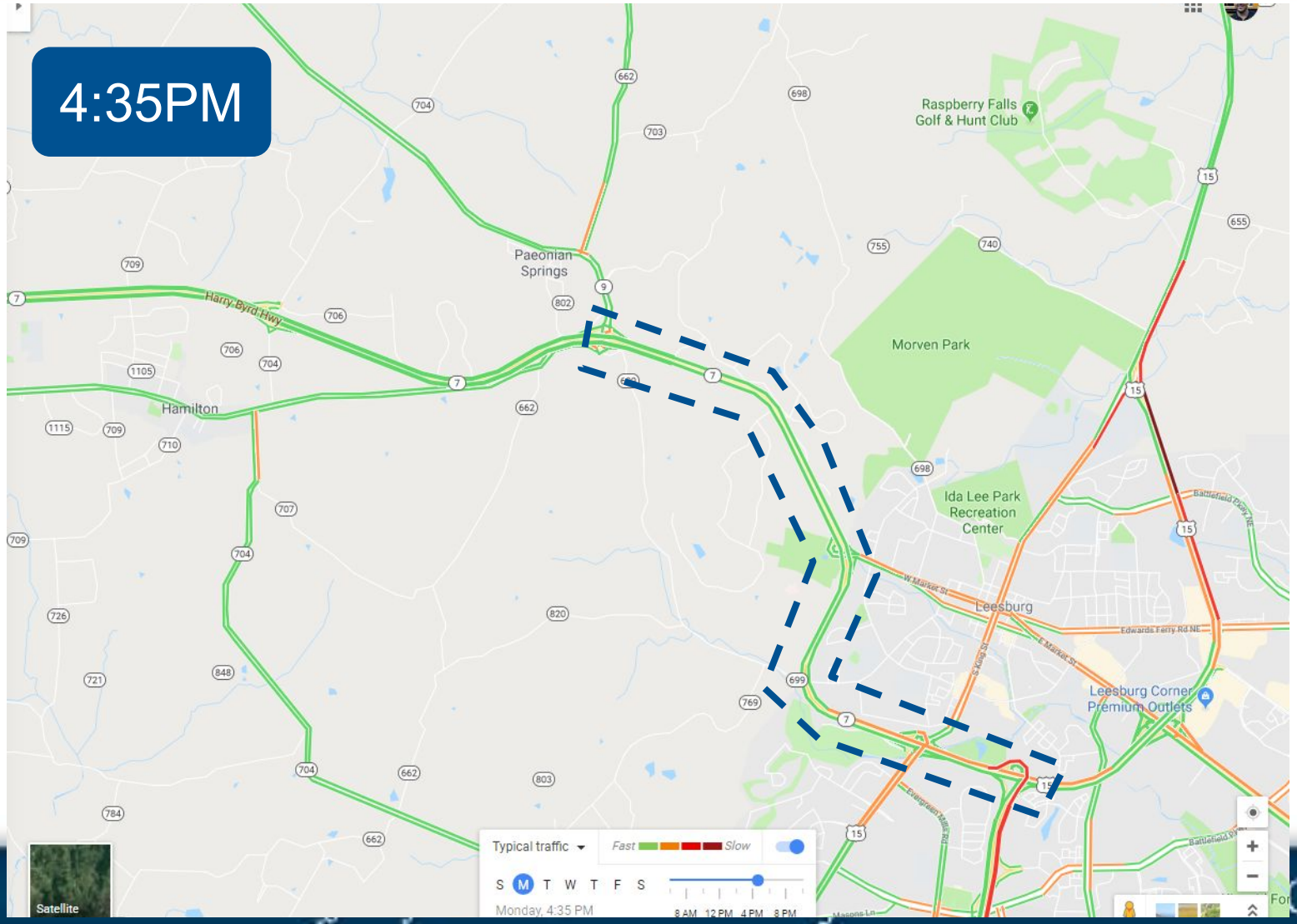

Route 7 - Route 9 to Dulles Greenway

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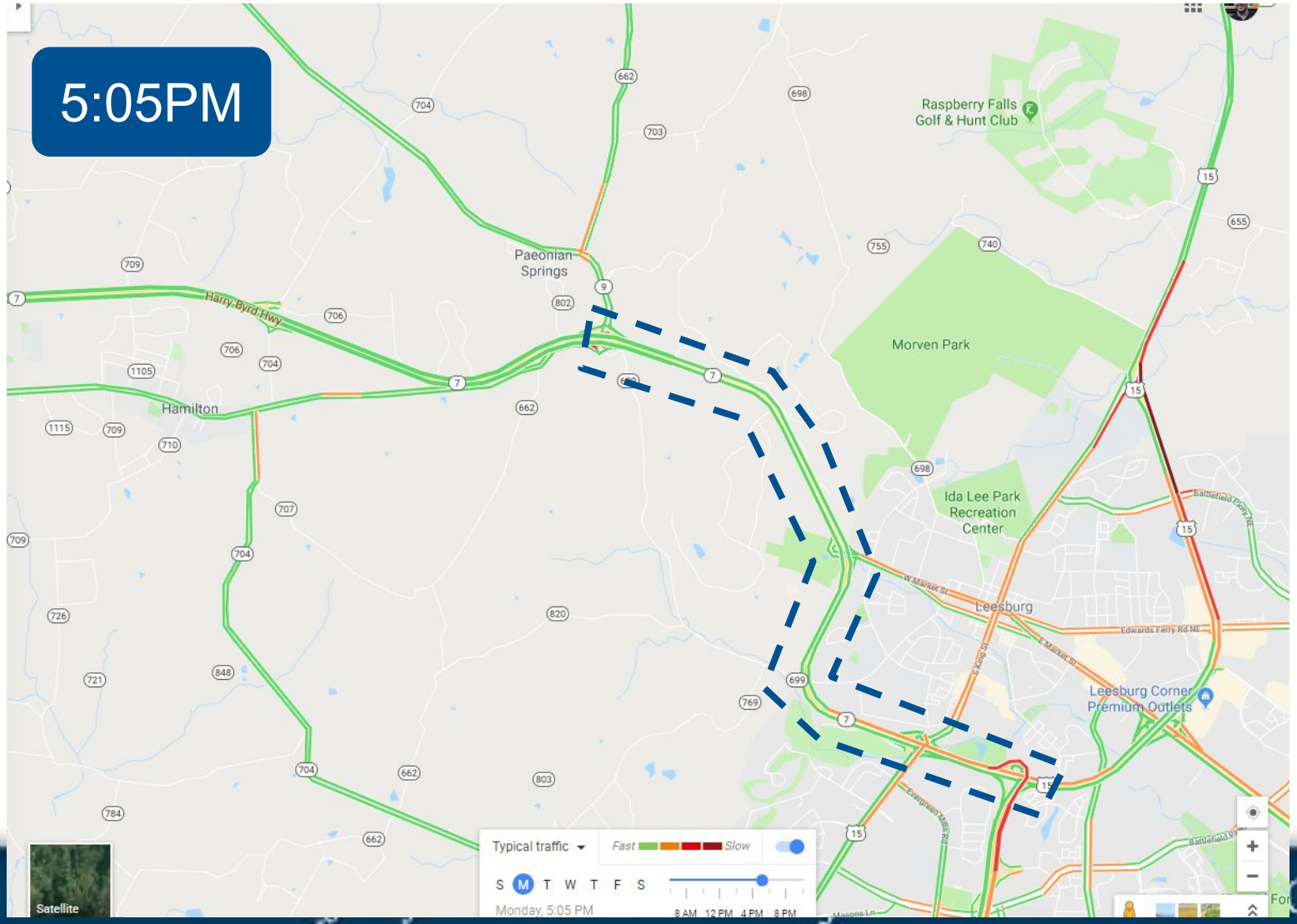

