

# SMART SCALE

Round 5: FY 2024 - 2030



# SMART SCALE

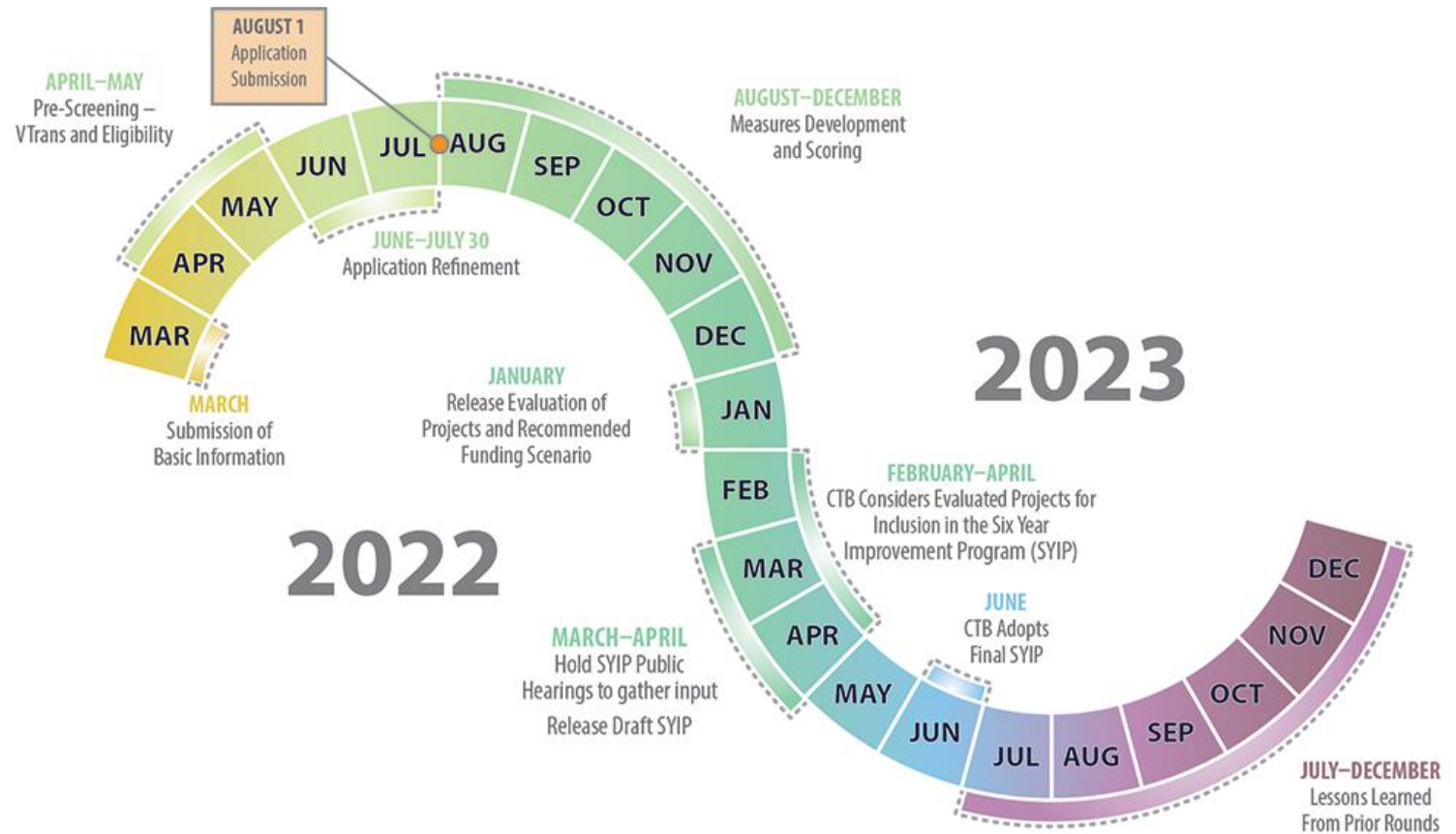
*Funding the Right  
Transportation Projects  
in Virginia*



