



**NEOFIX**

**Northeast Ohio Flight Information Exchange**



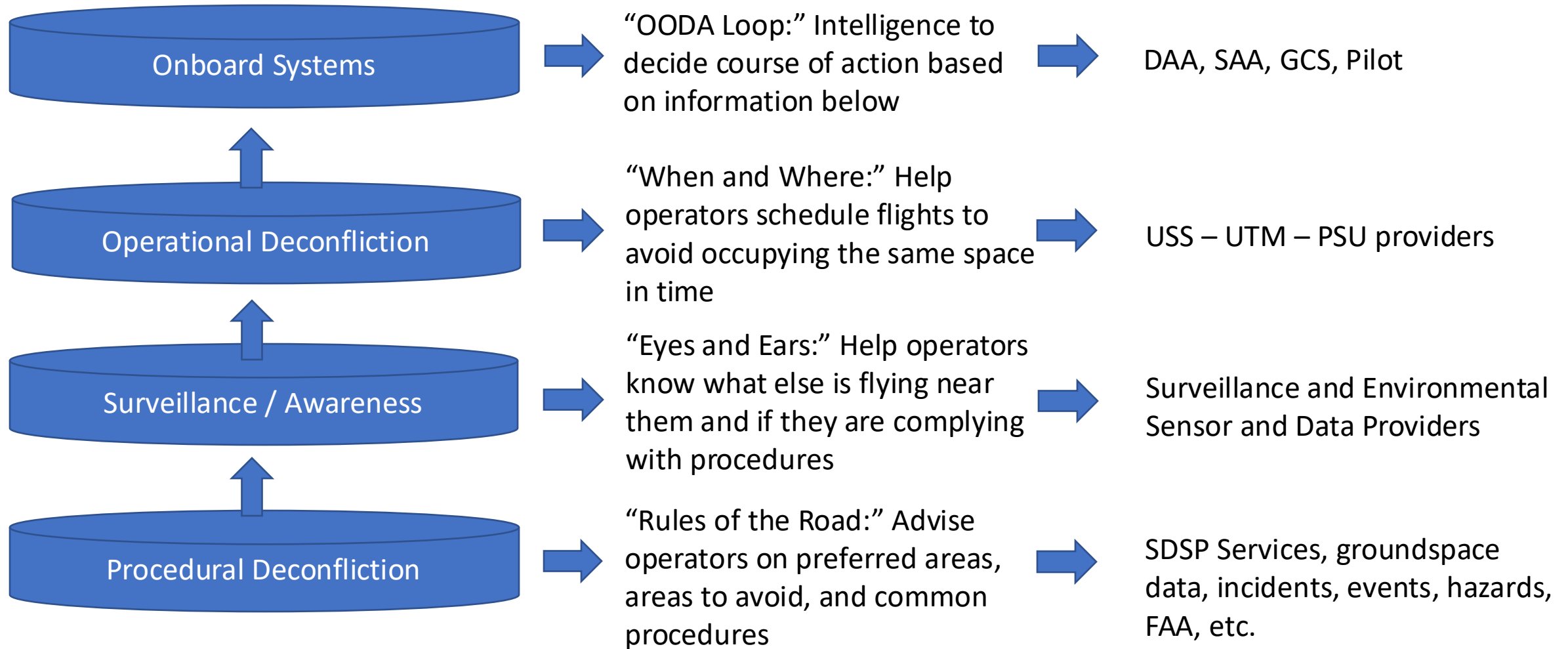
# Summary Program Update

- Over 3,500 ground-based advisories in the system
- Integration with DeDrone, ADS-B and RID at Burke goes live in ~2 weeks
- Integration with Aloft in process
- Additional ~600K in additional OTSCIF and County funds to support additional infrastructure investment
  - Focus is on airspace awareness and sharing that public data
  - Not as much as originally budgeted, but plenty to get started
  - Initial limited deployment focused on evaluating performance and demonstrating value
- Collect data to support additional ongoing funding requests and discussions
  - Currently funded through 2025
  - Engaged in additional active funding expansion conversations