Route 7 - Route 9 to Dulles Greenway

Evening Peak

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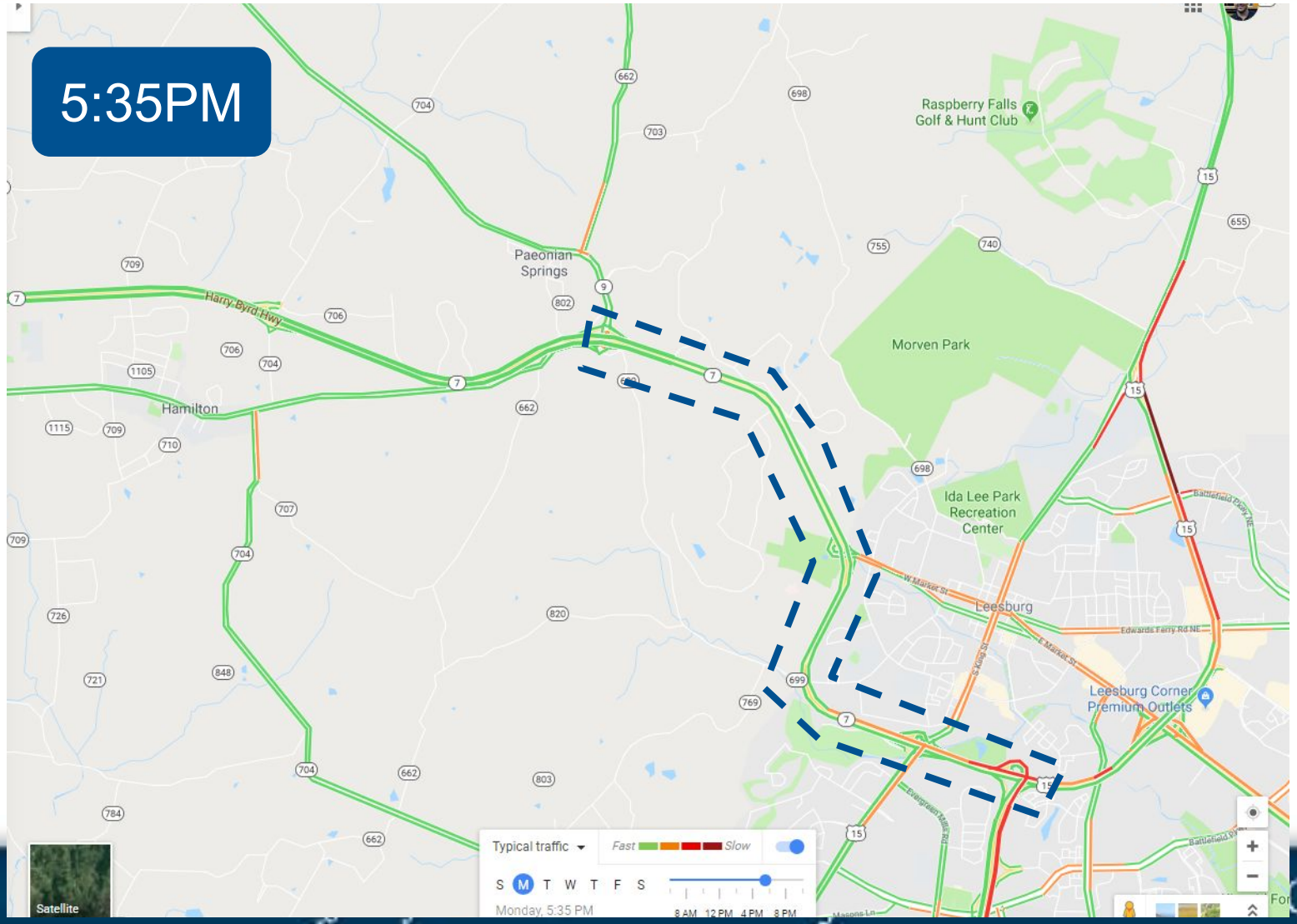

Route 7 - Route 9 to Dulles Greenway

Evening Peak

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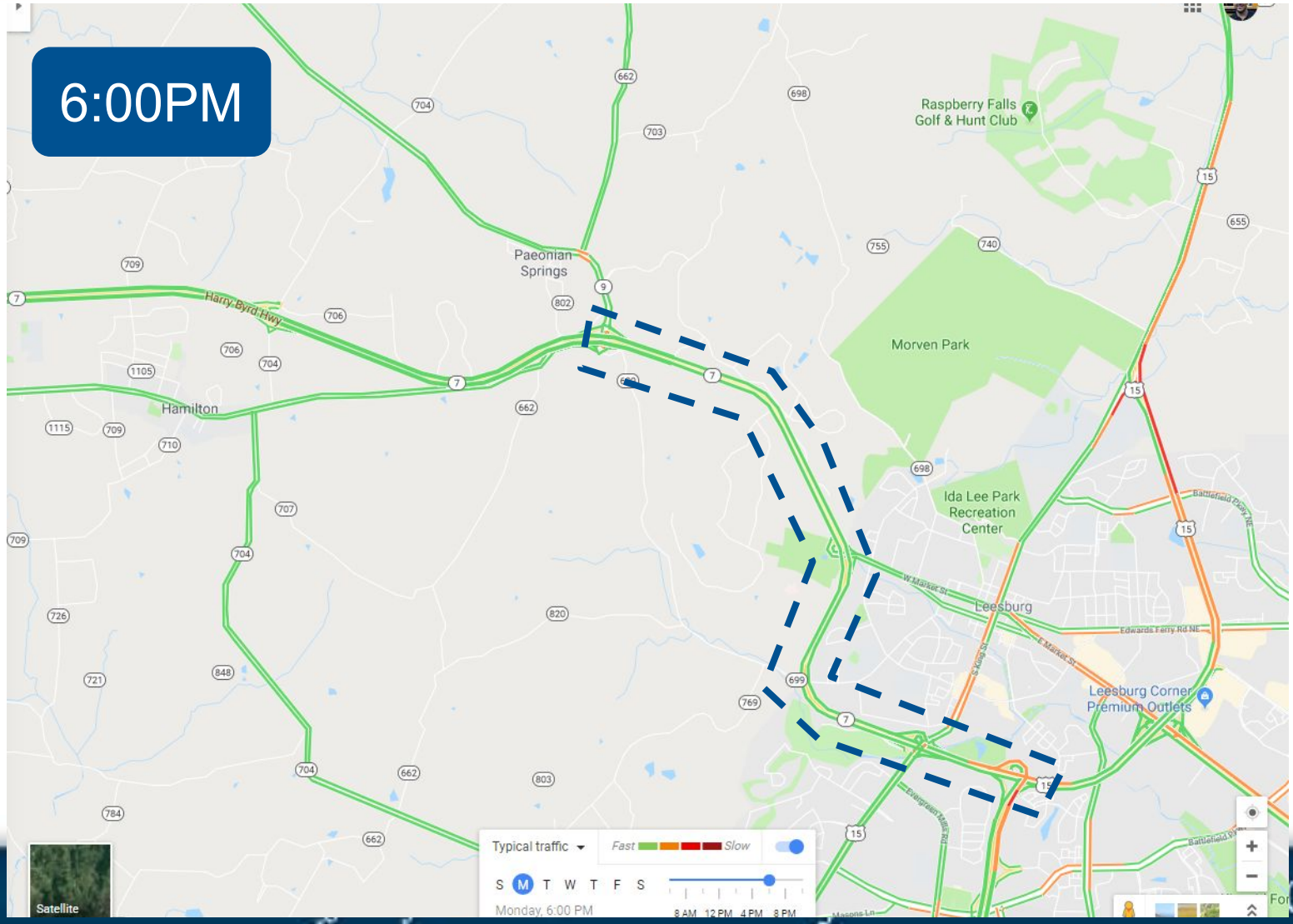

Route 7 - Route 9 to Dulles Greenway

SMART SCALE
Funding the Right Transportation Projects in Virginia

Need/Problem	EB congestion in morning peak at the Route 9 interchange due to friction through this interchange as vehicles merge while traveling uphill and around a curve	
Solution	Round 3 Submitted Project	Recommendation from STARS Study
Scope of Work	Widen 6.5 miles of Route 7 in both directions between Dulles GW and W Market Street	Extend acceleration lane onto Route 7 EB from Route 9 by 4850 feet
Cost	**$127,000,000**	**$16,600,000 (13%)**
Benefit Points	**4.66**	**2.71 (58%)**
SMART SCALE SCORE	**0.37**	**1.63 (440%)**

Implications related to Performance Based Planning

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Funding the Right Transportation Projects in Virginia

- There are instances where more cost effective solutions to a need have been identified but have not been submitted
- May want to consider mechanism for sharing such instances with impacted CTB members
- Is there opportunity for VDOT to work with localities in-between cycles to determine whether there are more cost effective solutions to a need?

If at first you don't succeed...

