Georgia Department of Transportation

ADVANCED AIR MOBILITY STUDY

SELECT AIRPORTS ANALYSIS

APRIL 2024

1. Select Airport Tables

Table 1-1: Estimated Cost to Install Two DC Electric Chargers One airside and one landside – 102 Publicly-Owned Public-Use Airports

No.	Associated City	Airport	LOC ID	Estimated Cost
1	Adel	Cook County Airport	15J	$500,000
2	Albany	Southwest Georgia Regional Airport	ABY	$750,000
3	Alma	Bacon County Airport	AMG	$500,000
4	Americus	Jimmy Carter Regional Airport	ACJ	$500,000
5	Ashburn	Turner County Airport	75J	$500,000
6	Athens	Athens-Ben Epps Airport	AHN	$750,000
7	Atlanta	Dekalb-Peachtree Airport	PDK	$750,000
8	Atlanta	Hartsfield-Jackson Atlanta International Airport	ATL	$750,000
9	Atlanta	Cobb County International Airport-McCollum Field	RYY	$750,000
10	Atlanta	Fulton County Executive Airport-Charlie Brown Field	FTY	$750,000
11	Atlanta	Atlanta Regional Airport-Falcon Field	FFC	$750,000
12	Atlanta	Atlanta Speedway Airport	HMP	$750,000
13	Atlanta	Newnan-Coweta County Airport	CCO	$500,000
14	Atlanta	Covington Municipal Airport	CVC	$500,000
15	Atlanta	Paulding Northwest Atlanta Airport	PUJ	$500,000
16	Augusta	Daniel Field Airport	DNL	$500,000
17	Bainbridge	Decatur County Industrial Air Park	BGE	$500,000
18	Baxley	Baxley Municipal Airport	BHC	$500,000
19	Blairsville	Blairsville Airport	DZJ	$500,000
20	Blakely	Early County Airport	BIJ	$500,000
21	Brunswick	Brunswick Golden Isles Airport	BQK	$750,000
22	Buena Vista	Marion County Airport	82A	$500,000
23	Butler	Butler Municipal Airport	6A1	$500,000
24	Cairo	Cairo-Grady County Airport	70J	$500,000
25	Calhoun	Tom B. David Field Airport	CZL	$500,000
26	Camilla	Camilla-Mitchell County Airport	CXU	$500,000
27	Canon	Franklin-Hart County Airport	18A	$500,000
28	Canton	Cherokee County Regional Airport	CNI	$500,000
29	Carrollton	West Georgia Regional Airport-O.V. Gray Field	CTJ	$500,000
30	Cartersville	Cartersville Airport	VPC	$750,000
31	Cedartown	Polk County Airport-Cornelius Moore Field	4A4	$500,000
32	Claxton	Claxton-Evans County Airport	CWV	$500,000
33	Cochran	Cochran Airport	48A	$500,000
34	Columbus	Columbus Airport	CSG	$750,000
35	Cordele	Crisp County-Cordele Airport	CKF	$500,000
36	Cornelia	Habersham County Airport	AJR	$750,000

No.	Associated City	Airport	LOC ID	Estimated Cost
37	Cuthbert	Lower Chattahoochee Regional Airport	25J	$500,000
38	Dahlonega	Lumpkin County-Wimpy's Airport	9A0	$500,000
39	Dalton	Dalton Municipal Airport	DNN	$500,000
40	Dawson	Dawson Municipal Airport	16J	$500,000
41	Donalsonville	Donalsonville Municipal Airport	17J	$500,000
42	Douglas	Douglas Municipal Airport	DQH	$500,000
43	Dublin	W. H. "Bud" Barron Airport	DBN	$500,000
44	Eastman	Heart of Georgia Regional Airport	EZM	$500,000
45	Elberton	Elbert County Airport-Patz Field	EBA	$500,000
46	Ellijay	Gilmer County Airport	49A	$500,000
47	Fitzgerald	Fitzgerald Municipal Airport	FZG	$500,000
48	Folkston	Davis Field Airport	3J6	$500,000
49	Hinesville	Wright Army Airfield-Midcoast Regional Airport	LHW	$750,000
50	Gainesville	Lee Gilmer Memorial Airport	GVL	$750,000
51	Greensboro	Greene County Regional Airport	CPP	$500,000
52	Griffin	Griffin-Spalding County Airport	6A2	$500,000
53	Hawkinsville	Hawkinsville-Pulaski County Airport	51A	$500,000
54	Hazlehurst	Hazlehurst Airport	AZE	$500,000
55	Homerville	Homerville Airport	HOE	$500,000
56	Jasper	Pickens County Airport	JZP	$500,000
57	Jefferson	Jackson County Airport	JCA	$500,000
58	Jekyll Island	Jekyll Island Airport	09J	$500,000
59	Jesup	Jesup-Wayne County Airport	JES	$500,000
60	LaFayette	Barwick-LaFayette Airport	9A5	$500,000
61	LaGrange	LaGrange-Callaway Airport	LGC	$750,000
62	Lawrenceville	Gwinnett County Airport-Briscoe Field	LZU	$750,000
63	Louisville	Louisville Municipal Airport	2J3	$500,000
64	Macon	Middle Georgia Regional Airport	MCN	$750,000
65	Macon	Macon Downtown Airport	MAC	$500,000
66	Madison	Madison Municipal Airport	52A	$500,000
67	McRae	Telfair-Wheeler Airport	MQW	$500,000
68	Metter	Metter Municipal Airport-John Edwin Jones, Sr. Field	MHP	$500,000
69	Milledgeville	Baldwin County Regional Airport	MLJ	$500,000
70	Millen	Millen Airport	2J5	$500,000
71	Monroe	Cy Nunnally Memorial Airport	D73	$500,000
72	Montezuma	Dr. C.P. Savage, Sr. Airport	53A	$500,000
73	Moultrie	Moultrie Municipal Airport	MGR	$500,000
74	Moultrie	Spence Field Airport	MUL	$500,000
75	Nahunta	Brantley County Airport	4J1	$500,000
76	Nashville	Berrien County Airport	4J2	$500,000