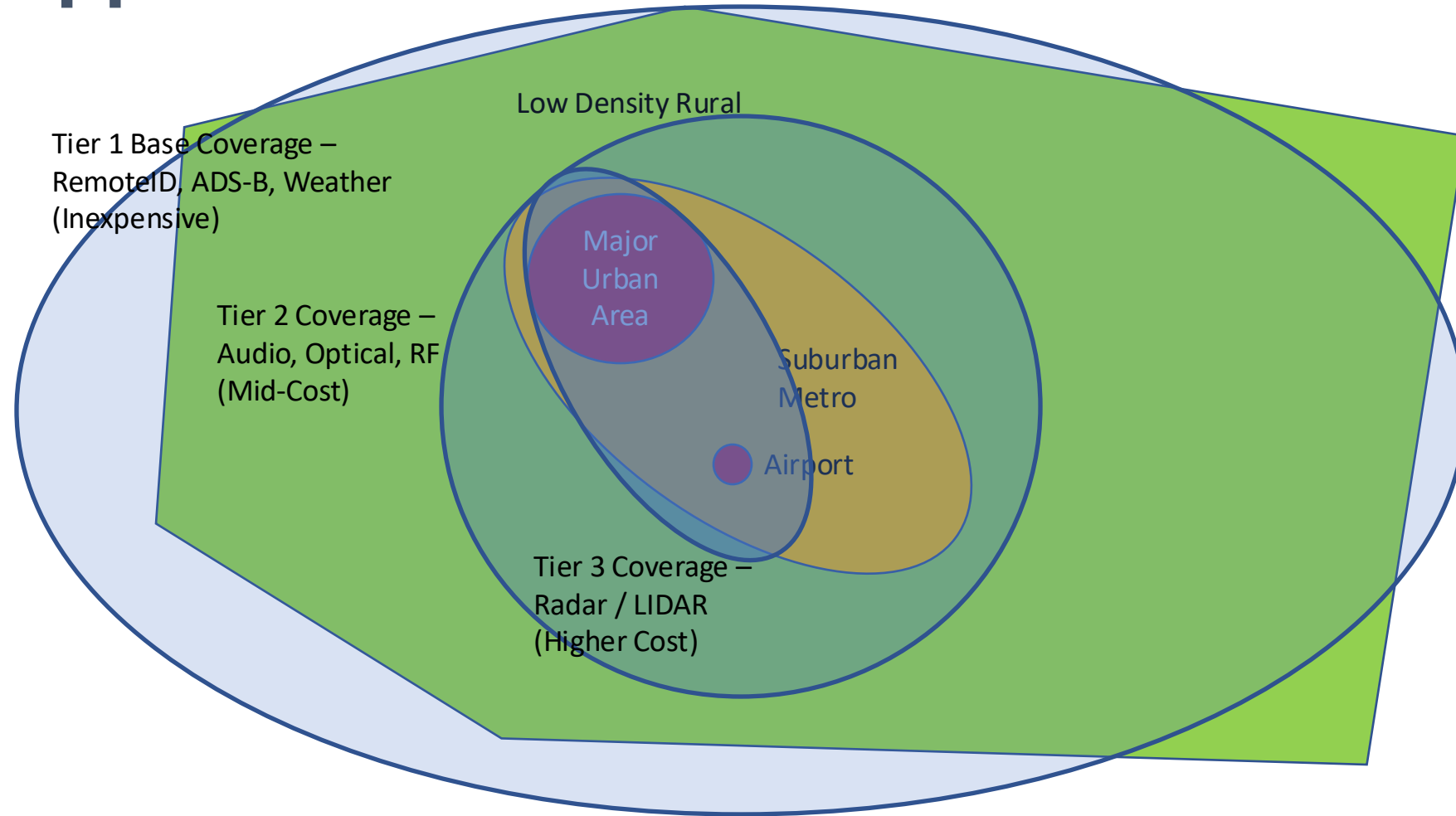
# Project Goals, Next 12 Months

- Develop an approximately 50 square mile “service volume” connecting key sites in Cuyahoga County:
  - Characterize airspace in a real-world environment over a longer (>12 months) period of time;
  - Characterize performance of Data Services within a multi-modal sensor approach in a real-world environment over a longer (>12 months) period of time;
  - Assess the performance and use of a multi-modal approach supporting Beyond Visual Line of Sight (BVLOS) flight;
  - Assess the usability of Public Digital Services in supporting DAA service for BVLOS flight;
  - Assess the performance and benefit of the multi-modal approach to support Public Safety missions, both Drone as a First Responder (DFR) and Counter-UAS (cUAS);
  - Assess the cost profile (both deployment and O&M) along with potential services and benefits to residents to develop real world costing and ROI models; and
  - Engage in user fee discussions and design through USS integration to begin identifying and developing a model for supportable infrastructure.
- Goal is to be live by 31 March 2025