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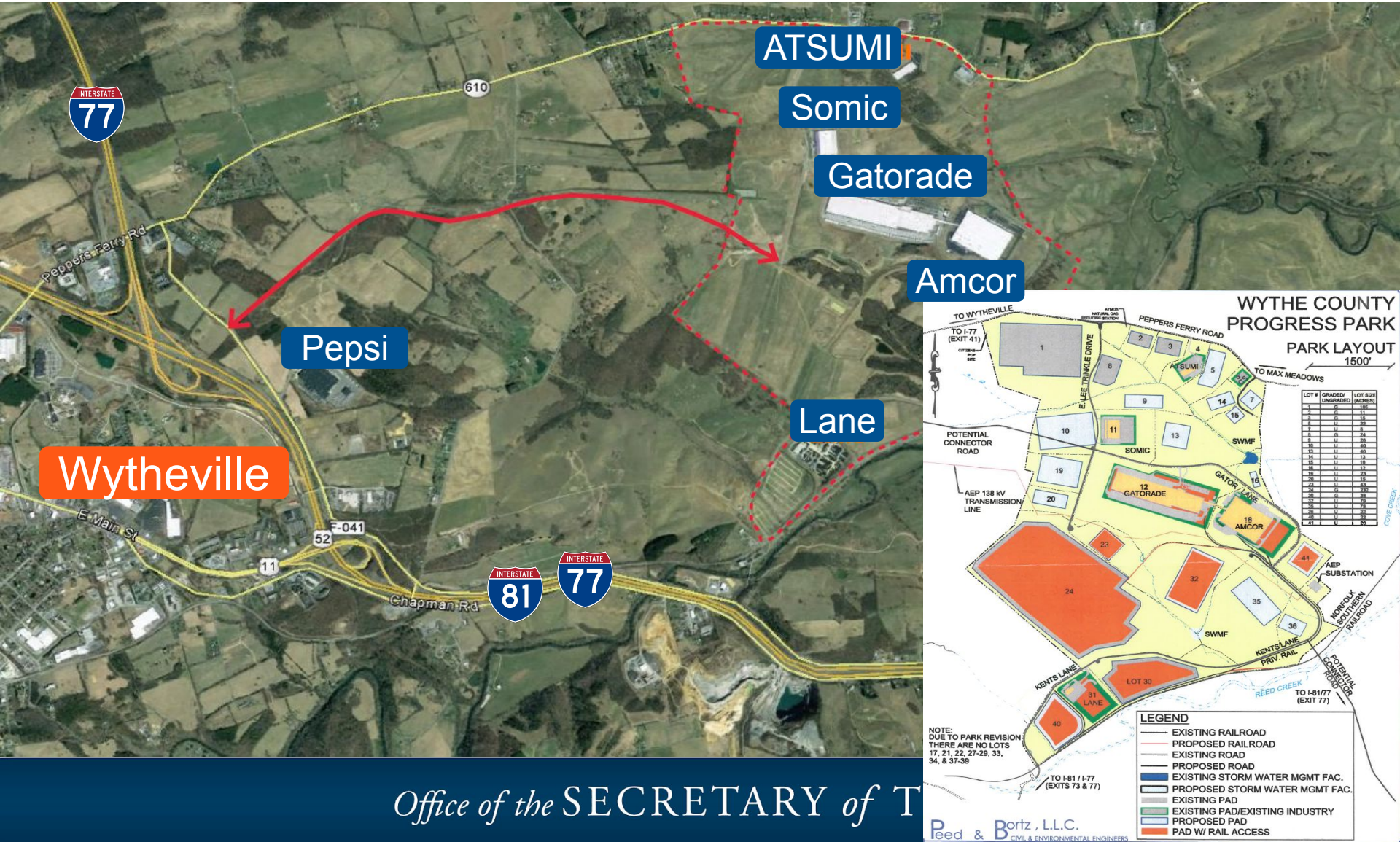
- Each round of SMART SCALE is unique
- Scorecard shows applicant where project was strong and weak
- State works with applicants to look for ways to improve project and project applications that were not successful
- Many examples of successful resubmissions

Bristol District Success

Progress Park Connector Road

SMART SCALE

Funding the Right Transportation Projects in Virginia



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Bristol District Success Story

Progress Park Connector Road

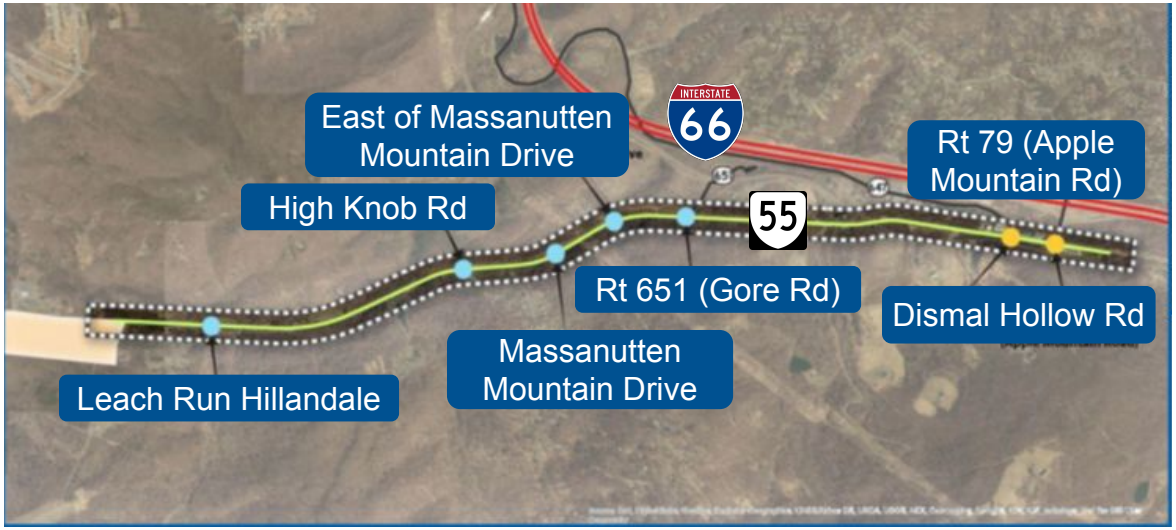
SMART SCALE
Funding the Right Transportation Projects in Virginia

- Round 2
  - $20M project
  - $17.7M SMART SCALE Request
  - No economic development sites included in application
  - One of lowest scoring projects statewide - zero points for economic development
- Round 3
  - $23.6M project
  - $10.8 Revenue Sharing leverage
  - $12.8M SMART SCALE Request
  - 12 economic development sites included
    - 2nd highest scoring project in state for economic development site support
  - Partnering (Wythe County and VDOT) – early and open communications with continued education on SMART SCALE

Staunton District Success

Route 55 East/John Marshall Highway

SMART SCALE
Funding the Right Transportation Projects in Virginia



Existing Conditions

- Poor pavement markings
- Need for signage upgrades
- Sight distance issues
- Deficient traffic control elements
- Rear-end/Fixed object off-road crashes
- 121 crashes over 5-year period
- Localized congestion at Rt 79 intersection only

Staunton District Success

Route 55 East/John Marshall Highway

SMART SCALE
Funding the Right Transportation Projects in Virginia

- **2013** Comprehensive Plan Update
- **2015** SMART SCALE Round 1 Application
- **2016** SMART SCALE Round 2 Application
- **2018** SMART SCALE Round 3 Application
- **2023** SMART SCALE Round 3 Application

Rounds 1 and 2

- Widen to 4-lane divided
- $24-32 million
- Benefit points less than 1
- SMART SCALE score <0.5
- Near bottom in District rankings

Round 3

- Added targeted spot safety improvements
- $1.6 million
- Benefit points > 4
- SMART SCALE score > 25
- 3rd highest ranked project in district

- Rumble strips
- Raised pavement markings
- Guardrail improvements
- Sign improvements
- Speed feedback signage
- Variable message boards
- Fixed object removal

Proactive Planning and Innovative Solutions

SMART SCALE
Funding the Right Transportation Projects in Virginia

- With a regular 2-year cycle and an established process and measures SMART SCALE encourages state and local/regional partners to be more proactive in project planning/development
- State is providing performance measures and mapping data to help applicants identify locations with congestion, safety and reliability problems - locations that have better chance of scoring points
- With cost as an important variable there is incentive to look for cost effective ways to solve problems

F'burg District Success

Proactive plan for 95/301 Corridors

SMART SCALE

Funding the Right Transportation Projects in Virginia

Interstate 95

North of Richmond Area to Baltimore

Current Travel Times (Uncongested)

- I-95 (entire distance)

  140 Miles, 2 hours 14 min

- I-95 ➜ I-495 ➜ I-95

  133 Miles, 2 hours 3 min

- I-95 ➜ I-295 ➜ B–W Pkwy ➜ I-895 ➜ I-95

  126 Miles, 2 hours 1 min

- I-95 ➜ B–W Pkwy ➜ I-895 ➜ I-95

  126 Miles, 2 hours 0 min

F'burg District Success

Proactive plan for Route 301 Corridor

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Funding the Right Transportation Projects in Virginia

Route 207/301

North of Richmond Area to Baltimore

Current Travel Times (Uncongested)

- Rte 207 ➜ Rte 301 ➜ Rte 5 ➜ I-95 ➜ Rte 5 ➜ B–W Pkwy ➜ I-895 ➜ I-95
  129 Miles, 2 hours 16 min
- Rte 207 ➜ Rte 301 ➜ Rte 3 ➜ I-97 ➜ I-895 ➜ I-95
  124 Miles, 2 hours 19 min

Currently, taking the Route 207/301 alternative is only a few minutes longer than taking any one of the I-95 alternatives

F'burg District Success

Proactive plan for Route 301 Corridor

SMART SCALE
Funding the Right Transportation Projects in Virginia

- **Developed an Arterial Management Plan for the corridor**
  - Increased travel due to widening of Nice Bridge to 4 lanes from current 2 lanes
  - Ability to divert 95 traffic – cost effective means of reducing congestion on I-95 - particularly on weekends
- **Identified innovative, low-cost improvements to improve safety and decrease congestion**
  - Continuous Green-T Intersections - 5 locations
  - Restricted Crossing U-Turn Intersections - 4 locations
  - Median U-Turn Intersections - 2 locations
  - Quadrant Roadway Intersections - 3 locations

Salem District Success

Project Development

SMART SCALE
Funding the Right Transportation Projects in Virginia

- Of 10 projects in final funding scenario for Salem six originated from Arterial Management Plans (AMP) or local planning initiatives
- SMART SCALE provides an objective measure based process that benefits targeted safety and operational improvements
- Plan your work, then work your plan

Successful Planning Projects

- Route 220 at Route 619 Improvements (Route 220 AMP)
- Route 220 at Route 919 Improvements (Route 220 AMP)
- Route 220 at International Parkway Intersection (stand alone AMP)
- Route 122 at Route 636 Improvements (UDA/local planning effort)
- Route 419 & Route 220 Diverging Diamond Interchange (local planning effort with VDOT assistance)
- Route 697 at US Route 460 Intersection (Route 460 APP)

Flexibility of SMART SCALE process

CTB discretion in selecting projects

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Funding the Right Transportation Projects in Virginia

- **Bristol - Smyth County**
  - US Route 11 / SR 660 Roundabout South swapped out and replaced with US Route 11 / SR 660 Roundabout North
  - Project costs almost identical - north roundabout would improve safety near school
- **Fredericksburg - City of Fredericksburg**
  - Project to implement operational improvements along Route 3 swapped out with variation that also included ramp improvements at the I-95/Rt 3 interchange
- **Staunton - Interchange Improvements on I-81 at Exits 247 and 313**
  - Based on updated DGP/HPP amounts in Rd 3
  - Supplements SGR funded bridge projects now, to add much needed capacity improvements, which provides significant future cost savings.