No.	Associated City	Airport	LOC ID	Estimated Cost
77	Perry	Perry-Houston County Airport	PXE	$500,000
78	Pine Mountain	Harris County Airport	PIM	$500,000
79	Quitman	Quitman-Brooks County Airport	4J5	$500,000
80	Reidsville	Swinton Smith Field @ Reidsville Municipal Airport	RVJ	$500,000
81	Rome	Richard B. Russell Regional Airport-J.H. Towers Field	RMG	$750,000
82	Sandersville	Kaolin Field Airport	OKZ	$500,000
83	Savannah	Savannah-Hilton Head International Airport	SAV	$750,000
84	Soperton	Treutlen County Airport	4J8	$500,000
85	St. Simons Island	St. Simons Island Airport	SSI	$750,000
86	Statesboro	Statesboro-Bulloch County Airport	TBR	$500,000
87	Swainsboro	East Georgia Regional Airport	SBO	$500,000
88	Sylvania	Plantation Airpark	JYL	$500,000
89	Sylvester	Sylvester Airport	SYV	$500,000
90	Thomaston	Thomaston-Upson County Airport	OPN	$750,000
91	Thomasville	Thomasville Regional Airport	TVI	$750,000
92	Thomson	Thomson-McDuffie County Airport	HQU	$750,000
93	Tifton	Henry Tift Myers Airport	TMA	$500,000
94	Toccoa	Toccoa Airport-R.G. Letourneau Field	TOC	$500,000
95	Valdosta	Valdosta Regional Airport	VLD	$750,000
96	Vidalia	Vidalia Regional Airport	VDI	$500,000
97	Warm Springs	Roosevelt Memorial Airport	5A9	$500,000
98	Washington	Washington-Wilkes County Airport	IIY	$500,000
99	Waycross	Waycross-Ware County Airport	AYS	$500,000
100	Waynesboro	Burke County Airport	BXG	$500,000
101	Winder	Barrow County Airport	WDR	$750,000
102	Wrens	Wrens Memorial Airport	65J	$500,000
		Total Estimated Cost		**$57,250,000**

Source: River Street Group, LLC

2. Select Airports Analysis

Athens/Ben Epps Airport

Airport Capacity and Landing Infrastructure

To determine if eVTOLs at Athens/Ben Epps Airport (AHN) would need segregated landing areas or if they should operate via existing runways, the airport's current annual operations were compared to its estimated annual service volume.

AHN has two runways: Runway 9/27, the primary runway, and Runway 2/20, the crosswind runway. Each runway has a partial parallel taxiway as well as several connector taxiways. Using AC 150/5060-5, an approximate ASV at AHN can be determined.

Based on the current runway configuration, the minimum ASV is approximately 200,000 (Federal Aviation Administration, 1983). There are two estimates of AHN's existing operations: the FAA 5010 form and the FAA TAF for 2022. As per the 5010 form, the airport has 44,863 annual operations, (Federal Aviation Administration, 2023) while the TAF reports 42,084 annual operations (Federal Aviation Administration, 2022). Both estimates indicate that the airport is operating at 21-22 percent of its ASV. FAA Order 5090.5, Formulation of the NPIAS and ACIP, states that planning for added capacity should start at 60 percent ASV, and development should occur at 80 percent of ASV (Federal Aviation Administration, 2019). Based on these numbers, annual operations at AHN would have to nearly triple from the 5010 form's 44,863 operations to 120,000 operations. Therefore, eVTOL aircraft could utilize the existing runways for takeoff and landing without overwhelming the existing aviation capacity at AHN.

Aside from AHN's two runways, the airport also has two TLOFs, just south of the main runway apron. These TLOFs support existing helicopter operations. According to FAA TFMSC data from March 1, 2022, to May 1, 2023, there were 101 helicopter operations at AHN. A breakdown of these operations is documented in **Table 2-1**. It's important to keep in mind that FAA TFMSC data doesn't cover all helicopter activity at AHN, particularly those conducted under visual flight rules. This means that the number of flights recorded may not fully represent the total helicopter traffic at the airport.

Table 2-1: Helicopter Operations at AHN

User Class	Operations June 2022 - May 2023	Percentage of Total
Military	81	80%
General Aviation	19	19%
Air Carrier	1	1%
Sum of Ops	**101**	**100%**

Source: (Federal Aviation Administration, 2023), Woolpert Analysis

Each of the TLOFs are 40 ft. in diameter and there is a 40-ft. gap between the edge of each TLOF. These dimensions are less than what is needed to meet design standards for an eVTOL aircraft as described earlier in this report, so eVTOL operations would not be advisable on those TLOFs without redesigning them to be larger, as well as to include a FATO and Safety Area. EB 105 dimensions are overlayed onto the existing TLOF dimensions in **Figure 2-1**.

Figure 2-1: AHN TLOF Overlay

Source: Google Earth, Woolpert Analysis

Should AHN choose to build a vertiport onsite to accommodate eVTOLs, there are several key factors to consider, including locations to avoid and locations that are more compatible.

