

# Appendix II-U3

## Traffic Flow Analysis

March 2024

# Atlantic Shores Offshore Wind Project – Lease Area OCS-A 0549

EDR DPC

*Offshore Ocean County, New Jersey*

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*Air Traffic Flow Analysis*

April 1, 2022



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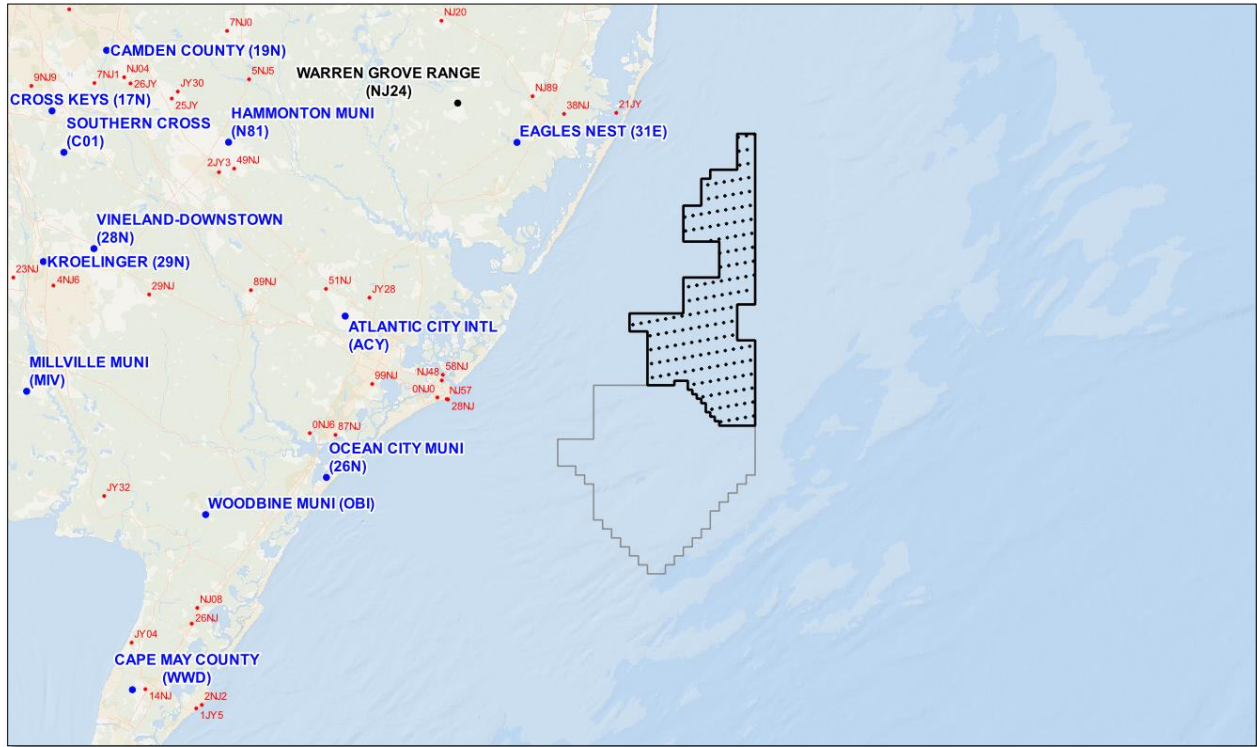


## Introduction

The Federal Aviation Administration (FAA) conducts aeronautical studies to ensure that proposed structures do not affect the safety of air navigation and the efficient utilization of navigable airspace by aircraft. Proposed structures undergoing aeronautical study that exceed obstacle clearance surfaces will be identified as having an adverse effect. If the FAA determines that the adverse effect would impact a significant volume of operations, it could be used as the basis for determinations of hazard. For visual flight rules (VFR) operations the threshold is one flight per day. For instrument flight rules (IFR) operations the threshold is one flight per week.