Programmatic Budgetary Performance

SMART SCALE
Funding the Right Transportation Projects in Virginia

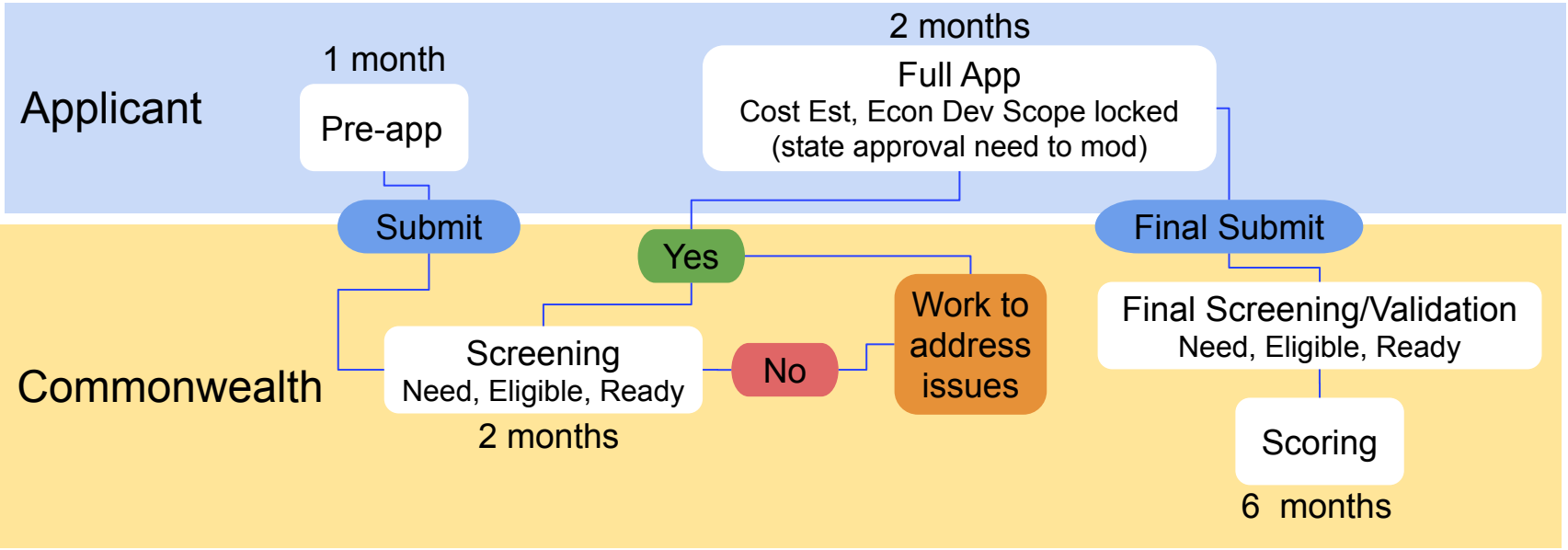
- **$2.4 Billion allocated in Rounds 1 and 2**
  - Over 300 projects selected for funding
- **$77 million in cost savings based on Construction Award**
- **$75 million re-allocated to cover cost increases**
  - 80% of cost increases on 2 projects (Rte 7, Laskin Rd)
  - Cost increases represent only 3% of funds allocated in Rounds 1 and 2
- **Reinforces need to consider programmatic success when reviewing future individual project cost increases**

Application Intake, Validation and Screening

Intake Schedule

SMART SCALE
Funding the Right Transportation Projects in Virginia

- Round 3 saw implementation of pre-application
- Very helpful, but after applicant submitted pre-app they could immediately start in full-app - often completely changing the project
- State was pre-screening a moving target - for this reason we will be recommending the hand-off approach shown below:



Screening and Validation

SMART SCALE
Funding the Right Transportation Projects in Virginia

- Per CTB policy there are three key screening decisions:
  - Does the project meet a ***VTrans need***?
    - Corridors of Statewide Significance
    - Regional Network
    - Urban Development Area (UDA)
    - Safety
  - Is the project ***eligible*** for SMART SCALE?
    - Not allowed - studies, state of good repair
  - Is the project ***ready***?
    - Clear scope of work
    - Met planning and public involvement requirements

Screening and Validation

SMART SCALE
Funding the Right Transportation Projects in Virginia

- Validation process is an accuracy and/or reasonableness review of data and information in the project application
- Lead by multi-disciplinary teams at DRPT and VDOT (District and CO)
- Focus areas
  - Scope of work and project features
  - Economic development sites
  - Cost estimate and schedule
  - Supporting documents
- Validation process helps ensure fairness and minimizes risks

Project Eligibility

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- After previous rounds the Board has adopted policy language to clarify eligibility/ineligibility
- Two project areas to discuss from an eligibility standpoint:
  - Transit Maintenance Facilities
  - System-wide Investments

Transit Maintenance Facilities

SMART SCALE
Funding the Right Transportation Projects in Virginia

- Rationale in favor of inclusion is that maintenance facilities or facility expansion may be needed to facilitate service or capacity expansion
- Concern this is a gray area and additional rules may be needed to avoid future problems
- Potential options
  - Only allow as part of a larger bus or rail capacity expansion
  - Limit eligibility to capital projects that (1) demonstrate expanded transit or rail capacity and (2) provide a direct benefit to transit passengers (station improvements, bus stop features, etc).

Area-wide Investments

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Funding the Right Transportation Projects in Virginia

- These are improvements that do not have a typical from/to and often cover a larger geographic area
- Some example from previous rounds include:
  - NOVA Regional Mobility Program- integrated, multimodal, technology-based approach to mobility and congestion management for NOVA region
  - Multi-corridor or jurisdiction-wide implementation of adaptive signal controllers
  - Countywide bus stop upgrades
- Expansive scope and multi-faceted nature of improvements present challenges for scoring and validation

Project Readiness

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Funding the Right Transportation Projects in Virginia

- Project readiness is critical to minimize risks for major scope changes and cost overruns
- Ability to estimate benefits and score a project is dependent on clear and concise scope of work
- Key points scope should address
  - What - what is being proposed
  - Where - location of each improvement
  - How much - measurement (length, width, #)
- Initial pre-applications often lack adequate detail
- Coordination to resolve details = time/resources

Project Readiness

SMART SCALE
Funding the Right Transportation Projects in Virginia

- Board has strengthened incrementally each round
- Much of the strengthened policies have focused on highway investments - requiring alternative analysis and planning studies
- Similar policy provisions should be considered for major transit capital investments such as BRT and light rail
- Show planning study with alternatives considered
- Projects are included in agency's Transit Strategic/Development Plan

SMART SCALE

Funding the Right Transportation Projects in Virginia

Round 3 Project Evaluation and Scoring

Round 3 Observations

SMART SCALE
Funding the Right Transportation Projects in Virginia

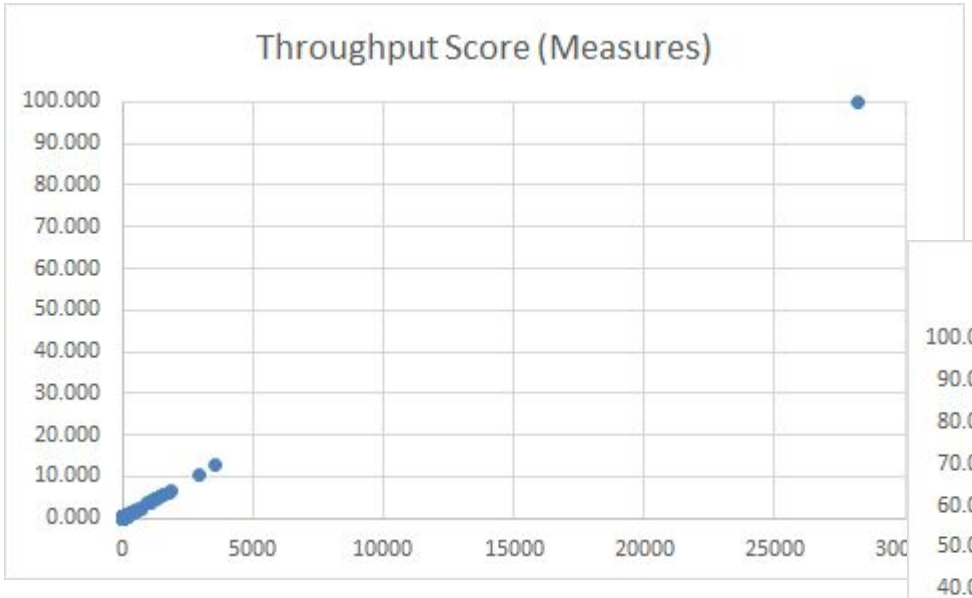
- Safety, Economic Development, and Land Use were the most influential factor areas in round 3