# TIMELINE

## SMART SCALE

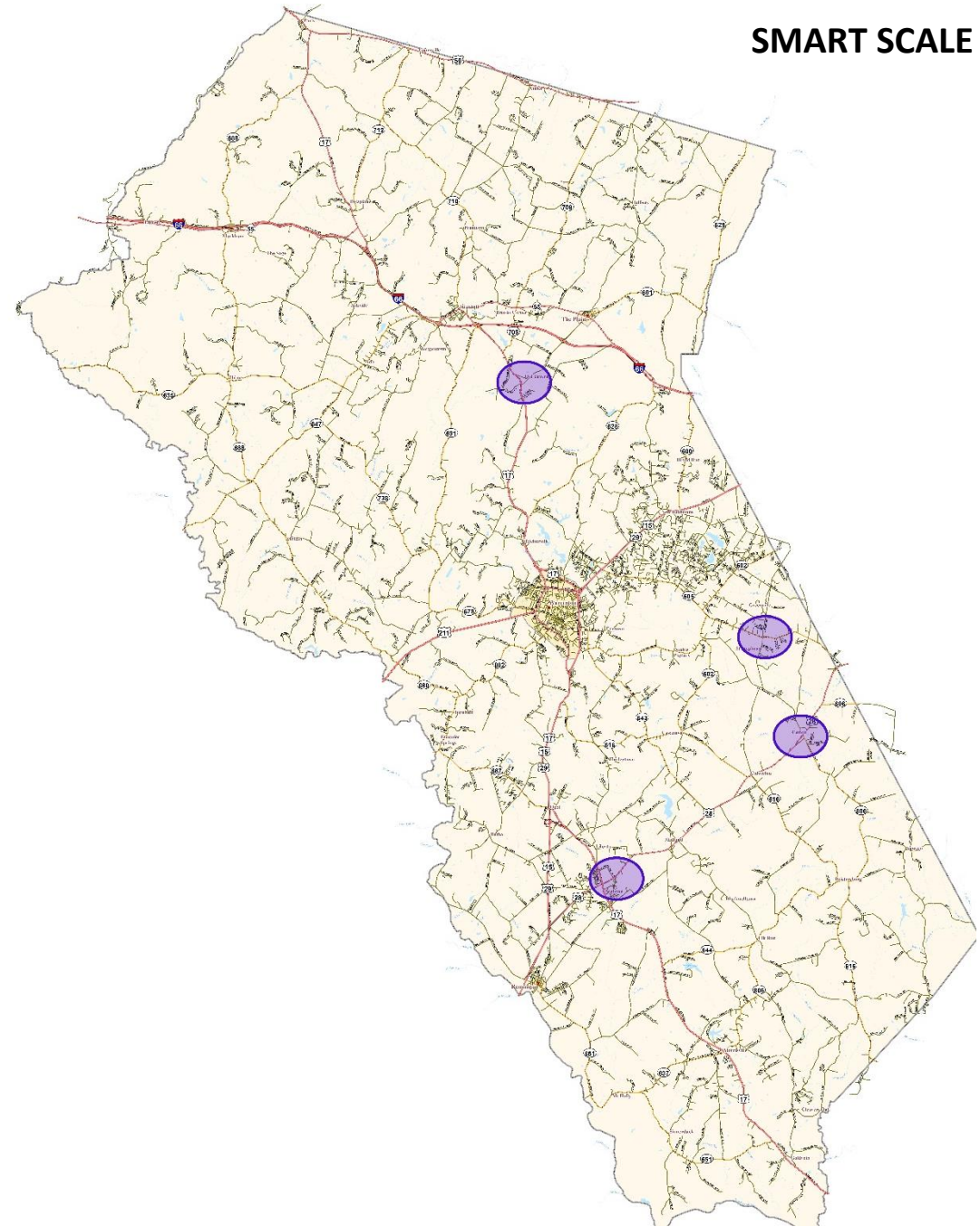
- August 2021 – March 2022 – Evaluation of Potential Projects/Applications
- March 19, 2022 – BOS Work Session
- April 1, 2022 – Pre-Application Deadline
  - County Submitted 5 Projects
- August 1, 2022 – Formal Application Deadline
  - Requires BOS Resolution of Support
- August - December 2022 – Application Scoring
- January 2023 – Release of Recommended Funding Scenario
- February – April 2023 – CTB SYIP Evaluation
- June 2021 – CTB Adopts SYIP
  - Selected Projects are Funded July 1, 2028 or July 1, 2029



# PRE-APPLICATION PROJECTS

- Catlett Rd. (Rt. 28) & Old Dumfries Rd. (Rt. 667) – Roundabout
- Catlett Rd. (Rt. 28) & Station Dr. (Rt. 853)/Bengü Gerek Avenue - Roundabout
- Dumfries Rd. (Rt. 605) & Greenwich Rd. (Rt. 603) – Roundabout
- James Madison Hwy. (Rt. 17) & Old Tavern Rd. (Rt. 245)/Enon Church Rd. (Rt. 703) – R-CUT.
- James Madison Hwy. (Rt. 17) & Old Tavern Rd. (Rt. 245)/Enon Church Rd. (Rt. 703) –Split Intersection.
- All Projects were Determined Eligible to be Submitted for SMART SCALE Funding.
  - Only 1 of the 2 Alternatives for the James Madison Hwy. (Rt. 17) & Old Tavern Rd. (Rt. 245)/Enon Church Rd. (Rt. 703) may be submitted.
  - Alternatively, the Board Could Choose to not Submit Either Alternative at this time.