Capitol Airspace previously conducted an obstruction evaluation and airspace analysis for the Atlantic Shores Offshore Wind, LLC (Atlantic Shores) Project (the Project - black outline, [Figure 1](#)) for Lease Area OCS-A 0549 (Lease Area). This analysis determined that 1,047-foot-tall wind turbines would require an increase to Atlantic City International (ACY) instrument approach procedure minimum holding altitudes (MHA), low-altitude enroute airway minimum altitudes, Atlantic City (ACY) Terminal Radar Approach Control (TRACON) minimum vectoring altitudes (MVA), and a McGuire Field (WRI) Radar Approach Control (RAPCON) MVA. If any of these IFR impacts would affect as few as one operation per week, it could be used as the basis for determinations of hazard.

In order to determine the number of IFR operations potentially affected by proposed wind turbines, Capitol Airspace conducted an air traffic flow analysis for the Atlantic Shores Lease Area. This analysis is an assessment of historical flight tracks that can be used to determine the likelihood of airspace impacts affecting a significant volume of future operations.



**Figure 1: Public-use (blue), private-use (red), and military (black) airports in proximity to the Atlantic Shores Lease Area (black outline) with Lease Area OCS-A 0499 (grey outline)**



## Methodology

Capitol Airspace evaluated FAA National Offload Program (NOP) flight tracks in proximity to the Atlantic Shores Lease Area for the 2020 calendar year. Flight tracks from the 2020 dataset were assessed since it contained a greater number of flights in the affected airspace than the 2019 dataset. The FAA NOP data contained radar returns associated with flights receiving air traffic control services.<sup>1</sup> Each flight that had at least one radar return within the affected airspace was analyzed for altitude and direction trends to determine its likely operation.

### **Instrument Approach Procedures**

Flight tracks were created for each flight that had at least one radar return within the affected procedure's missed approach holding pattern obstacle evaluation area. These flights also indicated that the potentially affected procedure's airport was their destination. Capitol Airspace analyzed each flight for altitude and direction trends to determine if it potentially flew the affected procedure. The historical presence of these flights is an indicator that the required procedure modifications could affect future instrument approach operations.

### **Enroute Airways**

Flight tracks were created for each flight that had at least one radar return within the low-altitude enroute airway at the affected altitudes. Capitol Airspace analyzed each flight for altitude and direction trends to determine if it potentially operated along the enroute airway. The historical presence of these flights is an indicator that the required procedure modifications could affect future enroute airway operations.

### **Minimum Vectoring Altitudes**

In order to accommodate proposed wind turbines, the FAA must modify MVA sector boundaries or establish isolation areas with an increased MVA. Depending on the type of MVA chart, the modifications would implement either a three or five nautical mile (NM) buffer around wind turbines exceeding the MVA sector's obstacle clearance surface. Flights that maintained one or more specific headings within the affected volume of airspace operated in a manner consistent with receiving radar vectoring services. These flights also maintained or climbed/descended to maintain an altitude within the affected airspace. The historical presence of these flights is an indicator that the required MVA sector modifications could affect future air traffic control operations.

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<sup>1</sup> NOP data excludes certain military flights due to the sensitive nature of some operations.