Factor Area	% of Total Benefit Points with HRBT	% of Total Benefit Points without HRBT
Congestion	9.5%	25.8%
Safety	31.7%	23.9%
Accessibility	5.2%	7.3%
Environmental	16.1%	12%
Economic Development	18.8%	17%
Land Use	18.6%	13.9%

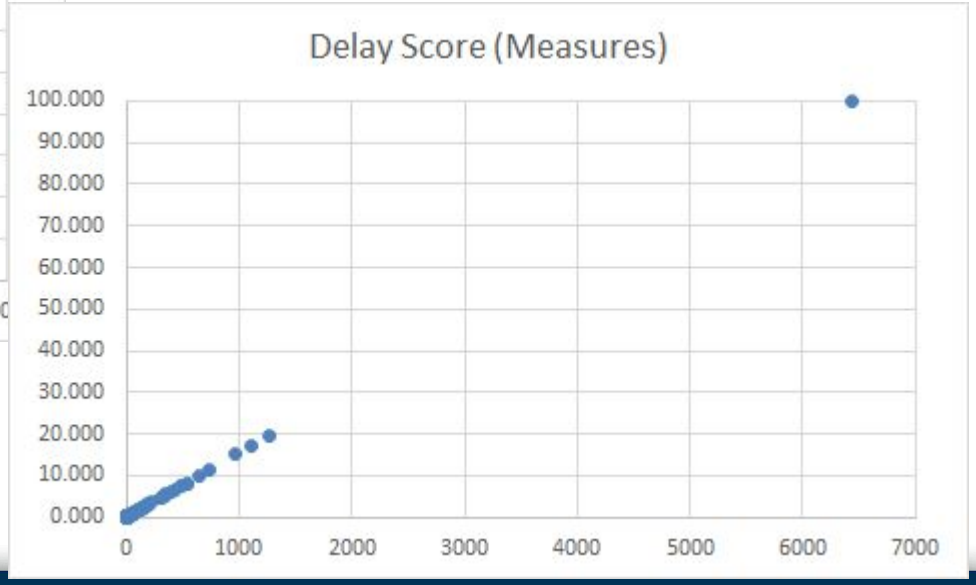
Round 3 Observations

SMART SCALE
Funding the Right Transportation Projects in Virginia

- Why did congestion not compare similar to safety, economic development and land-use? Distribution of values in the normalization process



For both C1 and C2 the values are skewed toward lower end of 0-100 scoring range

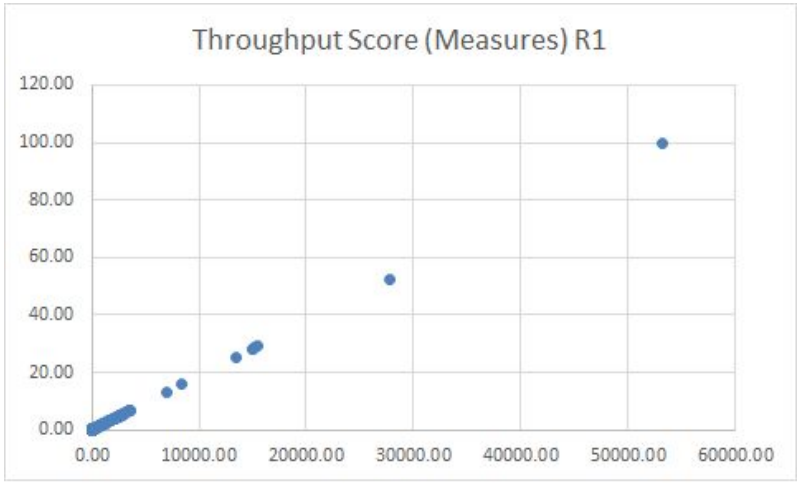


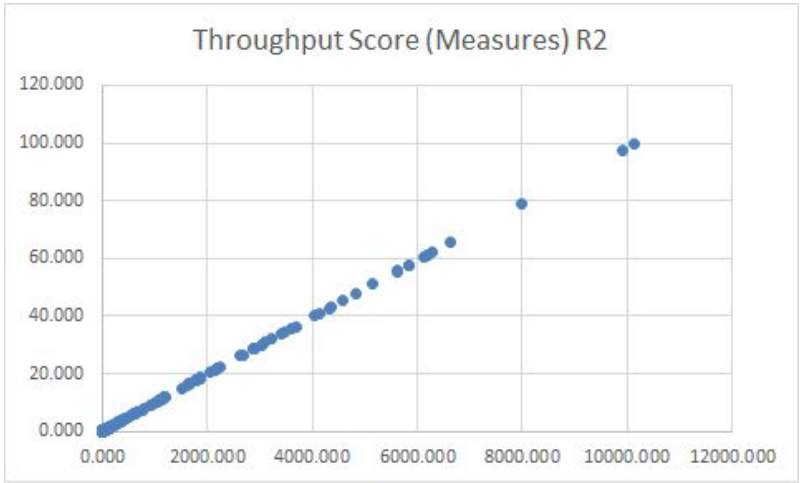
Round 3 Observations

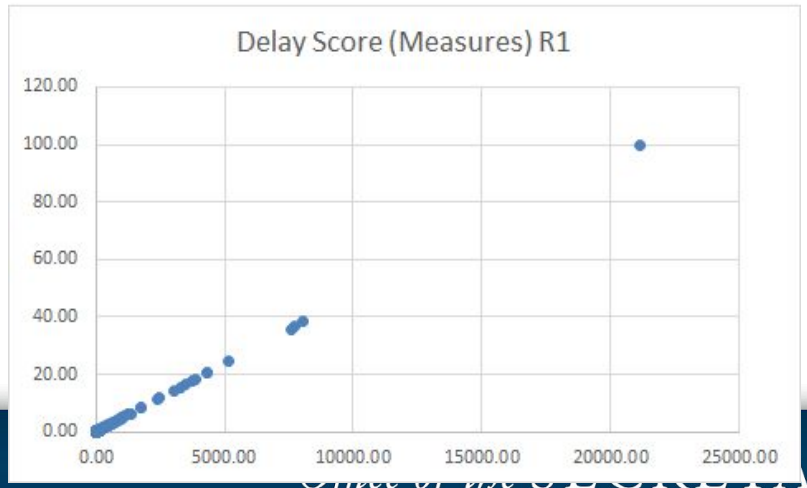
SMART SCALE

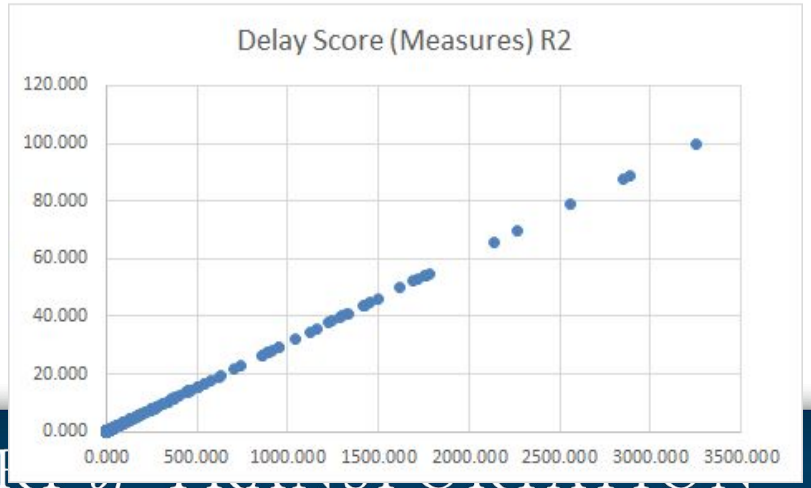
Funding the Right Transportation Projects in Virginia