**SMART SCALE**

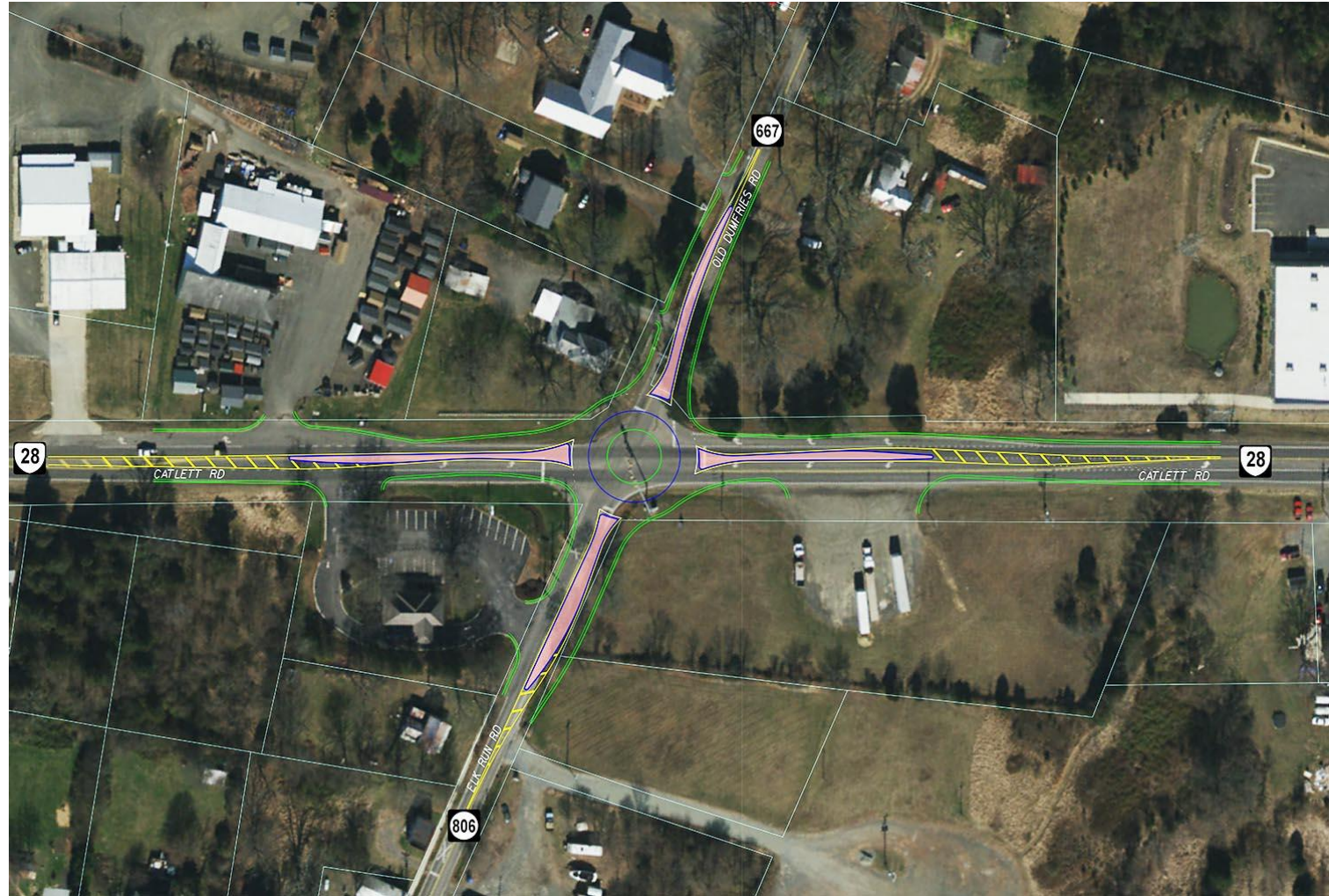


# CATLETT RD. (RT. 28) & OLD DUMFRIES RD. (RT. 667)

SMART SCALE

## Proposed Solution: Roundabout

- Not Identified as a Potential for Safety Improvements (PSI)
  - 22 Crashes within 300' – 1/16 – 8/25
  - Resulted in 10 Injuries
- Removes Signal & Redesigns the Intersection to a Roundabout
- Address Safety & Operational Issues