Locations to avoid include:

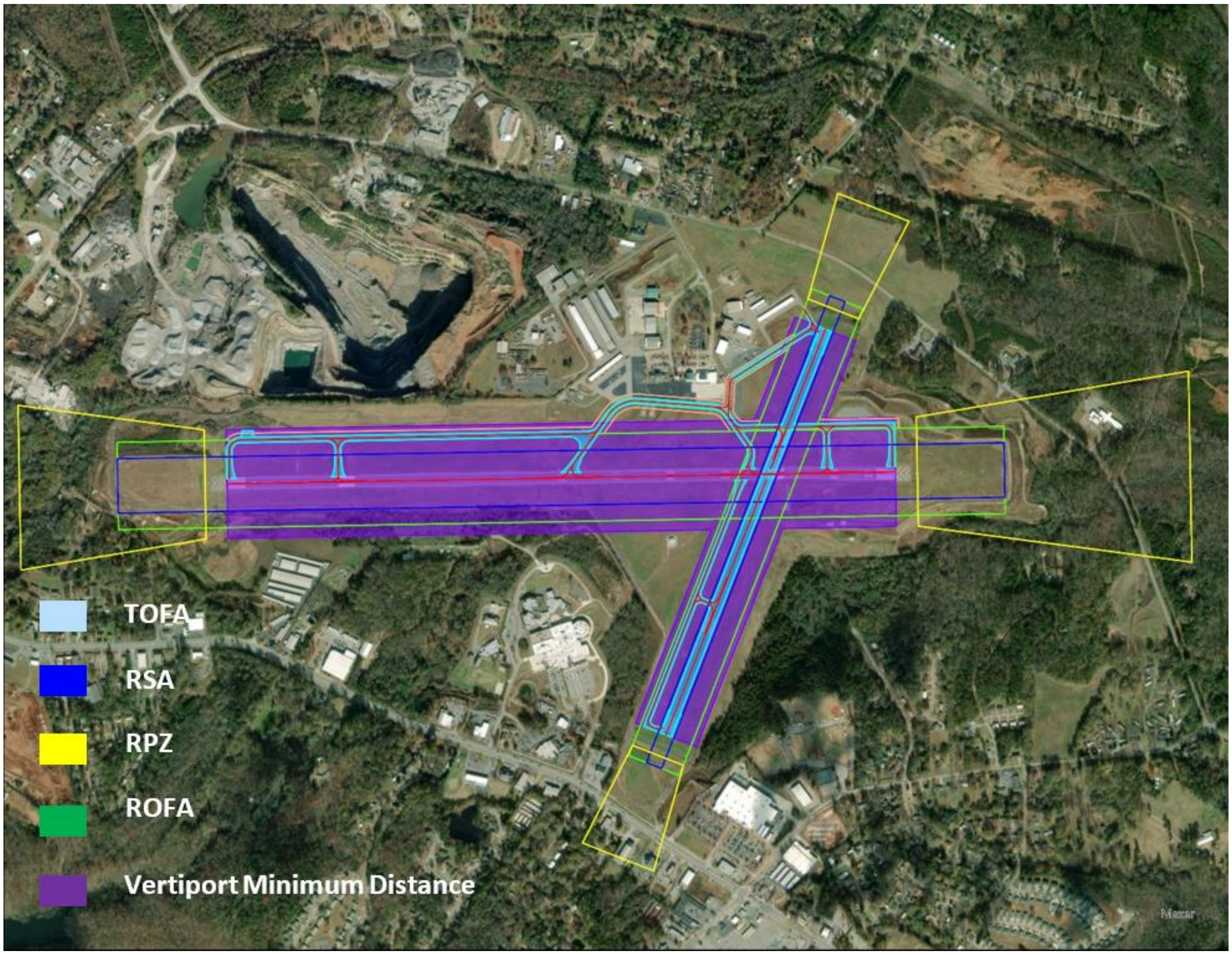
- Sites that interfere with the operation of existing aircraft operations, including taxiing, takeoff, and landing.
- Sites that overlap or are encompassed by critical airport design surfaces and areas, including the runway protection zone, runway safety area, runway object-free area, and taxiway object-free area.
- Siting which is less than the minimum distance from the runway based on the weight of the airport's critical aircraft, as referenced in EB 105.

Locations that are more compatible include those which:

- Minimize the distance needed to taxi the aircraft for passenger pickup and drop-off.
- Minimize the distance needed to reach the electric aircraft charging station.
- Minimize the distance needed to reach tiedown or hangar parking areas.

To determine the viability of establishing a new landing area dedicated to eVTOL aircraft, the airport design surfaces mentioned above were mapped out to identify areas that would need to be avoided. These surfaces are shown in **Figure 2-2.**

Figure 2-2: AHN Critical Airport Design Components



Source: Google Earth, AHN Airport Layout Plan, Woolpert Analysis

Once these areas are mapped, more compatible areas for vertiport siting can be identified. The planning team identified three potential areas for vertiports and electric aircraft charging stations at AHN. These areas are shown in **Figure 2-3** below. The areas shown include geometry for the TLOF, FATO, and Safety Area utilizing the 50-foot, 100-foot., and 150-foot. diameter parameters specified earlier in this report. The siting of these areas was drawn with planning-level precision; more precise siting efforts would be conducted with further study should the airport choose to proceed with the development of such a site.

