Study Objective

Develop a methodology to evaluate rail-road grade crossings in Ohio and produce an adaptive capacity tool (and resulting score) that assesses at-grade crossing importance, redundancy, and overall adaptability.
Study Overview

Phase 1 Inputs

7. Identify Pilot Areas

8. Develop/Test Adaptive Capacity Assessment Tool

9. Test and Validate Methodology in Pilot Areas

10. Final Report
### Adaptive Capacity Score Methodology

#### Adaptive Capacity Score

<table>
<thead>
<tr>
<th>Public Importance</th>
<th>Redundancy</th>
<th>Delay to Road Users</th>
<th>Safety</th>
</tr>
</thead>
<tbody>
<tr>
<td>For Motorized Road users</td>
<td>For Community</td>
<td>Proximity to Grade-Separated Facility</td>
<td>PUCO/ODOT Grade Crossing Hazard Index</td>
</tr>
<tr>
<td>For EMS/Fire Services</td>
<td>Facility Proximity to Crossing</td>
<td>Rail Traffic Volume (Day Trains)</td>
<td></td>
</tr>
<tr>
<td>Road Type (Functional Class)</td>
<td>Community Cohesion</td>
<td>Proximity to Signals, Sidings and Yards</td>
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</tr>
<tr>
<td>Road Demand (AADT)</td>
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<td>Road Demand (AADT)</td>
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<tr>
<td>Road Demand (AADT)</td>
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</table>

**For Motorized Road Users:**
- Road Type (Functional Class)
- Facility Proximity to Crossing
- Community Cohesion
- Proximity to Grade-Separated Facility
- Rail Traffic Volume (Day Trains)
- Proximity to Signals, Sidings and Yards
- Road Demand (AADT)

**For EMS/Fire Services:**
- Facility Proximity to Crossing

**For Community:**
- Community Cohesion
- Proximity to Grade-Separated Facility
- Rail Traffic Volume (Day Trains)
- Proximity to Signals, Sidings and Yards
- Road Demand (AADT)
Adaptive Capacity Score Output

Overall Motorized ACS: 3.23

Public Importance: 2.53
Redundancy: 2.97
Delay to Road Users: 3.58
Safety: 3.82

Identifiers:

Scores:

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<th>Crossing</th>
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<th>Route</th>
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<th>Redundancy</th>
<th>Delay to Road Users</th>
<th>Safety</th>
<th>Non-Motorized ACS</th>
<th>Truck ACS</th>
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What’s Next

• Final Stakeholder Workshop
• Final Report
• Final Evaluation Tool & User Manual
• Develop metrics to compare ACS outputs across a set of crossings (city/county/rail corridor/statewide)
• Incorporate ACS output into evaluation of potential projects
Contact Information

Megan McClory
Ohio Rail Development Commission
Megan.McClory@dot.ohio.gov
(614) 644-0289
Annex: Adaptive Capacity Score Methodology

Adaptive Capacity Score

**Public Importance**
- For Motorized Road users
- For EMS/Fire Services
- For Community
  - Road Type (Functional Class)
  - Facility Proximity to Crossing
  - Community Cohesion
  - Road Demand (AADT)

**Redundancy**
- Proximity to Grade-Separated Facility
- Road Demand (AADT)

**Delay to Road Users**
- Rail Traffic Volume (Day Trains)
- Proximity to Signals, Sidings and Yards
- Road Demand (AADT)

**Safety**
- PUCO/ODOT Grade Crossing Hazard Index
Annex: Adaptive Capacity Score Methodology

Public Importance

For Motorized Road Users

\( \times w_M^+ \)

- Road Type
  - Functional Class of a road

- Road Demand
  - Average Annual Daily Traffic (AADT)

For EMS/Fire Services

\( \times w_E^+ \)

- Facility Proximity to Crossing
  - Inverse of the Distance to Hospitals / Fire Stations

For Community

\( \times w_C \)

- Community Cohesion
  - Percentage of population split by rail line

Legend:

- Component
- Sub-Component
- Performance Category
- Performance Measure

Adaptive Capacity Score

- Public Importance
- Redundancy
- Delay to Road Users
- Safety

Motorized Road Users

To be included in the calculation of the Adaptive Capacity Score for Motorized Road Users only

EMS/Fire Services

Community
Annex: Adaptive Capacity Score Methodology

Redundancy

- Proximity to Grade-Separated Facility
- Road Demand

\[ \text{Distance to Closest Grade-Separated Crossing} \times \text{Average Annual Daily Traffic (AADT)} \]

Legend:

- Component
- Sub-Component
- Performance Category
- Performance Measure
Annex: Adaptive Capacity Score Methodology

**Delay to Road Users**

- **Rail Traffic Volume**
  - Number of Day Trains

- **Proximity to Signals, Sidings and Yards**
  - Inverse distance to closest rail signal, yard or siding

- **Road Demand**
  - Average Annual Daily Traffic (AADT)

**Legend:**
- **Component**
- **Sub-Component**
- **Performance Category**
- **Performance Measure**

**Adaptive Capacity Score**
- **Public Importance**
- **Redundancy**
- **Delay to Road Users**
- **Safety**
  - For Motorized Road Users
  - For EMS/Fire Services
  - For Community
  - Proximity to Grade Separated Facility
  - Proximity to Grade Crossing
  - Proximity to Signals, Sidings and Yards
  - Rail Demand (AADT)
Annex: Adaptive Capacity Score Methodology

Safety

PUCO/ODOT Grade Crossing Hazard Index

PUCO/ODOT Hazard Index

Legend:
Component
Sub-Component
Performance Category
Performance Measure

Adaptive Capacity Score
Public Importance
For Motorized Road users
For EMS/Fire Services
For Community
Road Type (Functional Class)
Facility Proximity to Crossing
Community Cohesion
Property to Grade Separated Facility
Road Demand (AADT)

Refundancy
Delay to Road Users
For Highway, Non-highway (B) trains
Property to Grade Separated Facility
Road Demand (AADT)

Safety
PUCO/ODOT Grade Crossing Hazard Index