- Congestion scores were better distributed in Rounds 1 and 2





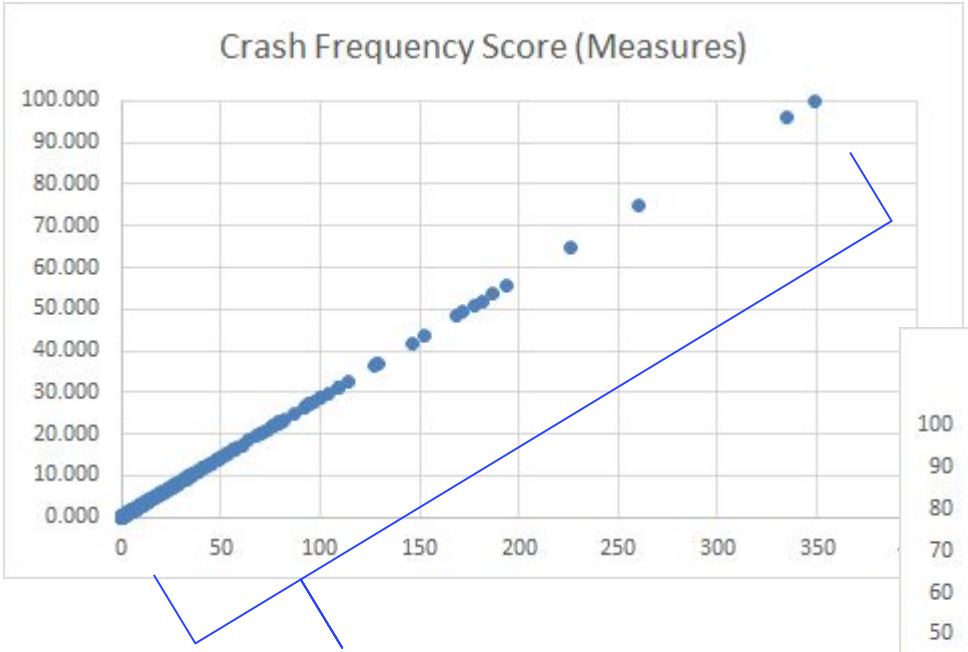




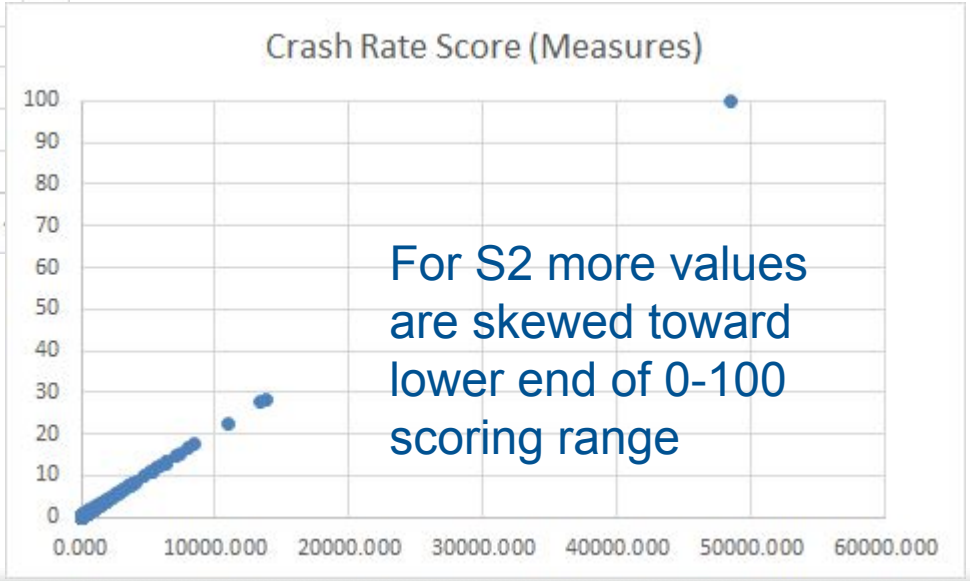
Round 3 Observations

SMART SCALE
Funding the Right Transportation Projects in Virginia

- Let's look at same charts for safety measures



More even distribution of scores throughout the 0-100 scoring range - for this reason the S1 measure was more impactful that the S2

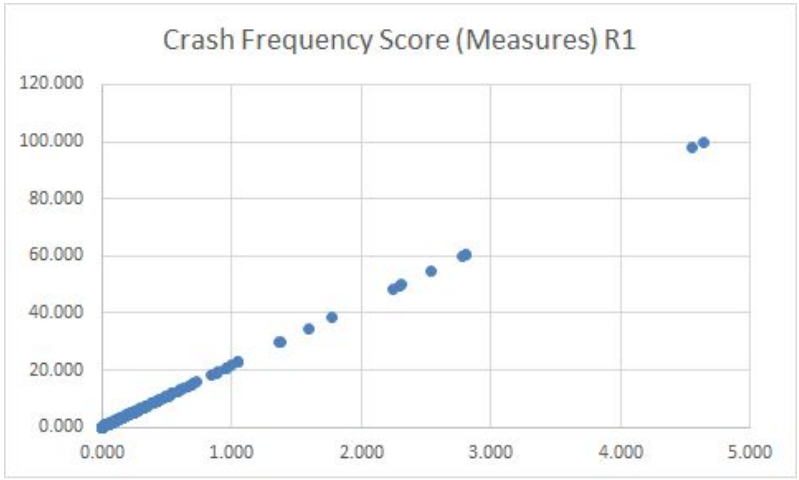


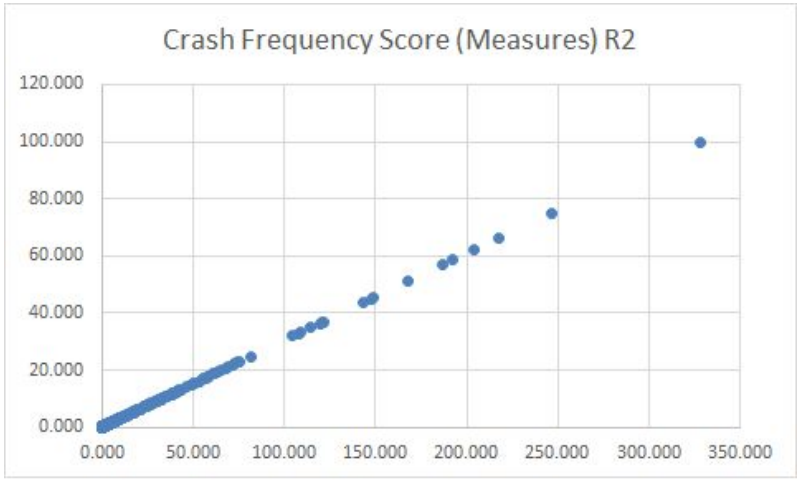
For S2 more values are skewed toward lower end of 0-100 scoring range

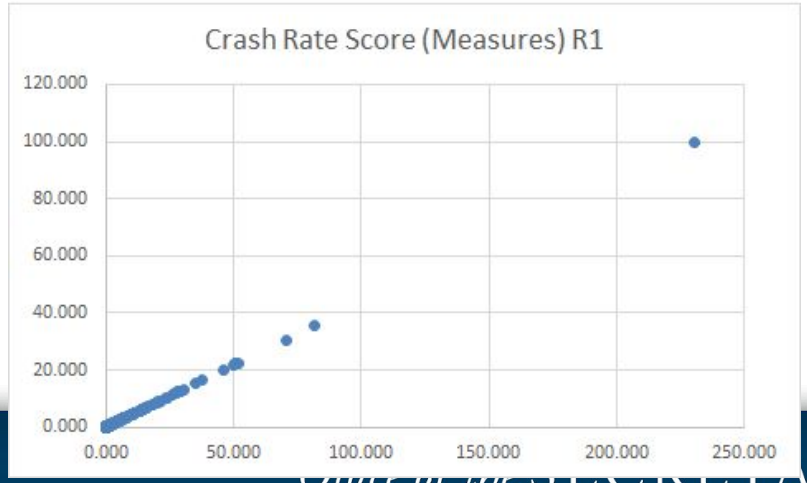
Round 3 Observations

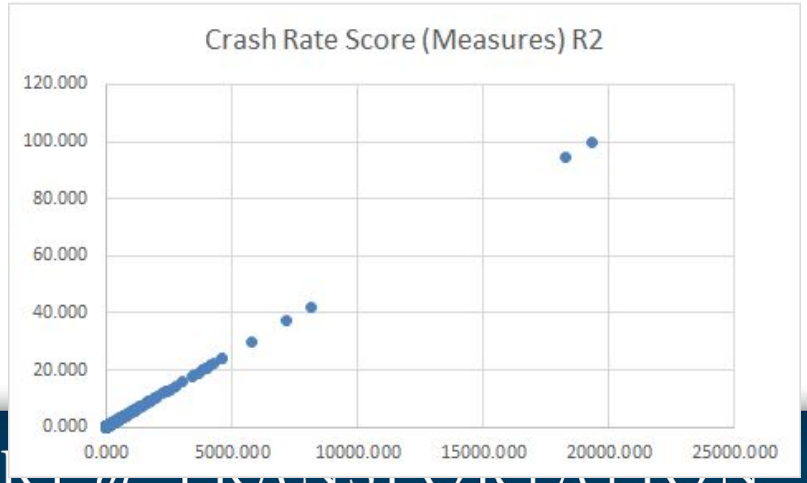
SMART SCALE
Funding the Right Transportation Projects in Virginia