Figure 2-3: Potential Charging and Vertiport Site Locations

Source: Google Earth, Woolpert Analysis

The first option for locating a vertiport at AHN is adjacent to the existing helicopter TLOFs. This site fits outside of the minimum vertiport distance from EB 105, and the TLOF and FATO are both clear of airport safety areas and object free areas. A facility here would facilitate eVTOL traffic in a very similar way to how helicopters operate at these TLOFs today. This site is adjacent to the airport's main apron area, providing the landing site with immediate access to the airport terminal for passenger pickup and drop-off. This facility would, however, have approach and departure paths that would intersect with the approach and departure of the existing TLOFs, so operations at either TLOF or the vertiport would not be able to be simultaneous.

It is also worth noting that should AHN move forward with developing a vertiport at this location, a similar option would be to consolidate the existing TLOFs into one, larger landing pad that accommodates both eVTOLs and helicopters. While this would theoretically limit the capacity of the landing pad by reducing the number of TLOFs to just one, eVTOLs landing at the site would land and immediately taxi away from the landing pad to drop off passengers or charge batteries. Overall, this site provides easy access to the passenger terminal as well as potential charging stations.

The second option is to locate the vertiport to the east of the existing apron, in the vacant space west of Runway 2/20. This site fits outside of the minimum vertiport distance from EB 105, and the TLOF and FATO are both clear of airport safety areas and object free areas. This area would locate the vertiport away from the existing helicopter TLOFs and allow for independent operations from those pads. This area is also very close to the passenger terminal and would allow for immediate access to the taxiway and main apron. The landing geometry's dimensions are shown in **Figure 2-3** above.

A third option is to locate the vertiport southwest of the main apron, south of the airport's fuel farm. This site fits outside of the minimum vertiport distance from EB 105, and the TLOF and FATO are both clear of airport safety areas and object free areas. This option is farther from the airport's main apron than Sites 1 and 2, but still has immediate access to the taxiway leading to the apron.

Two additional considerations apply for each of these sites: lighting and signage. Engineering Brief 105 specifies that vertiport lighting is required for nighttime operation. Additional details regarding lighting requirements and guidance for vertiports can be found in Chapter 3.5 of EB 105.

Last, because of the proximity of these sites to existing taxiways, it is prudent to install appropriate signage to alert taxiing pilots that the vertiport is an active landing area and that movements in proximity to that area should be done cautiously.

Electric Aircraft Charging

The planning team also identified three potential electric charging station sites. Charging Site A is located adjacent to the existing fuel farm at the airport, Charging Site B is located to the west of the auto parking lot and adjacent to the existing apron space northwest of the passenger terminal, and Site C is located adjacent to the main apron by the airport's administrative building. These sites are shown above in **Figure 2-3.**

The benefits of Charging Site A are the proximity to Vertiport Site 3 and the proximity to the existing fuel stations. While adequate distance would need to be maintained from the existing fuel tanks (though no safety guidance yet exists on the recommended separation distance), there is ample clear room around the existing fuel farm to allow aircraft to taxi to the station and charge, clear of traffic from other aircraft using the taxiways, aprons, and the fuel farm. The downsides to this site include that it is located farther from the passenger terminal than the other sites, and because it is located further from the buildings and roads at the airport, it is likely farther away from existing electrical lines. Connecting electrical lines to this site would warrant additional design and construction costs.

Charging Site B is located on a grass area between the northwestern portion of the airport apron and the auto parking lot. This site is located near the passenger terminal, thus minimizing the amount of taxiing needed to charge the aircraft before/after dropping off or picking up passengers. Additionally, the proximity of the site to the existing buildings and roads at the airport means that electric power is nearby and would not require significant additional design to provide electrical power to the charging station. Last, because this site is adjacent to the auto parking lot, the charger could theoretically also serve as an electric car charging station as well, though a minor redesign of the road would be needed to allow for a parking space in that location.

Charging Site C is located on the east side of the existing airport apron, adjacent to the airport administration building. This site provides many of the same benefits as Site B, including the proximity to the passenger terminal and the access to existing electrical lines and the auto parking lot. Additionally, this space could very easily function as a dual-use charging station, supporting electric car charging as well as electric aircraft charging. Minimal to no redesign of the surrounding infrastructure would be needed to install a charging station in this location.

At this time, installing one electric charging station at AHN is a prudent step to ensuring AHN is compatible and can support electric aircraft operations. To do so, AHN should consult with local utilities to understand their existing electric supply and capacity, and work to increase that capacity if needed. A more thorough siting selection exercise will identify the exact redesign and utilities needed to enable the charging station.

Electric Fire Safety

As a Part 139 airport, AHN is equipped with a fire rescue station on its premises. To ensure the safety of all parties involved, airport management should collaborate with Aircraft Rescue and Firefighting (ARFF) personnel to make them aware of the distinct fire response traits of electric aircraft. A protocol for ARFF response to such aircraft should be established in coordination with the onsite fire response team, with top priority given to the safety of pilots, passengers, staff, and neighboring infrastructure.

Supporting Infrastructure

Weather

AHN has an ASOS onsite. No additional weather infrastructure is needed to support AAM at this time.

High-speed Data/Broadband

High-speed data is not necessary but is a standard for site readiness. If AHN does not have this infrastructure, the airport should explore upgrading internet lines to provide this.

ADS-B

ADS-B capability is required in Class A, Class B, and Class C airspace. AHN is Class D airspace, which means that aircraft do not need ADS-B capabilities to operate at the airport or in its airspace. Still, it is prudent for AHN to acquire an ADS-B receiver to future-proof the facility as ADS-B grows in scope.