# Approach: Layered System



# Approach: Multi-Modal



- **Tier 1 Cost:**
  - Bench: \$5,000
  - Actual: \$4,420
  - Future: \$2,500
- **Tier 2 Cost:**
  - Bench: \$20,000
  - Actual: \$17,920
  - Future: \$15,000
- **Tier 3 Cost:**
  - Bench: \$75,000
  - Actual: \$107,920
  - Future: \$50,000

$0.05^4 = 0.0000625 = 99.9999 = 7 \text{ nines}$

# Target Uses

- Public Safety Drone as a First Responder (DFR) for incident response types such as search and rescue and crisis situations
- Medical Delivery (small package), emergency and non-emergency
- Detection of UAS incursions for both public safety and protection of airport operations and KCLE and KBKL in support of Metroparks policy, critical infrastructure protection, and general public safety
- Part 107 Commercial Survey / Videography

# Initial Deployment Service Areas Selection

- Ability to collect data
- Comply with legal and political requirements
- Local partner support
- Initial needs, use case, and risk assessment



# Determination of Need / Benefit

- Use Cases
- Potential Lives Served
- Potential flight volumes
- Financial or Social Benefit of Service

# Evaluation of Use Case Need / Risk

Severity  $\longrightarrow$

Likelihood  $\downarrow$

	Catastrophic	Hazardous	Major	Minor	Negligible
<b>Likely</b> $P > 0.5$	D	D	D	C	B
<b>Possible</b> $0.1 \leq P < 0.5$	D	C	C	C	B
<b>Unlikely</b> $0.05 \leq P < 0.1$	C	C	C	B	B
<b>Rare</b> $0.00025 \leq P < 0.05$	C	B	B	B	A
<b>Nil</b> $0 \leq P < 0.00025$	B	B	A	A	A

# Evaluation of Use Case Need / Risk

#	Complexity Elements	Specific Risks	Specific Mitigations	Risk Category
<b>1 (DFR)</b>	Potential for intersecting flight paths; other public safety activity	Loss of separation between UAVs or Manned Aircraft; Vehicle Failure; Exhausted Power Supply	Route/Groundspace design; DAA	Category B; possible minor to negligible
<b>2/3/4 (Delivery)</b>	Potential for intersecting flight paths; other public safety activity; lowering / delivering goods	Loss of separation between UAVs or Manned Aircraft; Vehicle Failure; Exhausted Power Supply; ensnaring delivery apparatus; potential loss of payload over populated areas	Route/Groundspace design; enhanced surveillance and awareness for route planning, deconfliction DAA	Category C; possible minor to major hazard
<b>5 (107)</b>	Potential for intersecting flight paths; vehicle malfunction	Same as 1	Route/Groundspace design; DAA; awareness	Category A

# Evaluation of Service Volume Risk

- Population Density and Exposure: This risk considers ground population, population density, population activity, and the nature of structural cover to assess their contribution to the risk of mortality and morbidity in the event of a ground impact incident;
- Air Traffic Density: This risk considers the air traffic density of the specific service volume;
- Structure Risk: This risk considers degree to which ground based structures either contribute to the risk of a mid-air collision (in the case of cranes, towers, or RF interference) or the severity of a ground impact (as in the case of hazardous materials or flimsy cover);
- Climate Risk: This risk considers the region-specific weather patterns and microclimate risks associated with operational type, such as unpredictable winds and visibility due to topographical and structural features; and
- Topographical Risk: This risk considers specific topographical features that may contribute to challenging flight conditions (such as unpredictable winds), loss of communications (such as ridges), or navigational ambiguities (such as inability to assess terrain).
- Rated as Low / Medium / High

# Evaluation of Service Volume Risk

Volume	Population Risk	Air Traffic Density	Structure Risk	Topography Risk	Climate Risk	Class
1	H	H	H	M	M	H
2	M	H	L	H	M	H
3	M	M	M	L	M	M
4	M	M	L	L	L	M
5	M	M	M	L	M	M
6	M	M	M	L	M	M
7	L	M	L	L	M	M

