Remote Towers Information

Presented to: Airport Sponsors/Operators
By: FAA NextGen and Technical Operations
Date: August 23, 2023
Agenda

- RT Pilot Program Congressional Direction
- New RT Strategy
- SDA and Commissioning Processes
- SDA Timeline
- RT Siting Process
- RT FCT Business Case Model
- Summary
Remote Tower Pilot Program
Congressional Direction

Congress directed the FAA to establish an RT pilot program to:

• Evaluate technical and operational feasibility of applying RT technology in the NAS
  – Conduct evaluations at select pilot sites to determine operational viability for use in the NAS
  – Initial evaluations for systems used at Class D, VFR airports

• Establish minimum standards and a clear process for operational certification of RT
  – Develop an Advisory Circular that defines the process to Certify (i.e., System Design Approval), and Commission RTs
  – Develop associated technical system requirements/ standards
  – Create a Qualified Vendor System List (QVSL) of approved systems

• Understand the business case of establishing and operating RTs in the NAS
  – Update FAA Contract Tower (FCT) Benefit Cost model to determine if RTs meet requirement for entry into the FCT program
RT Pilot Program Strategy

• **Original Strategy**
  – FAA evaluates remote tower system at vendor/FAA selected airport locations (one-system/one-site approach)
  – Air traffic approvals limited to site specific configuration/layout

• **New Strategy**
  – As of September 2022, the FAA is no longer selecting individual airport pilot sites
  – Centralized testing and evaluation at the **RT testbed located** at the **National Aerospace Research and Technology Park (NARTP)***, and **Atlantic City International Airport (ACY)**
  – Vendor must pass **FAA Intake Review Process** prior to proceeding to the full System Design Approval (SDA) Process
  – Accelerates timeline in meeting goals of Congressional direction
  – Provides more robust evaluation of vendors’ systems to allow FAA to explore the environmental and operational bounds of the utility of RT systems
  – Provides broader solutions to the RT marketplace in a timelier manner
  – Reduces risk to FAA and airport sponsors in the case the vendor system cannot meet FAA standards

*Note: NARTP is located adjacent to the William J. Hughes Technical Center*
NARTP/ACY Testbed

- **September 2022**: Initial Site Survey conducted WJHTC/ACY
- **October 2023**: RTC fit-out completed
- **February 2024**: RTA infrastructure completed
- **Spring 2024**: First system installation and optimization completed
- **Spring 2024 - Winter 2025**: Operational Testing
For a system to become operational in the NAS, the vendor system must obtain SDA AND successfully complete all Commissioning Activities.
Vendor SDA Notional Timeline

Schedule Dependencies:
- AJW bandwidth (i.e., number of vendors simultaneously completing Intake/SDA Process)
- Vendor’s requirements for testbed infrastructure; this schedule assumes no changes to RT testbed infrastructure are required
- Vendor’s installation/optimization timeline
- Vendor’s ability to timely deliver SDA documentation
- Quality of vendor’s submitted SDA documentation
Remote Tower Siting Process

• Draft RT Siting Order outlining the RT siting process is under development
• Siting process determines the location, orientation and height of camera nests
• Process is being modeled after current FAA Tower Siting Order JO 6480.4 and the new VISTA process used for brick-and-mortar towers
  – Expanded the existing tower Visibility Analysis Tool (VAT), which is used to assess initial visibility criteria for a conventional OTW views; the new Tower Visibility Toolkit (TVT) can assess initial visibility criteria for brick-and-mortar towers (OTW views) as well as Remote Towers (camera views)
  – Developed a RT Preliminary Hazard List
  – Subsequent work underway to determine acceptable 3D models to simulate camera views for siting panels
RT FCT Benefit Cost Model

- Since the acceptance to the FAA Contract Tower (FCT) program relies on a benefit-cost analysis, FAA has examined the adjustments needed to the current BC model to adequately assess the BC for remote tower applicants

- RT FCT BC model was developed proactively; RTs cannot be considered for FCT program until FAA approves systems for use in the NAS