Overall Compatibility and Next Steps

In summary, Athens-Ben Epps airport is fully capable of accommodating AAM aircraft with some necessary preparations. Since the airport has ample capacity, there is no need to construct new landing infrastructure for electric aircraft like eVTOLs, as they can use the existing infrastructure. However, segregating these aircraft from the current infrastructure is an option, and several potential vertiport sites that meet the design criteria from EB 105 have been suggested for further evaluation.

It is vital to install an electric aircraft charging station at AHN, allowing these aircraft to recharge while at the airport. Various potential charging sites have been identified, with consideration given to access to existing electric lines and terminal connectivity. Although there is currently no fire safety guidance for electric aircraft from the NFPA, AHN has an onsite fire response team and should collaborate with them to develop a protocol for electric fire hazards. Lastly, AHN has weather observation infrastructure and should strive to develop any additional supporting infrastructure it may need, such as high-speed data/broadband and ADS-B receivers.

Augusta Regional Airport

Airport Capacity and Landing Infrastructure

To determine if eVTOLs at Augusta Regional Airport (AGS) would need segregated landing areas or if they should operate via existing runways, the airport's current annual operations were compared to its estimated annual service volume.

AGS has two runways: RWY 17/35, the primary runway, and RWY 8/26, the crosswind runway. Each runway has a full parallel taxiway as well as several connector taxiways. Using AC 150/5060-5, an approximate ASV at AGS can be determined.

Based on the current runway configuration, the minimum ASV is approximately 200,000. (Federal Aviation Administration, 1983) There are two estimates of AGS's existing operations: the FAA Airport Data Inventory Program (ADIP) and the FAA Terminal Area Forecast (TAF) for 2022. As per ADIP, the airport has 42,038 annual operations, (Federal Aviation Administration, 2023) while the TAF reports 40,750 annual operations. (Federal Aviation Administration, 2022) Both estimates indicate that the airport is operating at between 20-21 percent of its ASV. FAA Order 5090.5, Formulation of the NPIAS and ACIP, states that planning for added capacity should start at 60 percent ASV, and development should occur at 80 percent of ASV. (Federal Aviation Administration, 2019) Based on these numbers, annual operations at AGS would have to increase from the ADIP's 42,038 operations to 120,000 operations. Therefore, eVTOL aircraft could utilize the existing runways for takeoff and landing without overwhelming the existing aviation capacity at AGS.

According to FAA Traffic Flow Management System Counts (TFMSC) data from June 1, 2022, to May 31, 2023, there were 133 helicopter operations at AGS. A breakdown of these operations is documented in **Table 2-2.** It's important to keep in mind that FAA TFMSC data doesn't cover all helicopter activity at AGS, particularly those conducted under visual flight rules. This means that the number of flights recorded may not fully represent the total helicopter traffic at the airport.

Table 2-2: Helicopter Operations at AGS

User Class	Operations June 2022 - May 2023	Percentage of Total
Air Carrier	2	2%
General Aviation	44	33%
Military	74	56%
Other	13	10%
Sum of Ops	**133**	**100%**

Source: (Federal Aviation Administration, 2023), Woolpert Analysis

Should AGS choose to build a vertiport onsite to accommodate eVTOLs, there are several key factors to consider, including locations to avoid and locations that are more compatible. Locations to avoid include:

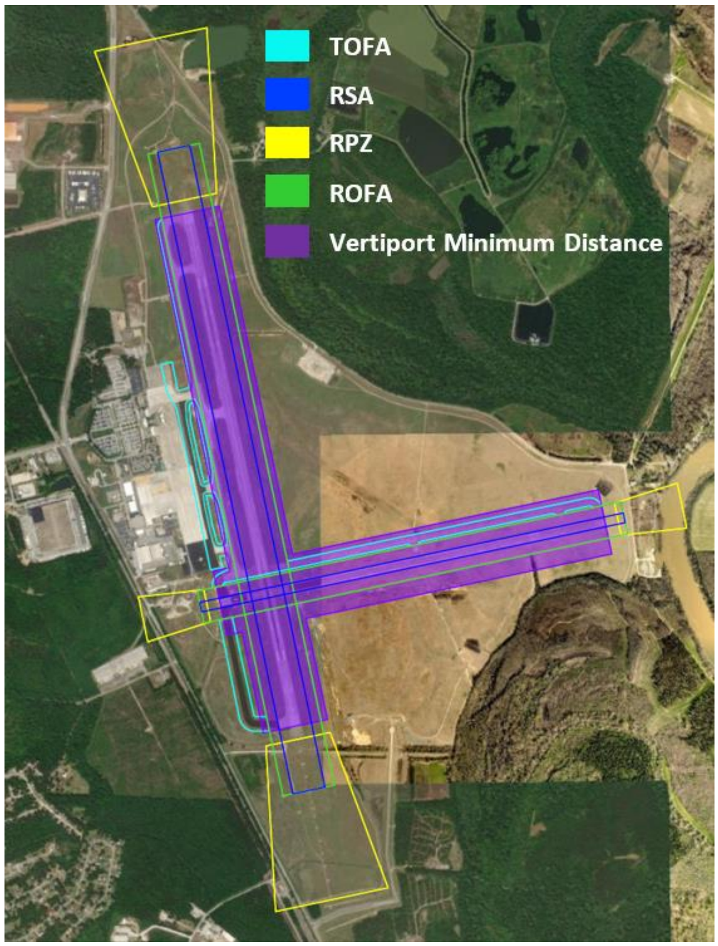
- Sites that interfere with the operation of existing aircraft operations, including taxiing, takeoff, and landing
- Sites that overlap or are encompassed by critical airport design surfaces and areas, including the runway protection zone, runway safety area, runway object-free area, and taxiway object-free area
- Siting which is less than the minimum distance from the runway based on the weight of the airport's critical aircraft, as referenced in EB 105

Locations that are more compatible include those which:

- Minimize the distance needed to taxi the aircraft for passenger pickup and drop-off
- Minimize the distance needed to reach the electric aircraft charging station
- Minimize the distance needed to reach tiedown or hangar parking areas

To determine the viability of establishing a new landing area dedicated to eVTOL aircraft, the airport design surfaces mentioned above were mapped out to identify areas that would need to be avoided. These surfaces are shown in **Figure 2-4**.