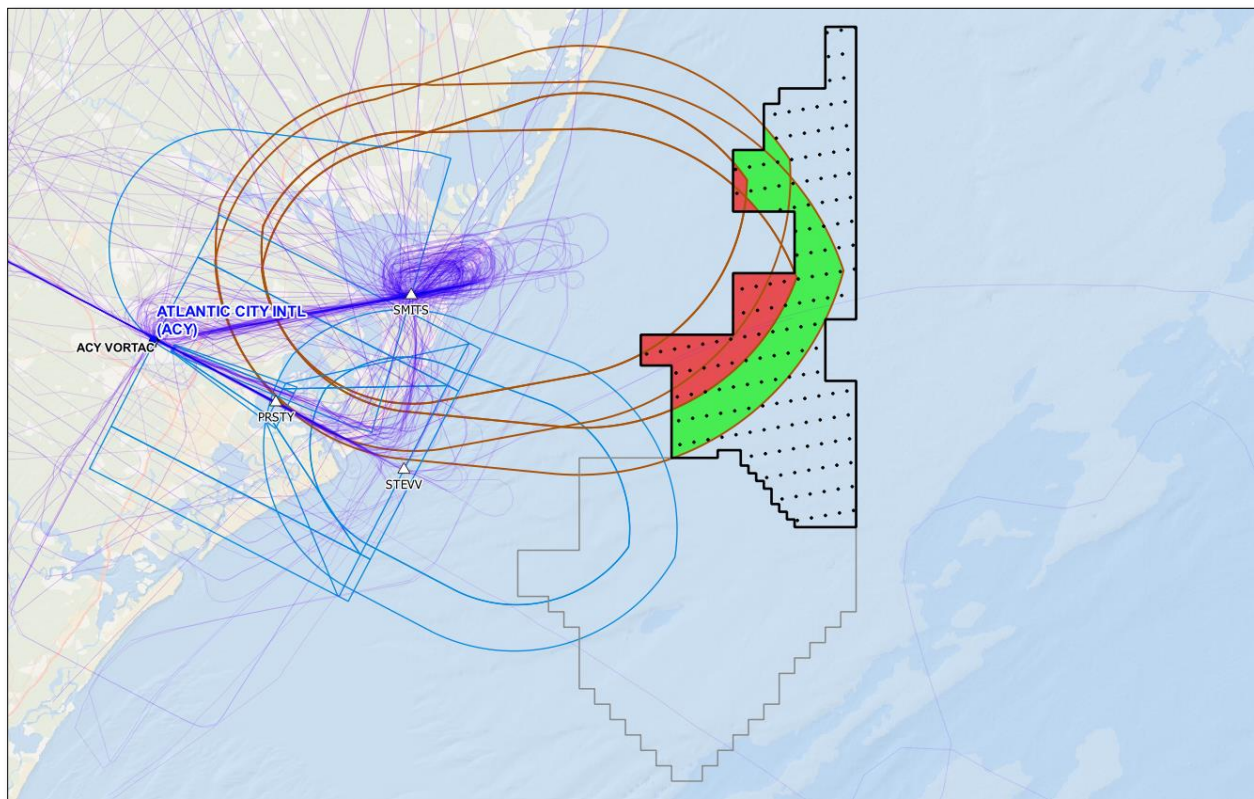


## Findings

### Instrument Approach Procedures

#### *Atlantic City International (ACY) - Multiple Instrument Approaches*

At 1,047 feet tall, proposed wind turbines in the western section of the study area (red areas, **Figure 2**), including 26 proposed locations, would require an increase to multiple *SMITS* missed approach holding pattern MHAs from 2,000 to 2,100 feet AMSL. While FAA instrument approach procedure design criteria would allow the holding pattern MHA to be increased to 2,100 feet AMSL, flight track data indicates that as many as 74 flights (purple tracks, **Figure 2**), an average of *1.42 flights per week*, utilized the *SMITS* missed approach holding patterns at the affected altitude. As a result, it is possible that the FAA may object to increasing the *SMITS* MHA due to the loss of a cardinal altitude for a significant volume of operations.