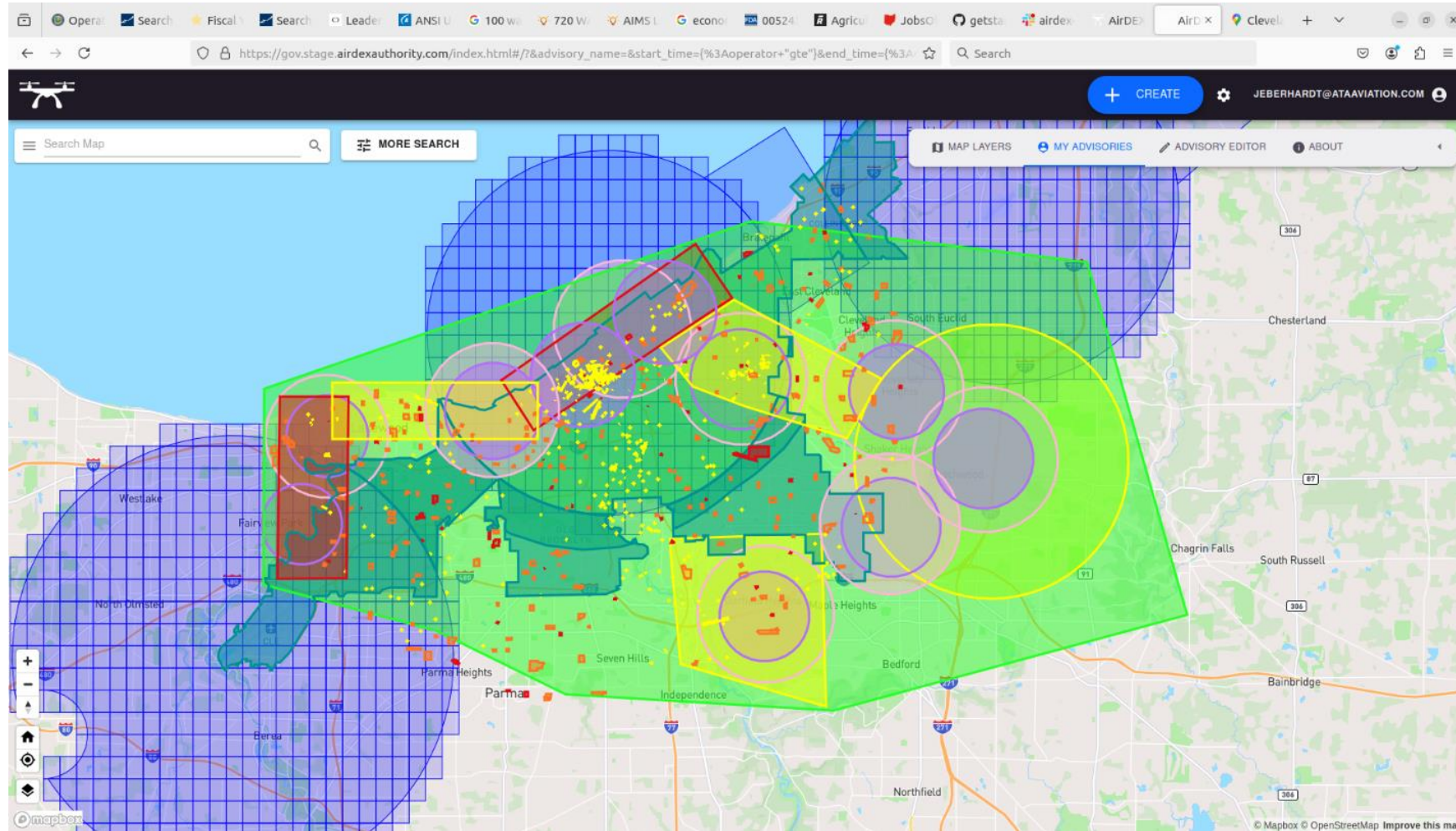
# Combined Risk

Volume x Operation	1	2	3	4	5	Overall
1	B/H	C/H	C/H	C/H	A/H	Tier 3
2	B/H	C/H	C/H	C/H	A/H	Tier 3
3	B/M	C/M	C/M	C/M	A/M	Tier 2
4	B/M	C/M	C/M	C/M	A/M	Tier 2
5	B/M	C/M	C/M	C/M	A/M	Tier 2
6	B/M	C/M	C/M	C/M	A/M	Tier 2
7	A/M	A/M	A/M	A/M	A/M	Tier 1

# Awareness and Mitigation Strategies

Tier	Example Sensors	Cost Profile	Example Coverage Area Type(s)
<b>Tier 1 (Green)</b>	Procedural deconfliction + <ul style="list-style-type: none"> <li>• RemoteID</li> <li>• ADS-B</li> <li>• Weather</li> <li>• GNSS RTK beacons</li> </ul>	Inexpensive <\$5,000 / sq mi	Low Density Rural sUAS operations at low weight / altitudes / Part 107 Procedurally deconflicted AAM at higher altitudes
<b>Tier 2 (Yellow)</b>	Tier 1+ <ul style="list-style-type: none"> <li>• Audio</li> <li>• Optical</li> <li>• RF / RDF</li> </ul>	Mid-Cost \$10,000 - \$25,000 / sq mi	Low Density Rural Cargo Suburban Metro sUAS package delivery Group 2 long distance / Group 3 UAS conducting survey activities
<b>Tier 3 (Red)</b>	Tier 2+ <ul style="list-style-type: none"> <li>• Radar/LIDAR</li> </ul>	Higher Cost > \$50,000 / sq mi	Major Urban Area, Airports UAM Vehicle Vertiport Areas sUAS package delivery at high weight