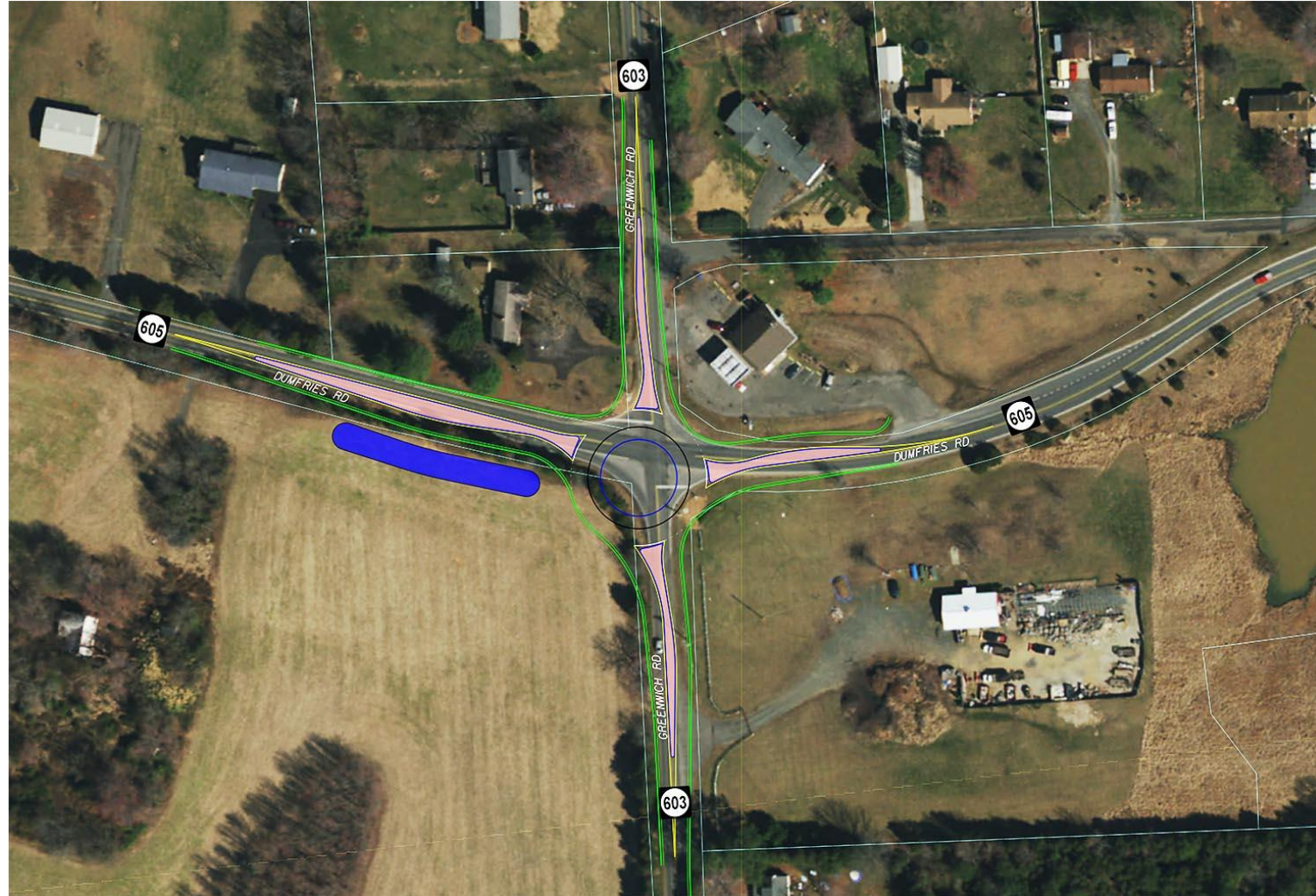


# CATLETT RD. (RT. 28) & STATION DR. (RT. 853)/BENGÜ GEREK AVE.

SMART SCALE

## Proposed Solution: Roundabout

- Identified as a Potential for Safety Improvements (PSI)
  - Ranked # 54 - 18 Crashes within 300' – 1/16 – 8/25
  - Resulted in 16 Injuries
  - Predominant Crash is Angle
- Removes Two-Way Stop & Redesigns the Intersection to a Roundabout
- Eliminates Angle & Head-On Crashes
- Reduces Speeds for the Intersection
  - May also Reduce Other Crash Types
- The Transportation Committee Recommended that this Intersection be Submitted for SMART SCALE funding.