**Figure 2: Atlantic City International (ACY) ILS or Localizer/DME Approach to Runway 31**

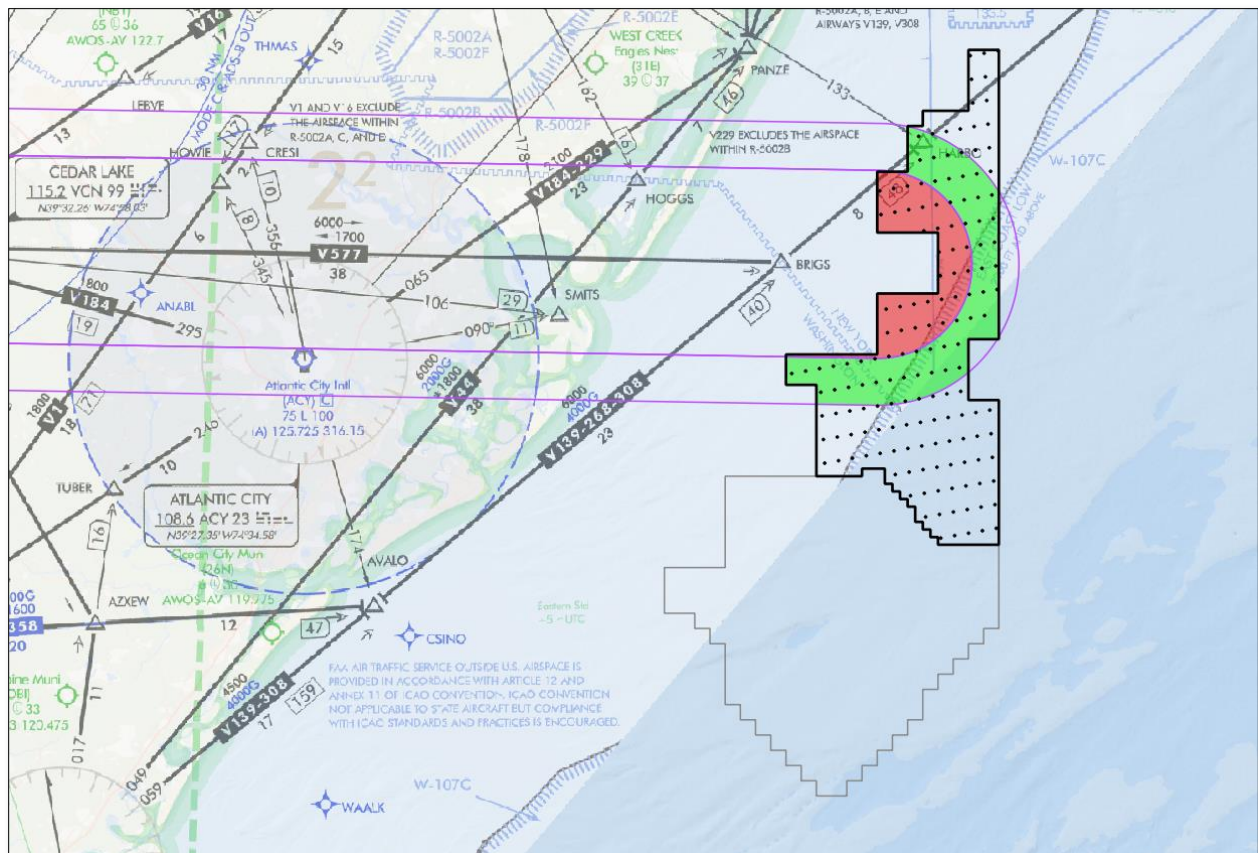


**V577**

*Cedar Lake (VCN) VOR/DME to BRIGS*

At 1,047 feet tall, proposed wind turbines in the western section of the study area (red areas, **Figure 3**), including 31 proposed locations, would require an increase to the existing westbound MEA from 1,700 to 2,100 feet AMSL. Flight track data indicates that no flights operated along the Cedar Lake (VCN) VOR/DME to BRIGS segment at the affected altitudes. This flight total represents an average of 0.00 flights per week which is below the FAA’s threshold for a significant volume of operations.

As a result of these findings, it is possible that the FAA would not object to increasing the V577 Cedar Lake (VCN) to BRIGS westbound segment MEA in order to accommodate wind development up to 1,047 feet AMSL. This mitigation option is subject to FAA approval.