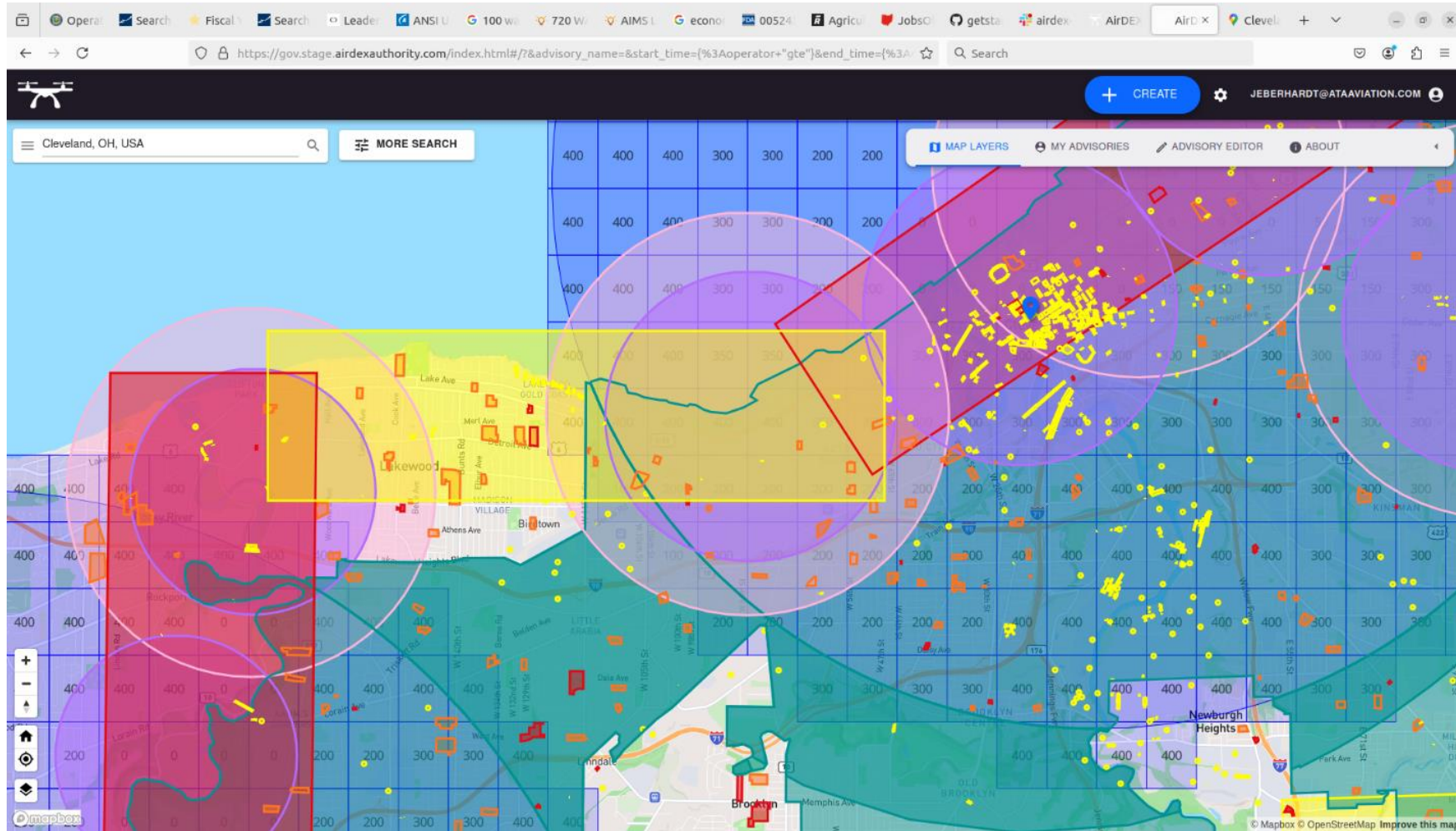
# Initial Deployment Service Volumes



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