- Safety scores were also well-distributed in Rounds 1 and 2





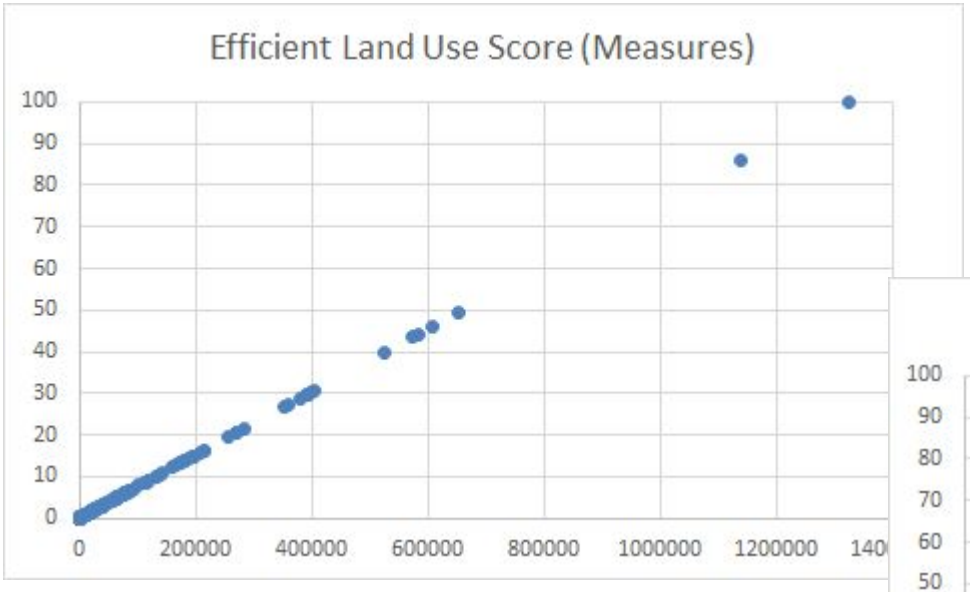




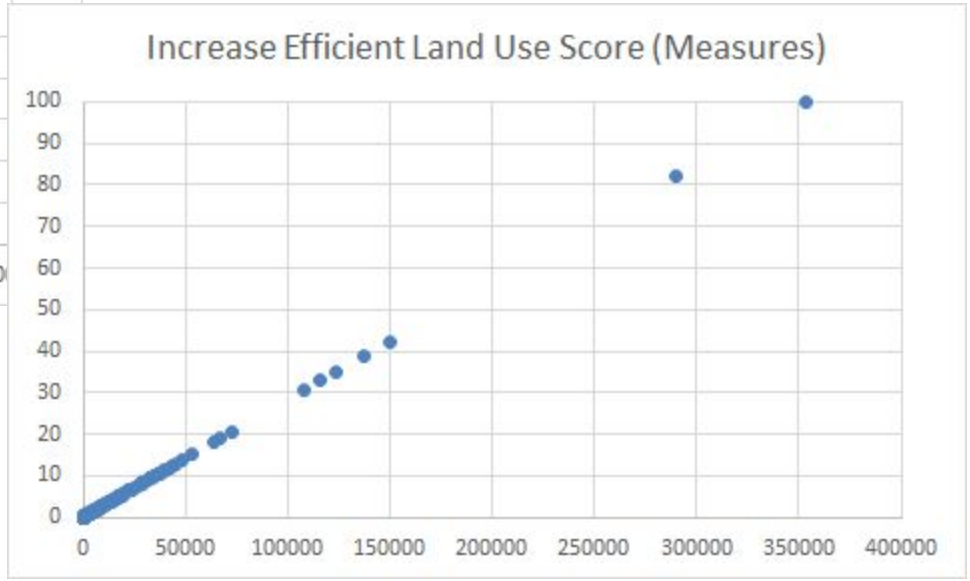
Round 3 Observations

SMART SCALE
Funding the Right Transportation Projects in Virginia

- Let's look at same charts for land-use measures



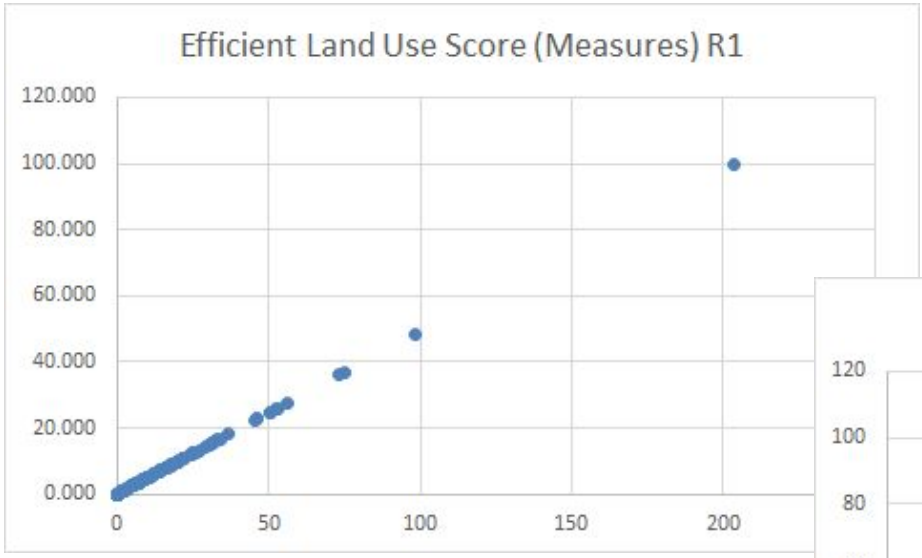
More even distribution of scores throughout the 0-100 scoring range

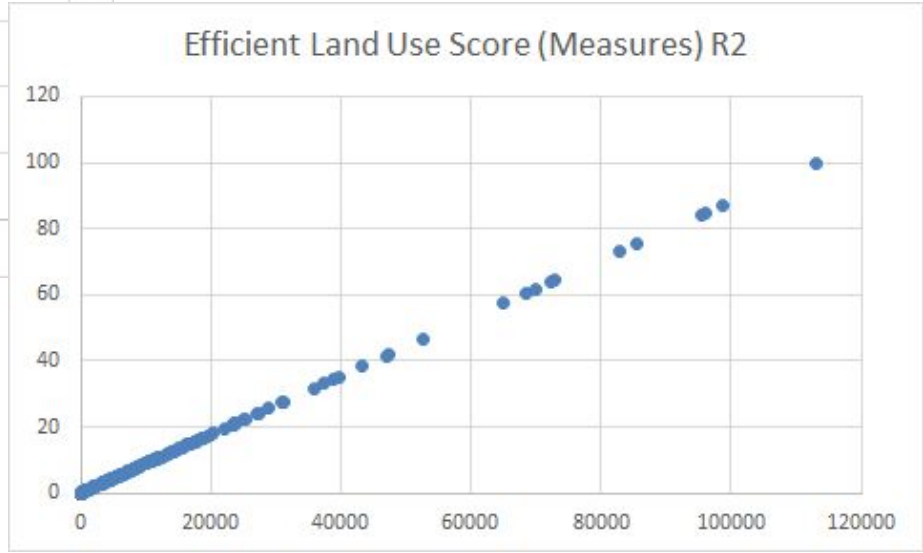


Round 3 Observations

SMART SCALE
Funding the Right Transportation Projects in Virginia

- Land Use Scores* were also well-distributed in Rounds 1 and 2





*As discussed above, Land Use was measured differently in Rounds 1 and 2; the overall factor area was well-distributed in all rounds, regardless of scoring approach

Round 3 Observations

SMART SCALE
Funding the Right Transportation Projects in Virginia

- Rounds 1 and 3 had very similar distributions of points by factor area
- Round 2 shifted much more to funding projects earning their points in Congestion and less from Safety
- In all three rounds, Land Use has contributed very significantly to project funding; this is likely because Area Types A and B receive a larger apportionment of district funding and most Area Type A and B projects earn at least some points from Land Use
- Factor areas with more evenly distributed scores tend to make up a greater proportion of all points earned

Congestion

SMART SCALE
Funding the Right Transportation Projects in Virginia

- **SMART SCALE team is looking at the following areas related to congestion**
  - Accounting for weekend congestion
  - Weighting of C1 versus C2 - currently 50/50
  - Current day versus 10 years in future
  - Scaling throughput
  - New tools and methods - simulation models

Safety

SMART SCALE
Funding the Right Transportation Projects in Virginia

- **SMART SCALE team is looking at the following areas related to safety**
  - Targeted Crash Modification Factors (CMFs)
  - Weighting of S1 versus S2 - currently 50/50

Safety
Crash Modification Factors

SMART SCALE
Funding the Right Transportation Projects in Virginia

- Crash modification factors (CMFs) calculate a projected crash reduction due to a project improvement
  - CMF of 0.80 = 20% reduction in crashes
- CMFs may be:
  - Total: apply to all crash types
    - Used in previous rounds of SMART SCALE
  - Targeted: apply to a specific crash type
    - Nighttime crashes for lighting
    - Roadway departure crashes for shoulder improvements
- Total CMFs can overestimate (more common) or underestimate project benefits based on crash patterns

Safety
Crash Modification Factors

SMART SCALE
Funding the Right Transportation Projects in Virginia

- **Project 3921 - Rte. 340/522 Lighting Project**
  - Funded
  - Safety Score Rank = 12
  - Install street lighting along Route 340/522
- **Round 3 Crash Reduction**
  - 30% reduction applied to 66 crashes (1,465 equivalent property damage only [EPDO] crashes)
  - 0.30 * 1,465 = **reduction in 440 EPDO crashes**
- **Targeted Crash Reduction**
  - 53% reduction applied to 5 crashes that occurred in darkness (210 EPDO crashes)
  - 0.53 * 210 = **reduction in 111 EPDO crashes**

Economic Development Sites

SMART SCALE
Funding the Right Transportation Projects in Virginia

- **Policies adopted by the Board for Round 3 improved the reasonableness of economic development results**
- **Zoned only properties has to be adjacent to the proposed transportation improvement**
- **In validating zoned properties and conceptual site plans we noticed several examples of high floor area ratios (FAR) - values in range of 5 were not uncommon**
- **Applicants uploaded zoning ordinances showing that larger FAR are allowed, but that does not mean they are likely**