**Figure 3: Low altitude enroute chart L-34 with V577 obstacle evaluation area (purple outline)**



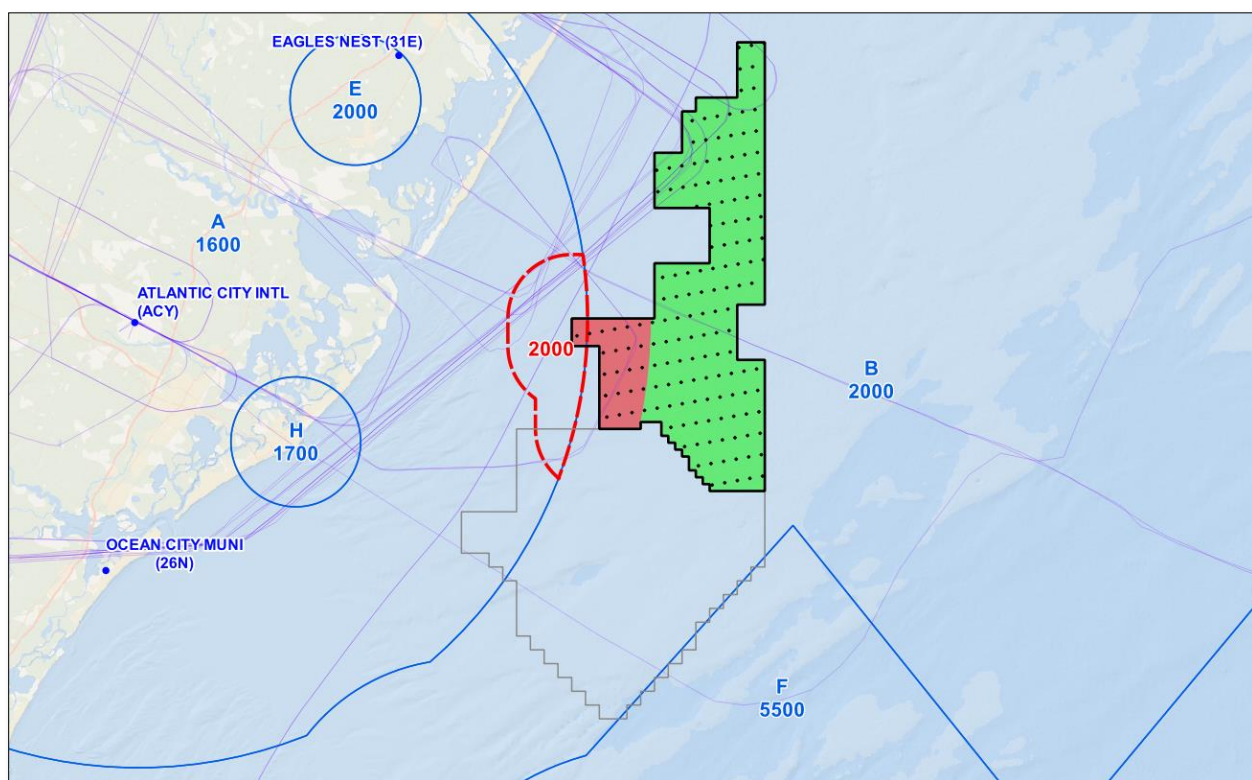
### Atlantic City (ACY) TRACON

ACY\_MVA\_FUS3\_2019

At 1,047 feet tall, proposed wind turbines in the western section of the study area (red area, **Figure 4**), including 21 proposed locations, would require an increased MVA that would affect portions of Sector A. Historical flight track data indicates that an increase to the Sector A MVA as a result of 1,047-foot-tall wind turbines should not affect a significant volume of radar vectoring operations (**Table 1**).