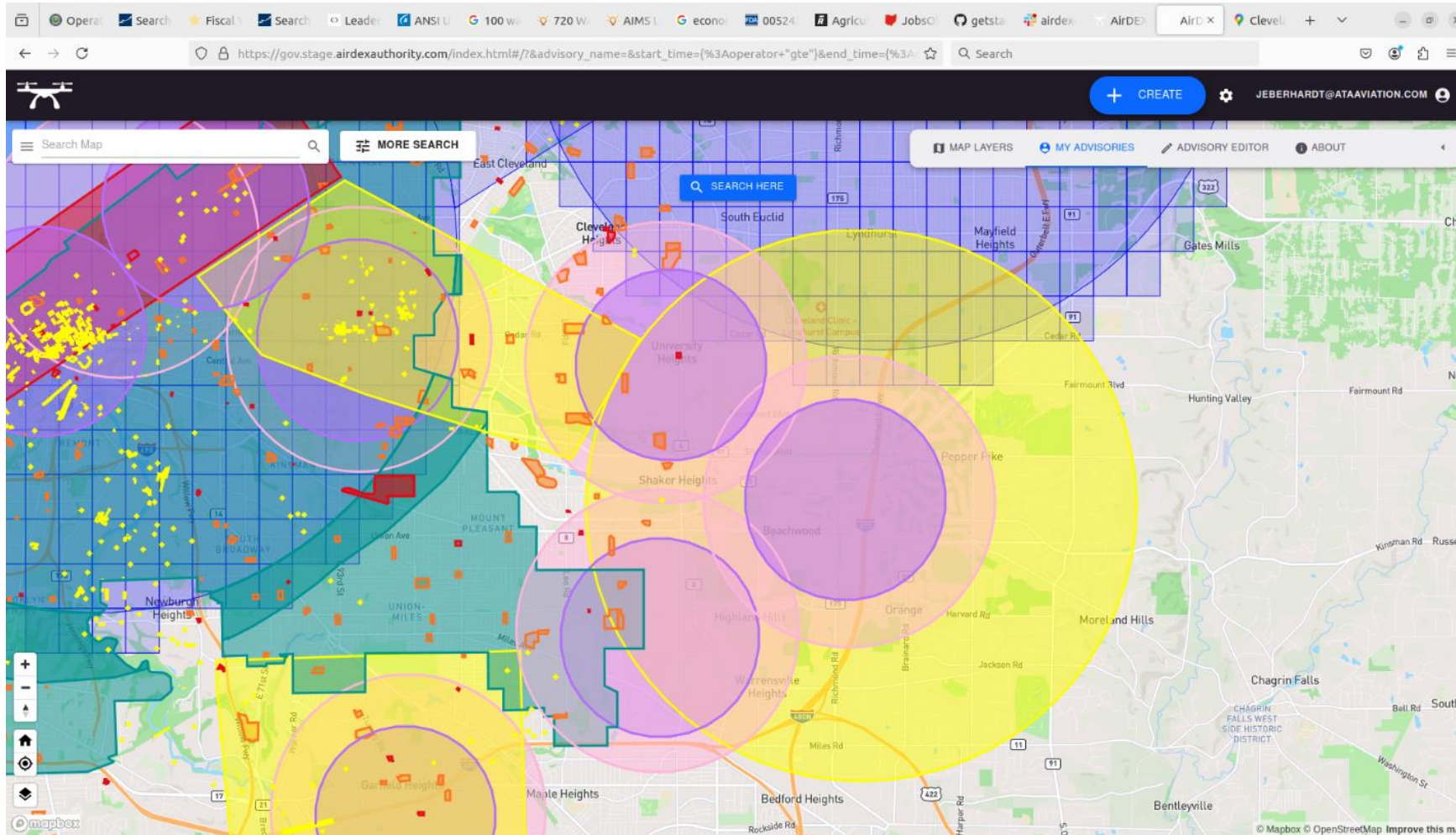
# Service Volumes 1, 2, 6



*NEOFIX EASSE Service Volumes 1 (Red, on Right), 2 (Red, on Left) and 6 (Yellow)*