Figure 2-4: AGS Critical Airport Design Components



Source: Google Earth, AGS Airport Layout Plan, Woolpert Analysis

AGS, siting a vertiport outside of those areas would be challenging without restructuring the airport apron. Much of the apron that could be used as a vertiport also functions as the access to hangars and thus could not be blocked permanently. At this time, given the capacity of the airport, it is recommended that airport staff and the air traffic control tower develop a protocol to support eVTOL aircraft on the existing infrastructure without building a standalone vertiport.

Electric Aircraft Charging

AGS is unique in that it has already installed an electric aircraft charging station onsite. This put AGS far ahead of most other airports in the country in terms of accommodating electric aircraft. Should AAM operations scale at AGS to the point where having only one charging station becomes a bottleneck, installing a second charger would be prudent. At this time, however, no additional charging needs are warranted.

The location of the charging site is shown below in **Figure 2-5.**

Figure 2-5: AGS Charging Site

Source: Google Earth, Woolpert Analysis

Electric Fire Safety

As a Part 139 airport, AGS is equipped with a fire rescue station on its premises. To ensure the safety of all parties involved, airport management should collaborate with Aircraft Rescue and Firefighting (ARFF) personnel to make them aware of the distinct fire response traits of electric aircraft. A protocol for ARFF response to such aircraft should be established in coordination with the onsite fire response team, with top priority given to the safety of pilots, passengers, staff, and neighboring infrastructure.

Supporting Infrastructure

Weather

AGS has an ASOS onsite. No additional weather infrastructure is needed to support AAM at this time.

High-speed Data/Broadband

High-speed data is not necessary but is a standard for site readiness. If AGS does not have this infrastructure, the airport should explore upgrading internet lines to provide this.

ADS-B

ADS-B capability is required in Class A, Class B, and Class C airspace. AGS is Class D airspace, which means that aircraft do not need ADS-B capabilities to operate at the airport or in its airspace. Still, it is prudent for AGS to acquire an ADS-B receiver if it does not already have one, to future-proof the facility as the use of ADS-B grows in scope.

Overall Compatibility and Next Steps

In summary, Augusta Regional Airport is fully capable of accommodating AAM aircraft and is well on its way to doing so. Since the airport has ample capacity, there is no need to construct new landing infrastructure for electric aircraft like eVTOLs, as they can use the existing infrastructure. However, segregating these aircraft from the current infrastructure is an option, and several potential vertiport sites that meet the design criteria from EB 105 have been suggested for further evaluation.

Because AGS has already installed an electric charging station, no additional infrastructure is needed to enable electric aircraft operations at this time. There is currently no fire safety guidance for electric aircraft from the NFPA, but AGS has an onsite fire response team and should collaborate with them to develop a protocol for electric fire hazards. Lastly, AGS has weather observation infrastructure and should strive to develop any additional supporting infrastructure it may need, such as high-speed data/broadband and ADS-B receivers.

Columbus Airport

Airport Capacity and Landing Infrastructure

To determine if eVTOLs at Columbus Airport (CSG) would need segregated landing areas or if they should operate via existing runways, the airport's current annual operations were compared to its estimated annual service volume.

CSG has two runways: RWY 6/24, the primary runway, and RWY 13/31, the crosswind runway. Each runway has a full parallel taxiway as well as several connector taxiways. Using AC 150/5060-5, an approximate ASV at CSG can be determined.

Based on the current runway configuration, the minimum ASV is approximately 200,000. (Federal Aviation Administration, 1983) There are two estimates of CSG's existing operations: the FAA Airport Data Inventory Program (ADIP) and the FAA Terminal Area Forecast (TAF) for 2022. As per ADIP, the airport has 37,662 annual operations, (Federal Aviation Administration, 2023) while the TAF reports 38,459 annual operations. (Federal Aviation Administration, 2022) Both estimates indicate that the airport is operating at 19 percent of its ASV. FAA Order 5090.5, Formulation of the NPIAS and ACIP, states that planning for added capacity should start at 60 percent ASV, and development should occur at 80 percent of ASV. (Federal Aviation Administration, 2019) Based on these numbers, annual operations at CSG would have to increase from the TAF's 38,459 operations to 120,000 operations. Therefore, eVTOL aircraft could utilize the existing runways for takeoff and landing without overwhelming the existing aviation capacity at CSG.

Aside from CSG's two runways, the airport also has a marked helicopter landing area, on the south side of the main general aviation apron. According to FAA Traffic Flow Management System Counts (TFMSC) data from June 1, 2022, to May 31, 2023, there were 77 helicopter operations at CSG. A breakdown of these operations is documented in **Table 2-3.** It's important to keep in mind that FAA TFMSC data doesn't cover all helicopter activity at CSG, particularly flights conducted under visual flight rules. This means that the number of flights recorded may not fully represent the total helicopter traffic at the airport.