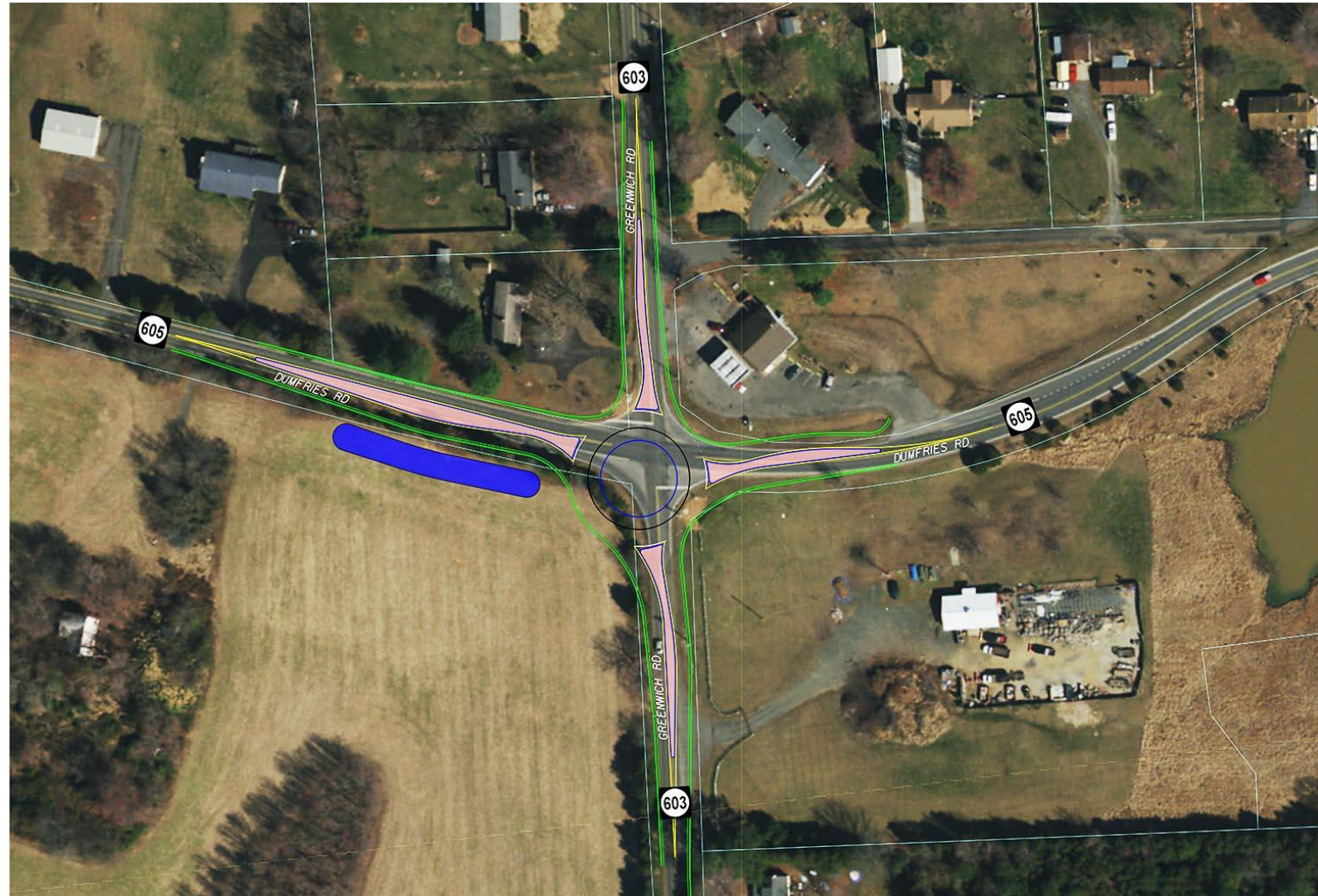


# DUMFRIES RD. (RT. 605) & GREENWICH RD. (RT. 603)

SMART SCALE

## Proposed Solution: Roundabout

- Identified as a Potential for Safety Improvements (PSI)
  - Ranked # 54 - 18 Crashes within 300' – 1/16 – 8/25
  - Resulted in 16 Injuries
  - Predominant Crash is Angle
- Removes Two-Way Stop & Redesigns the Intersection to a Roundabout
- Eliminates Angle & Head-On Crashes
- Reduces Speeds for the Intersection
  - May also Reduce Other Crash Types
- The Transportation Committee Recommended that this Intersection be Submitted for SMART SCALE funding.