**Table 1: ACY\_MVA\_FUS3\_2019 chart impact summary and flight track analysis results**

Sector	MVA		Flights Within Affected Airspace	Flights Potentially Receiving Radar Vectors
	Current	Required		
A	1600	2000	26	9 (0.17 flights per week)



**Figure 4: Historical flight tracks (purple) that potentially received radar vectoring services within the required 3 NM isolation area (dashed red)**



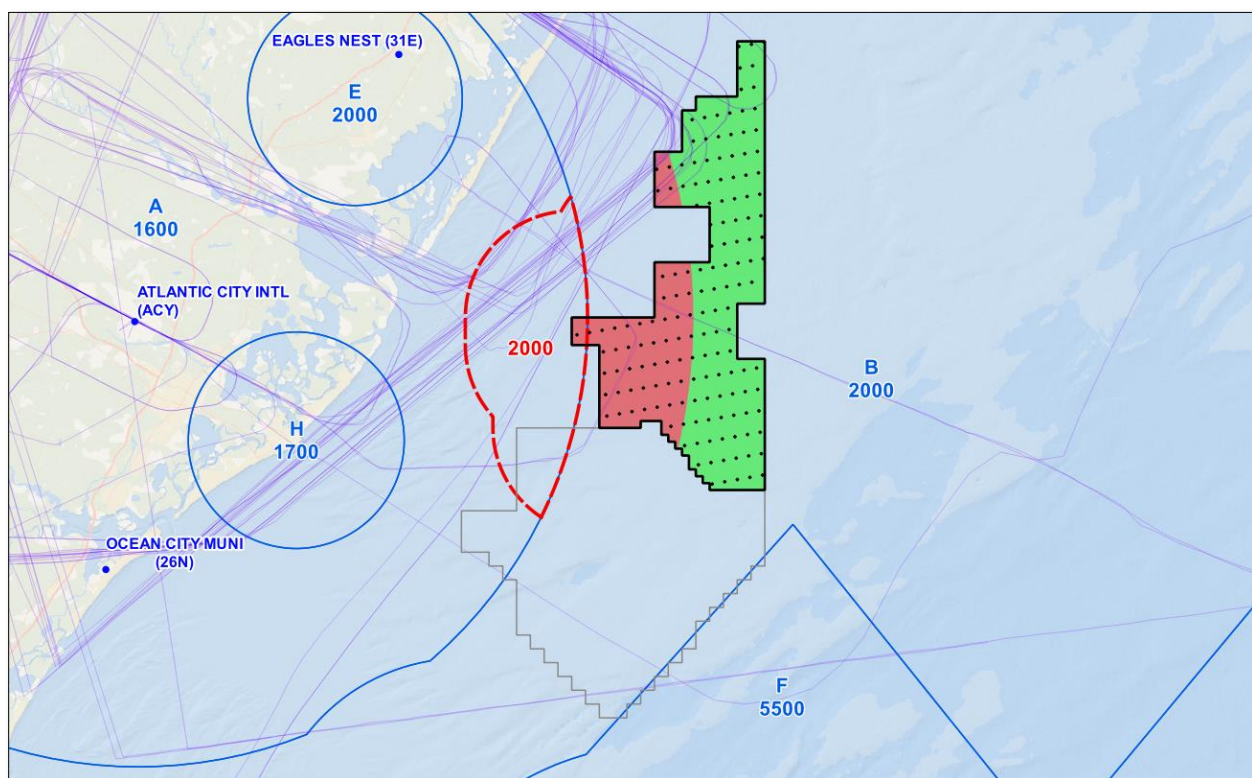


ACY\_MVA\_FUS5\_2019

At 1,047 feet tall, proposed wind turbines in the western half of the study area (red area, **Figure 5**), including 51 proposed locations, would require an increased MVA that would affect portions of Sector A. Historical flight track data indicates that an increase to the Sector A MVA as a result of 1,047-foot-tall wind turbines should not affect a significant volume of radar vectoring operations (**Table 2**).

