ABOUT RSTI

• $2.5-million studies of rapid-speed technology options (traditional rail and hyperloop)

• Chicago-Columbus-Pittsburgh Corridor

• Two initial phases:
  • Hyperloop Feasibility Study
  • Components of Tier 1 EIS
RSTI: TWO MODAL OPTIONS

Passenger rail
• Conduct preliminary environmental analysis
• Identify route & station alternatives
• Minimize impacts & costs

Hyperloop
• Determine feasibility of new technology; leverage rail environmental analysis
• Identify routes & station alternatives
• Minimize impacts & costs
• Explore freight & economic impacts
RAPID SPEED TRANSPORTATION

Map showing transportation routes between Chicago, Gary, Fort Wayne, Lima, Kenton, Marysville, Dublin, Columbus, Mingo Junction, and Pittsburgh. The map highlights different transportation modes including RAIL, HYPERLOOP, and HYPERLOOP/RAIL.
ROUTE SCREENING CRITERIA

• For Hyperloop and Rail
  • Route circuity
  • Corridor communities & land use
  • Environmental constraints
  • Comparative cost
  • Engineering complexity
  • Right-of-way and railroad ownership
  • Right of way width and availability
  • Number of bridge, underpass, or tunnel structures

• For Rail Only
  • Track class/speed
  • Track ownership
  • Train volumes
  • Track capacity
  • Number of at-grade crossings
  • Signaling
STATION/PORTAL ALTERNATIVES
STATION/PORTAL CRITERIA

- Market demand
- Local preference
- Former station location and reuse potential
- Tangent (straight) right-of-way/ track
- Adjacent land use
- Distance between portals/ stations
- Population centers and logistics potential
- Access to connecting infrastructure/multimodal potential
- Overall travel time
POTENTIAL STATIONS/PORTALS – COLUMBUS

Columbus

RAIL
HYPERLOOP
HYPERLOOP/RAIL
POTENTIAL STATION
POTENTIAL STATIONS/PORTALS – COLUMBUS

FRANKLINTON

CONVENTION CENTER

JOHN GLENN INT’L AIRPORT
POTENTIAL STATION – DUBLIN
POTENTIAL STATION – MARYSVILLE WEST

LOOKING SOUTH ALONG N. MAPLE ST Source: Google Maps
POTENTIAL STATION – MARYSVILLE SOUTH

LOOKING NORTH ALONG COLUMBUS AVE Source: Google Maps
KEY HYPERLOOP STUDY FINDINGS
RIDERSHIP MARKET

CHICAGO: 4,085,553
FORT WAYNE: 194,564
LIMA: 64,978
COLUMBUS: 1,196,303
PITTSBURGH: 1,597,589

2015 EMPLOYMENT
### TRAVEL TIME AND COST SAVINGS

<table>
<thead>
<tr>
<th>Metro Pair (bi-directional)</th>
<th>Auto</th>
<th>Air</th>
<th>Conventional Rail</th>
<th>Hyperloop</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Travel Time (min.)</td>
<td>Business / Non-Business Total Travel Cost*</td>
<td>Total Travel Time (Existing)</td>
<td>Total Fare (Existing)</td>
</tr>
<tr>
<td>Chicago-Fort Wayne</td>
<td>191</td>
<td>$98 / $27</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Chicago-Columbus</td>
<td>336</td>
<td>$198 / $54</td>
<td>249</td>
<td>$171</td>
</tr>
<tr>
<td>Chicago-Pittsburgh</td>
<td>412</td>
<td>$256 / $69</td>
<td>245</td>
<td>$177</td>
</tr>
<tr>
<td>Columbus-Fort Wayne</td>
<td>205</td>
<td>$96 / $26</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fort Wayne-Pittsburgh</td>
<td>317</td>
<td>$177 / $48</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Columbus-Pittsburgh</td>
<td>199</td>
<td>$113 / $31</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
HYPERLOOP STUDY KEY FINDINGS

• Feasible given:
  • Certification of the technology
  • Assumed optimal main line speed of 500 mph avg.
  • Branch lines with slower speeds (portal connectors)
  • Potential for initial phases with less tunneling

• Existing and new right of way, some tunneling (for main line primarily)
HYPERLOOP STUDY KEY FINDINGS

- Once fully operational, over 30 years:
  - 1.9 billion autos shifted to hyperloop passengers
  - 2.4 million tons of reduced CO2 emissions
  - $19 billion direct transportation benefit
  - *Reduction of 450 million commercial truck vehicles hours traveled*
WIDER ECONOMIC BENEFITS

Midwest Connect Hyperloop Assessment Corridor GRP - With/Without Hyperloop Enabled Productivity Increases

Cumulative GRP ($Billions)

Midwest Connect Hyperloop Assessment Corridor
Build Scenario

Midwest Connect Hyperloop Assessment Corridor
Baseline Scenario

$300B
FINDINGS: TRAVEL TIME SAVINGS
### Average Hyperloop Service Characteristics by Metro Pair

<table>
<thead>
<tr>
<th>Metro Pair</th>
<th>Line Haul Travel Time (min)</th>
<th>Line Haul Distance (miles)</th>
<th>Fare Cost (dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chicago-Fort Wayne</td>
<td>22</td>
<td>163</td>
<td>$33</td>
</tr>
<tr>
<td>Chicago-Columbus</td>
<td>38</td>
<td>302</td>
<td>$60</td>
</tr>
<tr>
<td>Chicago-Pittsburgh</td>
<td>58</td>
<td>465</td>
<td>$93</td>
</tr>
<tr>
<td>Fort Wayne-Columbus</td>
<td>19</td>
<td>139</td>
<td>$28</td>
</tr>
<tr>
<td>Fort Wayne-Pittsburgh</td>
<td>39</td>
<td>302</td>
<td>$60</td>
</tr>
<tr>
<td>Columbus-Pittsburgh</td>
<td>22</td>
<td>163</td>
<td>$33</td>
</tr>
</tbody>
</table>

*2019 dollars. Based on an assumed $0.20/mile, as calculated by AECOM with input from Virgin Hyperloop One.
### Environmental Sustainability

<table>
<thead>
<tr>
<th>Mode Shift Emissions Savings</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Auto to Hyperloop)</td>
<td>$113.9M</td>
</tr>
<tr>
<td>(Air to Hyperloop)</td>
<td>$0.3M</td>
</tr>
<tr>
<td>(Train to Hyperloop)</td>
<td>$7.8M</td>
</tr>
<tr>
<td>(Commercial Truck to Hyperloop)</td>
<td>$4.6M</td>
</tr>
</tbody>
</table>
HYPERLOOP NEXT STEPS

• Public meetings
• VHO certification segment – R&D collaboration opportunity
• Create a travel demand advisory panel (public agencies, academic institutions, VHO)
• Monitor NETT Council activities and opportunities to engage in federal regulatory framework
• Advance regulatory framework with appropriate agencies
• Continue to facilitate collaboration
PASSENGER RAIL NEXT STEPS

• Public meetings
• Secure funding to complete the environmental studies necessary for the federal construction approval process
• Engage and secure the support of communities east of Columbus
• Develop a strategy with other surrounding states to secure regulatory guidance