# JAMES MADISON HWY. (RT. 17) & OLD TAVERN RD. (RT. 245)/ENON CHURCH RD. (RT. 703)

SMART SCALE

## Project History

- Identified as a Potential for Safety Improvements (PSI)
  - Ranked # 48 - 21 Crashes within 300' – 1/16 – 8/25
  - Resulted in 25 Injuries & 2 Fatalities (2017, 2021)
- VDOT Studies – July '21 & March '22
  - July '21 - Signalization is not Warranted nor Appropriate
  - March '22 – Evaluated 7 Different Alternatives
- SMART SCALE Pre-Application – April 1, 2022
  - R-CUT and Split Intersection Options Were Submitted
  - Both Deemed Eligible for Funding
- Public Informational Meeting – June 7, 2022
  - Comments were Varied w/ No Clear Preference
  - Slightly More Support for the R-CUT



# JAMES MADISON HWY. (RT. 17) & OLD TAVERN RD. (RT. 245)/ENON CHURCH RD. (RT. 703)

SMART SCALE

## Decision Matrix

- **R-CUT Intersection**
  - Most Viable Long-Term Improvement
  - Significant Benefit to Cost
  - Greatest Reduction In Crashes
  - Most Likely to Achieve Funding
- **Split Intersection**
  - Most Viable Concept for a Shorter Term, Lower Cost Improvement
  - Some Impacts to Property Access
  - Left Turn Conflicts Remain, Under Conditions that potentially Improve Driver Decisions & Reduce Crashes

| Goal/Need                            | Metric                                                         | Existing | Green-T | Median U-Turn | Split Intersection |                    | RCUT     | Widened Median  | Roundabout  | Grade Separation          |
|--------------------------------------|----------------------------------------------------------------|----------|---------|---------------|--------------------|--------------------|----------|-----------------|-------------|---------------------------|
|                                      |                                                                |          |         |               | Without Green-T    | With Green-T       |          |                 |             |                           |
| Overall Safety <sup>1</sup>          | Reduction in All/O Crashes                                     |          | 4%      | 37%           | *                  | 4%                 | 46%      | 16%             | ↑6%**       | 36%                       |
| Severity <sup>1</sup>                | Reduction in KABC Crashes                                      |          | 16%     | 63%           | *                  | 16%                | 63%      | 16%             | 63%         | 42-57%                    |
| Left Turn Conflict Safety            | Westbound Left Turn Conflicts                                  | 8        | 3       | 0             | 3                  | 3                  | 0        | 8               | 0           | 0 (on US-17)              |
| Property Access Impacts              | Impacts to Driveways/Direct Access To Roadways                 |          |         |               | One Way Operations | One Way Operations |          |                 |             | Ramps & Footprint Impacts |
| Right of Way Impacts                 | Physical Impacts to Property                                   |          |         | Minor         |                    |                    | Minor    | Significant     | Significant | Extremely High            |
| Intersection Operations              | Overall PM Peak Hour Operations                                | A        | A       | A             | A                  | A                  | A        | A               | A           |                           |
| Route 245 Left Turn Delay            | PM Peak Hour Average Delay (s/veh) + Travel Time               | 48.4     | 46.5    | 47.2          | 64.4               | 64.8               | 47.2     | 48.4            | 11.0        | ***                       |
| Route 245 Additional Travel Distance | Additional Distance Traveled (ft)                              |          | 0       | 800           | 2400               | 2400               | 800      | 0               | 0           | 0                         |
| Heavy Vehicle Accomodations          | Navigation for Oversized Vehicles                              |          |         |               | Similar            |                    |          | Longer Crossing |             |                           |
| Cost <sup>2</sup>                    | Preliminary Cost Estimate, Could Vary based on details/funding |          | \$\$\$  | \$\$\$        | \$                 | \$\$\$\$           | \$\$**** | \$\$\$\$\$\$    | \$\$\$\$\$  | \$\$\$\$\$\$\$\$          |
|                                      |                                                                |          | \$4-5m  | \$4-5m        | <\$500k            | \$5-7m             | \$4-5m   | \$13m+          | \$12-15m    | \$30m+                    |

|  |                                  |
|--|----------------------------------|
|  | Very Improved/Beneficial         |
|  | Somewhat Improved/Beneficial     |
|  | Minimally Improved/Minor Benefit |
|  | Not Applicable/No Impact         |
|  | Neutral/No Impact                |
|  | Somewhat Negative/Impacted       |
|  | Very Negative/Impacted           |
|  | Significantly Negative/Impacted  |

\*No Direct CMF Available - Based on qualitative improvements to geometrics & conflicts