Table 2-3: Helicopter Operations at CSG

User Class	Operations June 2022 - May 2023	Percentage of Total
Military	74	96%
General Aviation	3	4%
Sum of Ops	**77**	**100%**

Source: (Federal Aviation Administration, 2023), Woolpert Analysis

The helicopter landing area is a triangle with each side measuring 30 feet in diameter. These dimensions are less than what is needed to meet design standards for an eVTOL aircraft as described earlier in this chapter. The surrounding pavement is paved and clear of obstacles. Theoretically, eVTOL operations could take place in this area, though the area falls within the vertiport minimum distance zone for the adjacent runway and would not meet requirements to that distance. This will be explained later in this report as the site is analyzed further. EB 105 dimensions are overlayed onto the existing TLOF dimensions in **Figure 2-6**.

Figure 2-6: CSG Helicopter Landing Area Overlay (EB 105 Dimensions)

Source: Google Earth, Woolpert Analysis

Should CSG choose to build a vertiport onsite to accommodate eVTOLs, there are several key factors to consider, including locations to avoid and locations that are more compatible. Locations to avoid include:

- Sites that interfere with the operation of existing aircraft operations, including taxiing, takeoff, and landing
- Sites that overlap or are encompassed by critical airport design surfaces and areas, including the runway protection zone, runway safety area, runway object-free area, and taxiway object-free area
- Siting which is less than the minimum distance from the runway based on the weight of the airport's critical aircraft, as referenced in EB 105

More compatible locations include those which:

- Minimize the distance needed to taxi the aircraft for passenger pickup and drop-off
- Minimize the distance needed to reach the electric aircraft charging station
- Minimize the distance needed to reach tiedown or hangar parking areas

To determine the viability of establishing a new landing area dedicated to eVTOL aircraft, the airport design surfaces mentioned above were mapped out to identify areas that would need to be avoided. These surfaces are shown in **Figure 2-7.**

Figure 2-7: CSG Critical Airport Design Components

Source: Google Earth, CSG Airport Layout Plan, Woolpert Analysis

Once these areas are mapped, more compatible areas for vertiport siting can be identified. The planning team identified two potential areas for vertiports and electric aircraft charging stations at CSG. These areas are shown in **Figure 2-8** below. The areas shown include geometry for the TLOF, FATO, and Safety Area utilizing the 50-foot, 100-foot, and 150-foot diameter parameters specified earlier in this report. The siting of these areas was drawn with planning-level precision; more precise siting efforts would be conducted with further study should the airport choose to proceed with the development of such a site.

Figure 2-8: Potential Charging and Vertiport Site Locations

Source: Google Earth, Woolpert Analysis

The first option for locating a vertiport at CSG is an interim measure to simply expand and mark the existing helicopter landing area to accommodate eVTOLs. While the site would not meet EB 105 criteria as an onsite vertiport, it is a simple measure that could be undertaken with minimal effort. A facility here would facilitate eVTOL traffic in a very similar way to how helicopters operate at these TLOFs today. This site is adjacent to the airport's main apron area, providing the landing site with immediate access to the airport terminal for passenger pickup and drop-off. Overall, this site provides easy access to the passenger terminal as well as potential charging stations.

The second option is to locate the vertiport between the general aviation side of the airport and the commercial service terminal, in the vacant space just north of the apron (or as part of a redesign that includes part of the existing apron). This site fits outside of the minimum vertiport distance from EB 105, and the TLOF and FATO are both clear of airport safety areas and object free areas. This area would provide access to both the general aviation side of the airport for those flying privately, and the commercial service terminal for those flying commercially. The landing geometry's dimensions are shown in **Figure 2-8** above.

As shown, the full TLOF, FATO, and Safety area do not fit entirely into the grassy location, so the airport would have a few options to ensure adequate space for the site. The airport could redesign the auto roadway just north of the site to clear circulate traffic elsewhere and make room for the Safety Area, or it could instead shift the site farther south and extend it further onto the apron to avoid the roadway redesign. This way, it would function similarly to how the helicopter landing pad does today, but in a separate area outside of the minimum vertiport distance specified in EB 105.

Three additional considerations apply for each of these sites: lighting, fencing, and signage. Engineering Brief 105 specifies that vertiport lighting is required for nighttime operation. Fencing should be installed outside of the safety area to deter malicious actors, and a vertiport caution sign should be erected at all access points. Additional details regarding lighting, fencing, and signage requirements and guidance for vertiports can be found in Chapter 3.5 of EB 105.

Electric Aircraft Charging

The planning team also identified two potential electric charging station sites Charging Site A is located on the airside just outside of Flightways Columbus, the fixed-base operator (FBO) at CSG and Charging Site B is located to the west of the commercial service terminal and just north of the apron between the general aviation area and commercial service terminal. These sites are shown above in **Figure 2-8**.

The benefits of Charging Site A are its location directly next to existing tie-down stations and proximity to the FBO. There is adequate room for a specific station to be added or an existing spot to be redesigned to create a parking place for eVTOLs to charge. A site in this location would allow seamless access for eVTOL passengers to deplane, enter the FBO, and for the aircraft to charge, all in one location at the airport. Additionally, the proximity of the site to the existing buildings and roads at the airport means that electric power is nearby and would not require significant additional power lines to provide electrical power to the charging station.