**Table 2: ACY\_MVA\_FUS5\_2019 chart impact summary and flight track analysis results**

Sector	MVA		Flights Within Affected Airspace	Flights Potentially Receiving Radar Vectors
	Current	Required		
A	1600	2000	78	22 <i>(0.42 flights per week)</i>



**Figure 5: Historical flight tracks (purple) that potentially received radar vectoring services within the required 5 NM isolation area (dashed red)**

These findings indicate that 1,047-foot-tall wind turbines would require an increase to Atlantic City (ACY) TRACON MVAs, but should not affect a significant volume of radar vectoring operations. As a result of these findings, it is possible that Atlantic City (ACY) TRACON would not object to modifying the affected MVA sectors to accommodate wind development up to 1,047 feet tall.



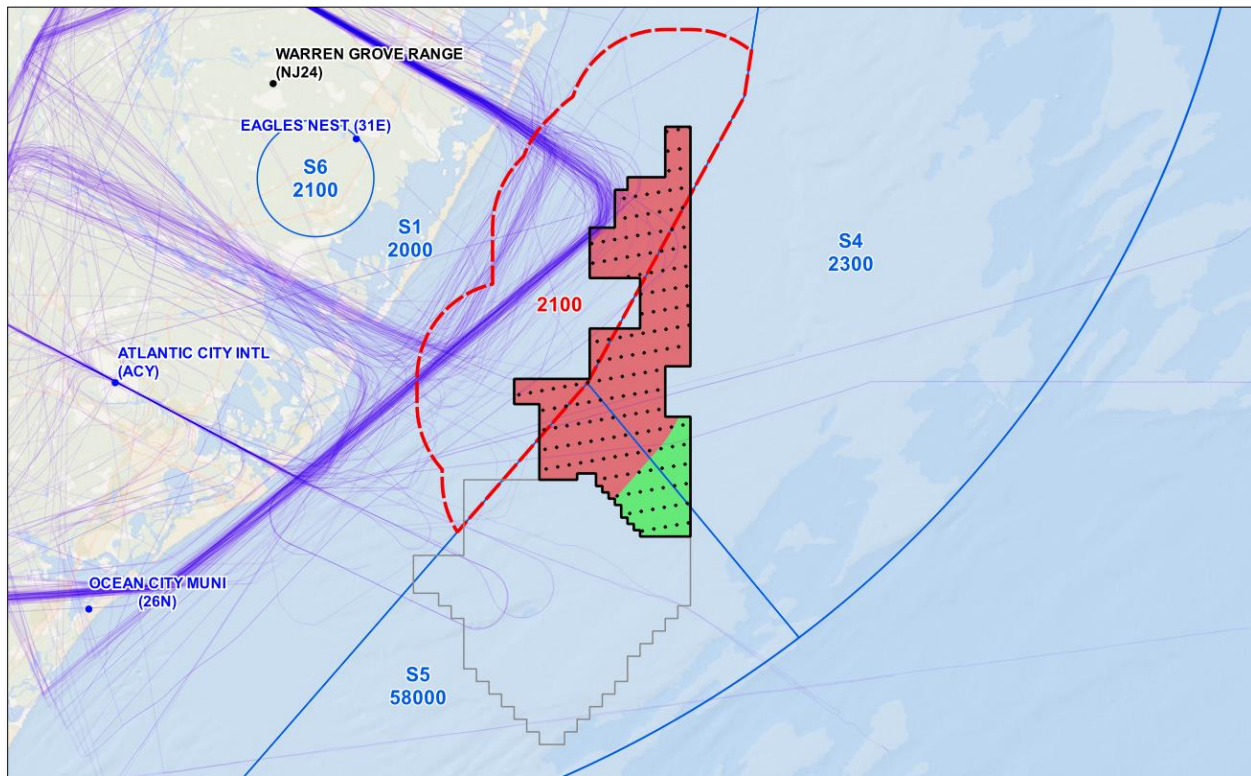
### McGuire Field (WRI) RAPCON

#### Terminal MVA Chart

At 1,047 feet tall, proposed wind turbines throughout most of the study area (red area, **Figure 6**), including 131 proposed locations, would require an increased MVA that would affect portions of Sector 1. Historical flight track data indicates that increases to the Sector 1 MVA as a result of 1,047-foot-tall wind turbines could affect a significant volume of radar vectoring operations (**Table 3**).