\*\*Multilane Roundabouts generally increase PDO crashes but reduce severity

\*\*\*Variability based on configuration

\*\*\*\*Assumes RCUT for 245 approach only

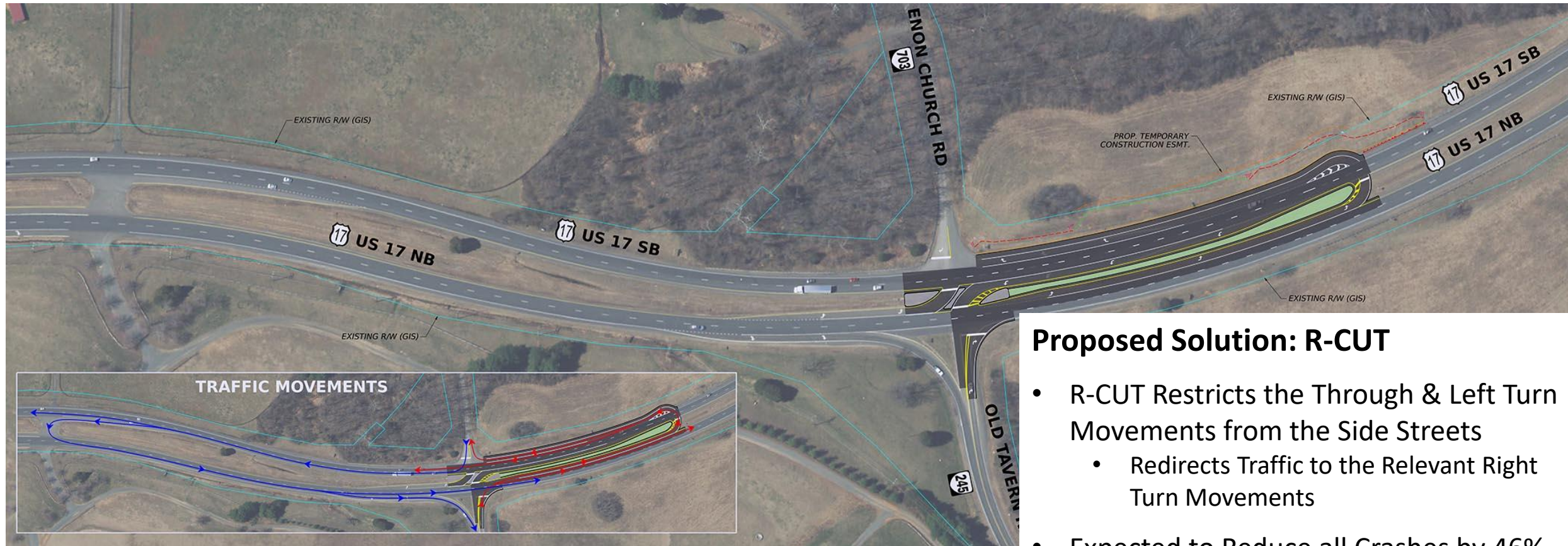
Notes:

1) CMFs utilize Virginia Specific Values where available, FHWA Clearinghouse where VA specific unavailable