Weighting Sites based on Readiness

Highest

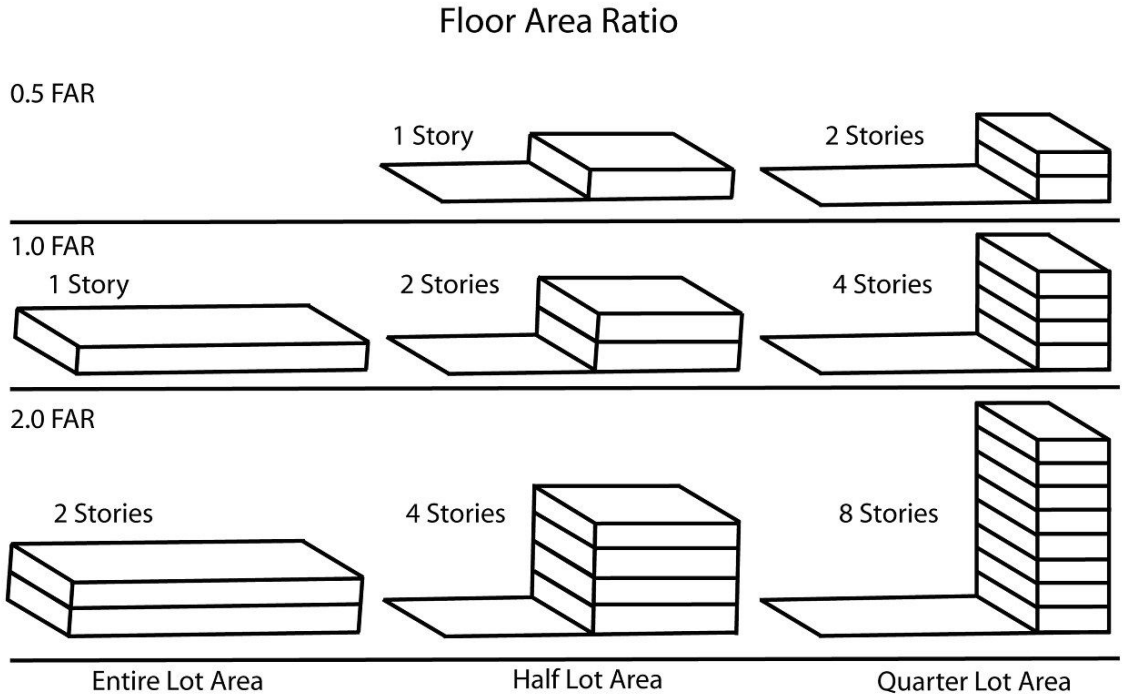
Lowest

Approved Detailed Site Plan
Submitted Detailed Site Plan
Approved Conceptual Site Plan
Submitted Conceptual Site Plan
Zoned Only

Floor Area Ratio Explained

SMART SCALE
Funding the Right Transportation Projects in Virginia

Floor area ratio is the ratio of a building's total floor area to the size of the piece of land upon which it is built



Economic Development Sites

SMART SCALE
Funding the Right Transportation Projects in Virginia

- Floor Area Ratio (FAR) assumptions for zoned-only properties can be problematic
- Large industrial tracks (250+ acres) with assumed FARs of 1.0 - 250 ac = 10,890,000 sqft
  - **Boeing Everett Factory - 4.28M sqft**
- Several tracts with assumed FARs of 5.0 or higher
- Applicants provided documentation of local ordinances allowing FAR value used - just because it is allowed does not mean it is likely
- **Consideration for next round - default FAR assumption for zoned only properties (.30)**

Land Use

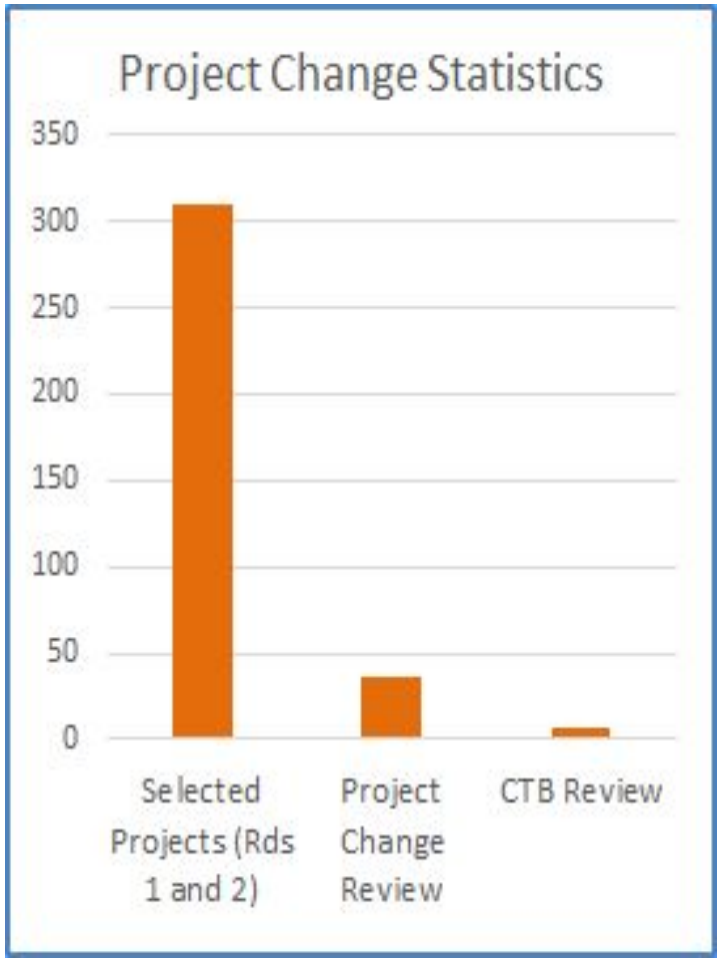
SMART SCALE
Funding the Right Transportation Projects in Virginia

- **For Round 3, the Board adopted a new method objective metric to replace subjective metric to measure a project's support for transportation efficiency of development**
- **L1 multiplies non-work accessibility by future density; this favors projects in areas that are already very dense over projects in areas that, though growth may be expected, existing density is low**
- **L2 multiplies non-work accessibility by the *change* in population and employment; this measure favores projects in areas where growth is expected regardless of initial density**

Project Changes and Rescoring

SMART SCALE
Funding the Right Transportation Projects in Virginia

- **Over 300 projects selected in Rds 1 & 2**
- **36 projects (12%) have experienced documented project change**
  - Scope change or budget increase
- **7 projects (3%) have required CTB action**
  - 4 budget increases
  - 2 scope modifications
  - 1 both
- **Project Change Guidance was established previously and is in the process of being updated**



Blind Scoring

SMART SCALE
Funding the Right Transportation Projects in Virginia

- **Randomly selected 10+% of SMART SCALE projects to reevaluate congestion and safety scoring measures**
  - New for Round 3: Blind scoring was conducted by a separate external team - independent from official scoring team
- **Congestion and safety measures were selected due to the significant number of inputs and complexity of analysis**
  - 62 total projects were randomly selected for reevaluation
  - Project analysis types and locations were distributed across each VDOT district
- **Re-evaluate and compare projects independent of initial scoring**
  - Accomplished with new analyst and new internal QC

Blind Scoring

SMART SCALE
Funding the Right Transportation Projects in Virginia

Improvements to safety and congestion QC process identified during Round 2 were made to Round 3

- **Held weekly team meetings to improve communication/consistency**
- **Incorporated traffic volume development tool into scoring tool**
- **Incorporated standard assumptions documentation into scoring tool**

Congestion Blind Scoring
Round 3 Findings

SMART SCALE
Funding the Right Transportation Projects in Virginia

- Nearly half of projects had identical throughput and/or delay measure scores
- Larger differences in 10% QC results were attributed to the blind scoring team not having access to the same applicant data and lack of hands-on scoring experience
- Blind scoring results were run through the funding steps and it was determined the differences would not have affected the staff recommended funding scenario

Congestion Blind Scoring
Recommendations for Round 4

SMART SCALE
Funding the Right Transportation Projects in Virginia

- Improve congestion scoring training to include extensive hands-on scoring a variety of project types
- Develop methods for sharing data provided by applicants while maintaining a partition between official and blind scoring
- Develop easy-to-digest congestion scoring user guide
- Provide step-by-step guidance on volume development
- Improve workflow between congestion and bike/ped scoring
- Create clear guidelines on determining a project's Peak Hour Expansion Factor

Safety Blind Scoring
Round 3 Findings

SMART SCALE
Funding the Right Transportation Projects in Virginia

Official score was more consistent with adopted scoring methods than blind scoring three-quarters of the time

- Issue with inconsistent segment length between analysts (sensitive on smaller projects)
- Inconsistent application of CMF values- especially on non-standard designs
- Inconsistent application of new intersection and new alignment roads

Safety Recommendations for Round 4

SMART SCALE
Funding the Right Transportation Projects in Virginia

- **Provide more training focusing on**
  - Understanding plans
  - Travel Demand Model inputs
  - Segmentation
  - Influence areas
  - CMF selection
- **Refine CMF list to minimize changes during scoring**
- **Refine scoring process for: new alignment, segmentation, one directional improvements**