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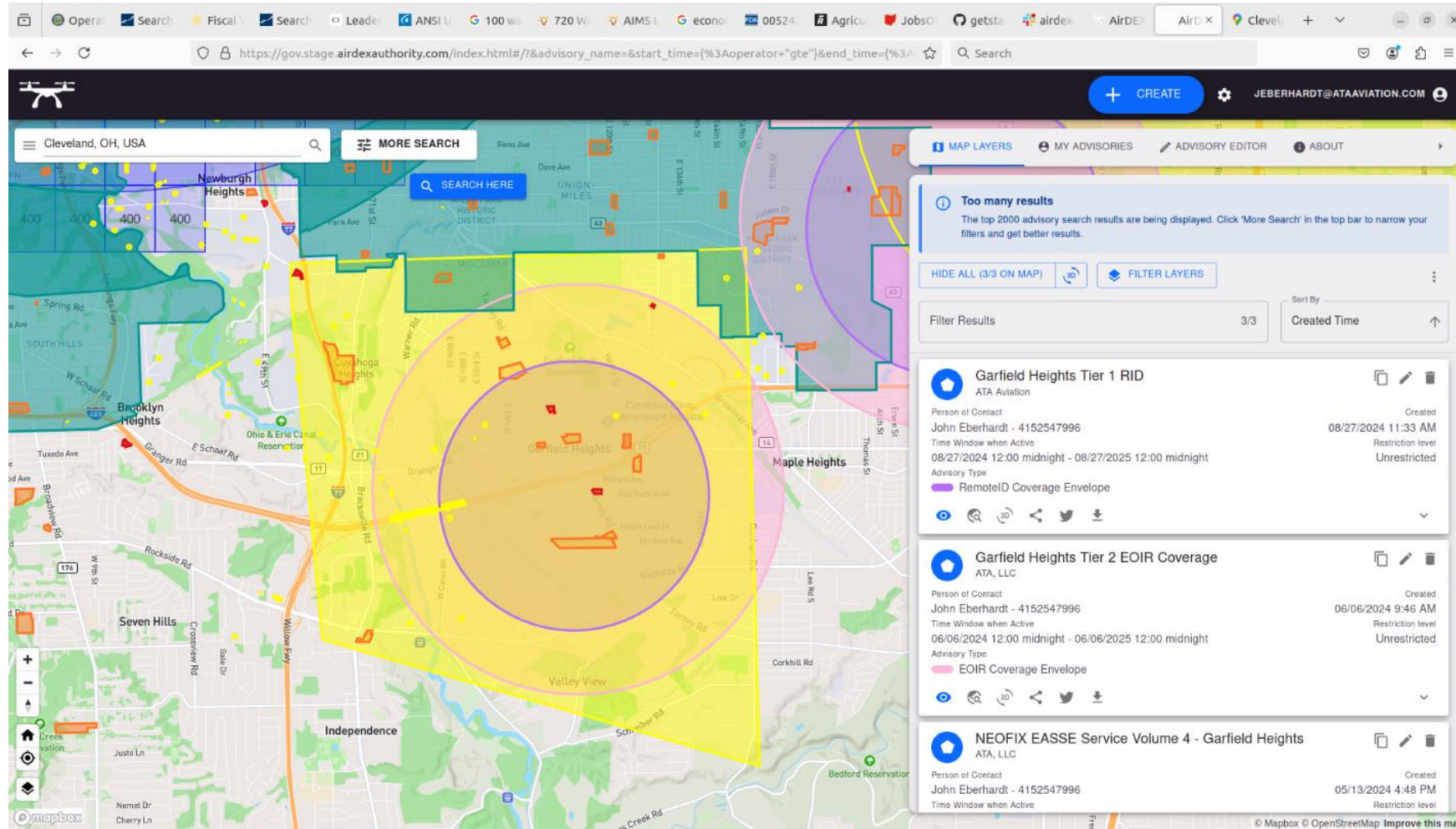
# Service Volumes 3, 5