2) Costs based on similar projects, are planning level only, and in 2022 dollars

# JAMES MADISON HWY. (RT. 17) & OLD TAVERN RD. (RT. 245)/ENON CHURCH RD. (RT. 703)

SMART SCALE



## Proposed Solution: R-CUT

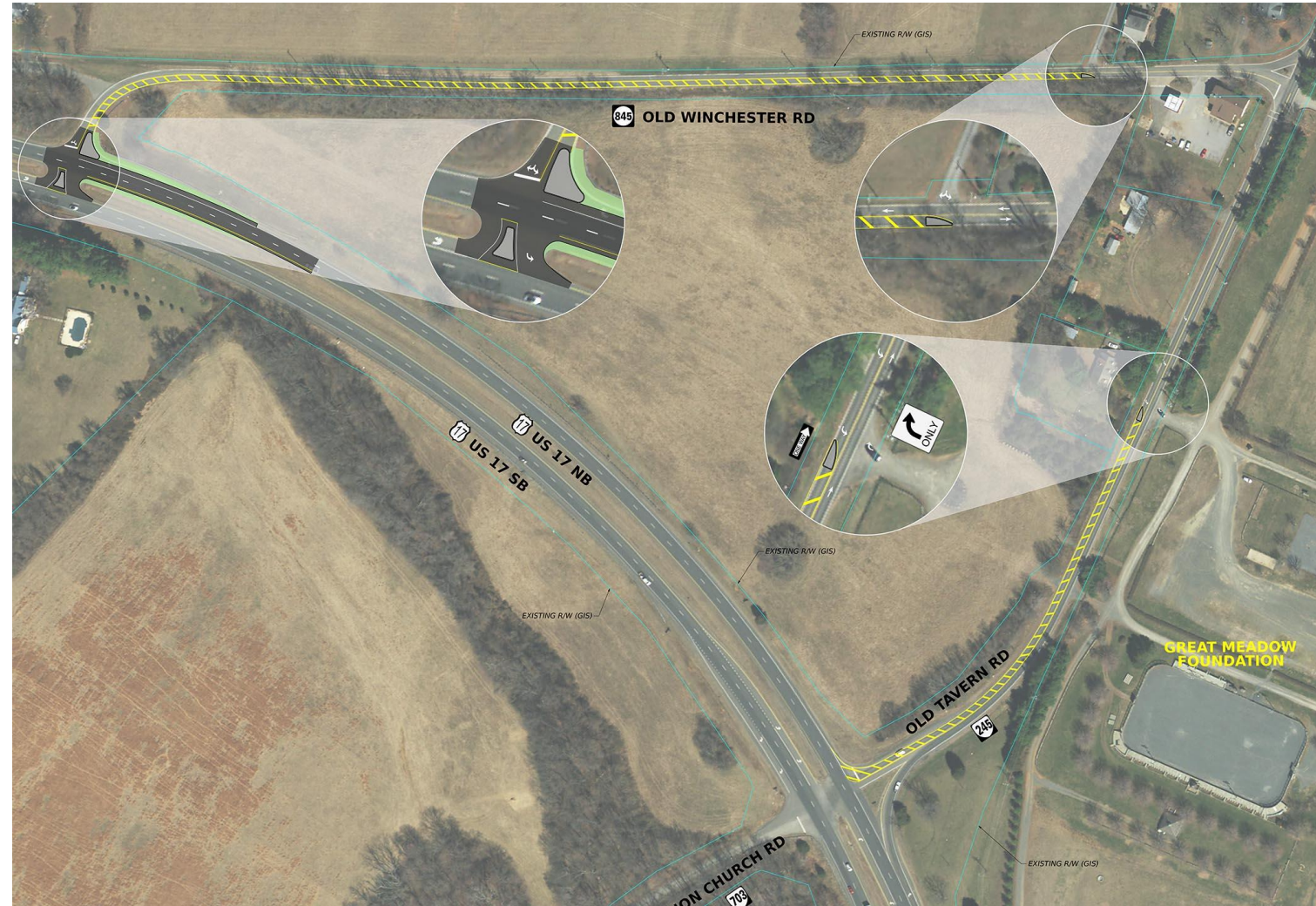
- R-CUT Restricts the Through & Left Turn Movements from the Side Streets
  - Redirects Traffic to the Relevant Right Turn Movements
- Expected to Reduce all Crashes by 46% & Fatal/Injury Crashes by 63%.
- Highest Benefit to Cost Ratio
- Resolution A – Support for the R-CUT Alternative

# JAMES MADISON HWY. (RT. 17) & OLD TAVERN RD. (RT. 245)/ENON CHURCH RD. (RT. 703)

SMART SCALE

## Proposed Solution: Split Intersection

- Route 245 between US 17 and the Great Meadow entrance would be restricted to one-way operations eastbound
- Old Winchester Road would be limited to northbound traffic only
  - Except between the private residence driveways & Route 245
- Reduces Number of Crossing Conflict Points
- Relatively Low Cost
- Resolution B – Support for the Split Intersection Alternative.



# RESOLUTION OF SUPPROT

SMART SCALE

## All three resolutions contain the following projects:

- Catlett Rd. (Rt. 28) & Old Dumfries Rd. (Rt. 667) – Roundabout
- Catlett Rd. (Rt. 28) & Station Dr. (Rt. 853)/Bengü Gerek Avenue - Roundabout
- Dumfries Rd. (Rt. 605) & Greenwich Rd. (Rt. 603) – Roundabout

## Resolution A also contains:

- James Madison Hwy. (Rt. 17) & Old Tavern Rd. (Rt. 245)/Enon Church Rd. (Rt. 703) – R-CUT.

## Resolution B also contains:

- James Madison Hwy. (Rt. 17) & Old Tavern Rd. (Rt. 245)/Enon Church Rd. (Rt. 703) – Split Intersection

## Resolution C:

- No project at James Madison Hwy. (Rt. 17) & Old Tavern Rd. (Rt. 245)/Enon Church Rd. (Rt. 703)