**Table 3: Terminal MVA chart impact summary and flight track analysis results**

Sector	MVA		Flights Within Affected Airspace	Flights Potentially Receiving Radar Vectors
	Current	Required		
1	2000	2100	229	155 <i>(2.98 flights per week)</i>



**Figure 6: Historical flight tracks (purple) that potentially received radar vectoring services within the required 5 NM isolation area (dashed red)**

These findings indicate that 1,047-foot-tall wind turbines would require an increase to McGuire Field (WRI) RAPCON MVAs (including the loss of the 2,000-foot AMSL cardinal altitude) and that wind turbines could affect a significant volume of radar vectoring operations. As a result, it is possible that McGuire Field (WRI) RAPCON would object to modifying their affected MVA sector in order to accommodate 1,047-foot-tall wind turbines.



## Conclusion

Capitol Airspace assessed historical FAA radar track data covering the period of one year to determine the number of operations that could be affected by 1,047-foot-tall wind turbines.

### **Atlantic City International (ACY)**

#### *Multiple Instrument Approach Procedures*

Proposed wind turbines in the western section of the study area, including 26 locations, would require an increase to the *SMITS* holding pattern MHAs from 2,000 to 2,100 feet AMSL. As many as 74 flights (*1.42 flights per week*) utilized the holding patterns at the affected altitude. This frequency of operations exceeds the threshold for a significant volume of IFR operations (one per week). Although the *SMITS* holding pattern MHA could be increased to 2,100 feet AMSL while still complying with FAA instrument approach procedure design criteria, it is possible that the FAA would still object to increasing the MHA due to the loss of a cardinal altitude for a significant volume of operations.

### **V577**

#### *Cedar Lake (VCN) VOR/DME to BRIGS*

Proposed wind turbines in the western section of the study area, including up to 31 locations, would require an increase to the westbound MEA from 1,700 to 2,100 feet AMSL. However, 0 flights (*0.00 flights per day*) operated along the *Cedar Lake (VCN) VOR/DME to BRIGS* segment of low altitude airway V577 at the affected altitudes. This frequency of operations is below the threshold for a significant volume of IFR operations (one per week).

### **Atlantic City (ACY) TRACON**

#### *ACY\_MVA\_FUS5\_2019 & ACY\_MVA\_FUS5\_2019*

Proposed wind turbines in the western half of the study area, including up to 51 locations, would require an increase to MVAs from 1,600 to 2,000 feet AMSL. As many as 9 flights (3 NM charts) or 22 flights (5 NM charts) could have been receiving radar vectoring services within the affected airspace. These flight totals represent an average of *0.17 flights per week* (3 NM charts) or *0.42 flights per week* (5 NM charts) which is below the threshold for a significant volume of IFR operations (one per week).

### **McGuire Field (WRI) RAPCON**

#### *Terminal MVA Chart*

Proposed wind turbines throughout most of the study area, including up to 131 locations, would require an increase to the Sector 1 MVA from 2,000 to 2,100 feet AMSL. As many as 155 flights (*2.98 flights per week*) could have been receiving radar vectoring services within the affected airspace. This frequency of operations exceeds the threshold for a significant volume of IFR operations (one per week). As a result, it is possible that McGuire Field (WRI) RAPCON may object to increasing the Sector 1 MVA due to the loss of a cardinal altitude for a significant volume of operations.

Based on these findings, the impact on the Atlantic City International (ACY) instrument approach procedure MHAs and the McGuire Field (WRI) RAPCON Sector 1 MVA could affect a significant volume of operations. These impacts could result in determinations of hazard for 1,047-foot-tall wind turbines throughout most of the study area, including up to 131 locations.

Please contact [Dan Underwood](#) or [Candace Childress](#) at (703) 256-2485 with any questions regarding the findings of this analysis.