*NEOFIX EASSE Service Volumes 3 and 5 (Yellow, Lower Right, Upper Left)*

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# Service Volume 4



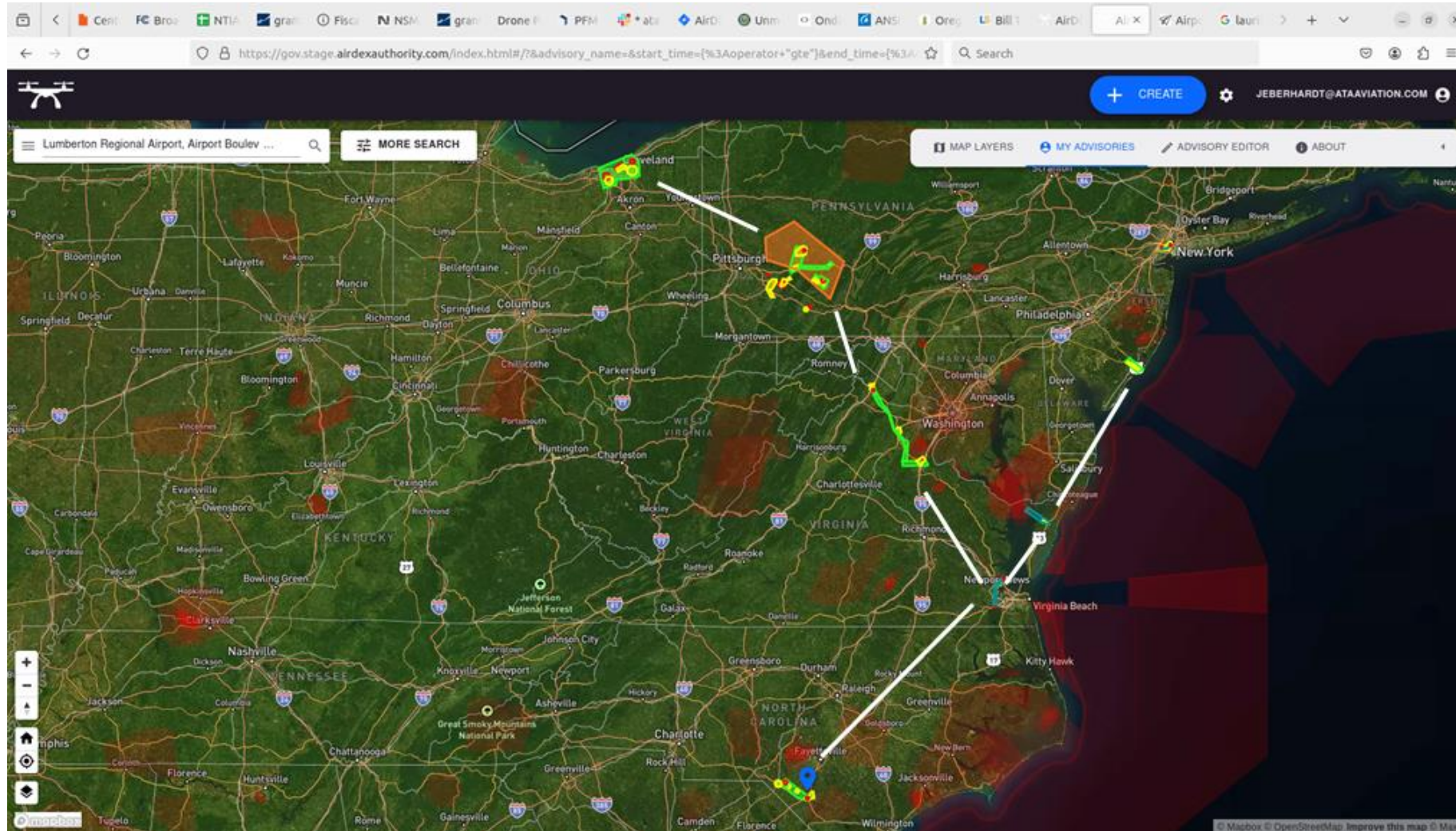
The screenshot displays the NEOFIX web application interface. The map shows Cleveland, OH, USA, with several advisory overlays. A large yellow circle highlights the 'Garfield Heights Tier 2 EOIR Coverage' area. The interface includes a search bar, map layers, and a list of advisories on the right side.

Advisory Name	Organization	Person of Contact	Created	Time Window when Active	Restriction level	Advisory Type
Garfield Heights Tier 1 RID	ATA Aviation	John Eberhardt - 4152547996	08/27/2024 11:33 AM	08/27/2024 12:00 midnight - 08/27/2025 12:00 midnight	Unrestricted	RemoteID Coverage Envelope
Garfield Heights Tier 2 EOIR Coverage	ATA, LLC	John Eberhardt - 4152547996	06/06/2024 9:46 AM	06/06/2024 12:00 midnight - 06/06/2025 12:00 midnight	Unrestricted	EOIR Coverage Envelope
NEOFIX EASSE Service Volume 4 - Garfield Heights	ATA, LLC	John Eberhardt - 4152547996	05/13/2024 4:48 PM			

*NEOFIX EASSE Service Volume 4 (Yellow)*

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# Super Regional System



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# Next Round of Funding / Selection

- Needs Based
- Clear description of need by use case
- Estimate of benefit to demonstrate ROI
- Develop infrastructure funding cases for stakeholder localities to pursue and deploy next round of funding