- The FAA Contract Tower (FCT) Program Benefit Cost Model for Remote Tower applicants was finalized in September 2021
  - **Costs**
    - This model only considers FAA incurred costs (FAA does not fund construction of brick-and-mortar towers or RT systems); therefore, there is only slight FAA cost increase associated with annual tech. op. inspections of the non-Federally owned RT systems
  - **Benefits**
    - RT efficiency benefit analysis showed there was no difference in RT efficiency as compared to brick and mortar
    - Data needed to calculate the RT safety benefit is very limited; therefore, FAA took a risk-based approach and reduced the safety benefits by 10% until more safety benefit data is available

- In most cases if an airport meets BC ratio (i.e., BC>1) with a brick-and-mortar tower, then the airport will meet the BC ratio with a Remote Tower also
RT Business Case for Airport Sponsors

- Preliminary comprehensive cost analysis show that RTs are likely a cost-effective alternative to brick-and-mortar towers for many airports, but it is site-specific.

- The cost categories below are those that differ between a brick-and-mortar and RT and should be considered when determining the best solution for a site.

<table>
<thead>
<tr>
<th>Cost Category</th>
<th>Brick-and-Mortar</th>
<th>Remote Tower</th>
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<tbody>
<tr>
<td>Facility Construction</td>
<td>All costs to construct a Traditional up/down tower, including base building, site preparation and utility connections.</td>
<td>All costs to construct the Remote Tower Center (RTC), including site preparation and utility connections.</td>
</tr>
<tr>
<td>RT Equipment Procurement</td>
<td>Not applicable.</td>
<td>Procurement of remote tower system. Includes logistics, initial spares, and installation of control room equipment in RTC.</td>
</tr>
<tr>
<td>RT Airfield Equipment Installation</td>
<td>Not applicable.</td>
<td>Installation of towers/masts and cameras on Remote Tower Airfield (RTA), including trenching of power/comm. lines to camera masts, and from masts to RTC control facility.</td>
</tr>
<tr>
<td>Training</td>
<td>No costs. Assume traditional training is established.</td>
<td>Conduct of initial controller and maintenance training for RT system.</td>
</tr>
<tr>
<td>Building Maintenance</td>
<td>Recurring upkeep and maintenance of tower.</td>
<td>Recurring upkeep and maintenance of RTC.</td>
</tr>
<tr>
<td>RT Equipment Maintenance</td>
<td>Not applicable.</td>
<td>Recurring upkeep and maintenance of RT equipment in RTC and on the RTA.</td>
</tr>
<tr>
<td>Utilities</td>
<td>Recurring utilities costs (e.g., water, electric, gas, oil, commercial comm., etc.)</td>
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</tr>
</tbody>
</table>
Summary

- FAA is no longer selecting individual airport RT pilot sites
- All RT vendors must go to ACY Testbed for evaluation and System Design Approval (SDA)
- Once vendor obtains SDA, the system will be put on a QVSL
  - RT systems on the QVSL can be used to provide Air Traffic Control Tower services in the NAS
  - QVSL will indicate environment (e.g. multiple runway, Class D, VFR tower) for which the RT system is approved for use
  - First approved RT system not expected on QVSL until late 2025
- Once QVSL is established, interested airports and system vendors must follow the RT system Commissioning Process as outlined in the RT Advisory Circular
  - Airports must coordinate with non-Federal (system) Program Implementation Manager (PIM) before purchasing a system for provision of ATCT services at airport
  - Airports must complete the RT camera siting process
  - System must complete an Operational Viability Evaluation and obtain a positive OVD
RT Non-Federal Website

- The RT Advisory Circular (AC)* and future Qualified Vendor System List (QVSL) can be found on the RT non-Federal Website: https://www.faa.gov/airports/planning_capacity/non_federal/remote_tower_systems

- Updated documents will be uploaded to website as available

- Any questions, please contact Matt Richardson <matthew.richardson@faa.gov>
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Back Up
Acronyms

• AC- Advisory Circular
• RTC- Remote Tower Center
• RTA- Remote Tower Airport
• NARTP- National Aerospace Research & Technology Park (testbed RTC)
• ACY- Atlantic City International Airport (testbed RTA)
• OVR- Operational Visual Requirements
• FAE- Functional Acceptance Evaluation (at testbed)
• FAD- Functional Acceptance Decision (for SDA)
• SDA – System Design Approval
• OVE- Operational Viability Evaluation (at each sponsor airport site)
• OVD- Operational Viability Decision (for Commissioning)