The benefits of Site B are its location directly between the FBO and the commercial service terminal and its proximity to existing roadways. Because of its location, eVTOLs would be able to charge at the station without significant taxi time regardless of whether they were traveling to the commercial service terminal or the FBO. In addition, because it is so close to existing roadways, it is likely that power lines supplying electricity are close to the site already.

At this time, installing one electric charging station at CSG is a prudent step to ensuring CSG is compatible and can support electric aircraft operations. To do so, CSG should consult with local utilities to understand their existing electric supply and capacity, and work to increase that capacity if needed. A more thorough siting selection exercise will identify the exact redesign and utilities needed to enable the charging station.

Electric Fire Safety

As a Part 139 airport, CSG is equipped with a fire rescue station on its premises. To ensure the safety of all parties involved, airport management should collaborate with Aircraft Rescue and Firefighting (ARFF) personnel to make them aware of the distinct fire response traits of electric aircraft. A protocol for ARFF response to such aircraft should be established in coordination with the onsite fire response team, with top priority given to the safety of pilots, passengers, staff, and neighboring infrastructure.

Supporting Infrastructure

Weather

CSG has an ASOS onsite. No additional weather infrastructure is needed to support AAM at this time.

High-speed Data/Broadband

High-speed data is not necessary but is a standard for site readiness. If CSG does not have this infrastructure, the airport should explore upgrading internet lines to provide this.

ADS-B

ADS-B capability is required in Class A, Class B, and Class C airspace. CSG is Class D airspace, which means that aircraft do not need ADS-B capabilities to operate at the airport or in its airspace. Still, it is prudent for CSG to acquire an ADS-B receiver if it does not already have one, to future-proof the facility as the use of ADS-B grows in scope.

Overall Compatibility and Next Steps

In summary, Columbus Airport is fully capable of accommodating AAM aircraft with some necessary preparations. Since the airport has ample capacity, there is no need to construct new landing infrastructure for electric aircraft like eVTOLs, as they can use the existing infrastructure. However, segregating these aircraft from the current infrastructure is an option, and several potential vertiport sites that meet the design criteria from EB 105 have been suggested for further evaluation.

Installing an electric charging station at CSG would allow these aircraft to recharge while at the airport. Various potential charging sites have been identified, with consideration given to access to existing electric lines and terminal connectivity. Although there is currently no fire safety guidance for electric aircraft from the NFPA, CSG has an onsite fire response team and should collaborate with them to develop a protocol for electric fire hazards. Lastly, CSG has weather observation infrastructure and should strive to develop any additional supporting infrastructure it may need, such as high-speed data/broadband and ADS-B receivers.

Dalton Municipal Airport

Airport Capacity and Landing Infrastructure

To determine if eVTOLs at Dalton Municipal Airport (DNN) would need segregated landing areas or if they should operate via existing runways, the airport's current annual operations were compared to its estimated annual service volume.

DNN has one runway: RWY 14/32 and has a full parallel taxiway as well as several connector taxiways. Using AC 150/5060-5, an approximate ASV at DNN can be determined.

Based on the current runway configuration, the minimum ASV is approximately 195,000. (Federal Aviation Administration, 1983) There are two estimates of DNN's existing operations: the FAA Airport Data Inventory Program (ADIP) and the FAA Terminal Area Forecast (TAF) for 2022. As per ADIP, the airport has 23,100 annual operations, and in this case that figure matches the TAF. (Federal Aviation Administration, 2022) Both estimates indicate that the airport is operating at 12 percent of its ASV. FAA Order 5090.5, Formulation of the NPIAS and ACIP, states that planning for added capacity should start at 60 percent ASV, and development should occur at 80 percent of ASV. (Federal Aviation Administration, 2019) Based on these numbers, annual operations at DNN would have to increase from 23,100 operations to 117,000 operations. Therefore, eVTOL aircraft could utilize the existing runways for takeoff and landing without overwhelming the existing aviation capacity at DNN.

Aside from DNN's runway, the airport also has a marked helicopter landing area near a tie-down area in the center of the apron. According to FAA Traffic Flow Management System Counts (TFMSC) data from June 1, 2022, to May 31, 2023, there were just two helicopter operations at DNN. A breakdown of these operations is documented in **Table 2-4**. It's important to keep in mind that FAA TFMSC data doesn't cover all helicopter activity at DNN, particularly flights conducted under visual flight rules. This means that the number of flights recorded may not fully represent the total helicopter traffic at the airport.

Table 2-4: Helicopter Operations at DNN

User Class	Operations June 2022 - May 2023	Percentage of Total
Military	1	50%
General Aviation	1	50%
Sum of Ops	**2**	**100%**

Source: (Federal Aviation Administration, 2023), Woolpert Analysis

According to measurements on Google Earth, the TLOF has a diameter of 20 feet, the FATO has a diameter of 40 feet (including the TLOF) and the Safety Area has a diameter of 65 feet (including the FATO and TLOF). This means that the existing dimensions fall short of the dimensions specified for an agnostic eVTOL in EB 105.

The surrounding pavement is paved and clear of obstacles. Theoretically, eVTOL operations could take place in this area, though the area falls within the vertiport minimum distance zone for the adjacent runway and would not meet requirements to that distance. This will be explained later in this report as the site is analyzed further. EB 105 dimensions are overlayed onto the existing TLOF dimensions in **Figure 2-9.**

Figure 2-9: DNN Helicopter Landing Area Overlay (EB 105 Dimensions)

Source: Google Earth, Woolpert Analysis

Should DNN choose to build a vertiport onsite to accommodate eVTOLs, there are several key factors to consider, including locations to avoid and locations that are more compatible. Locations to avoid include:

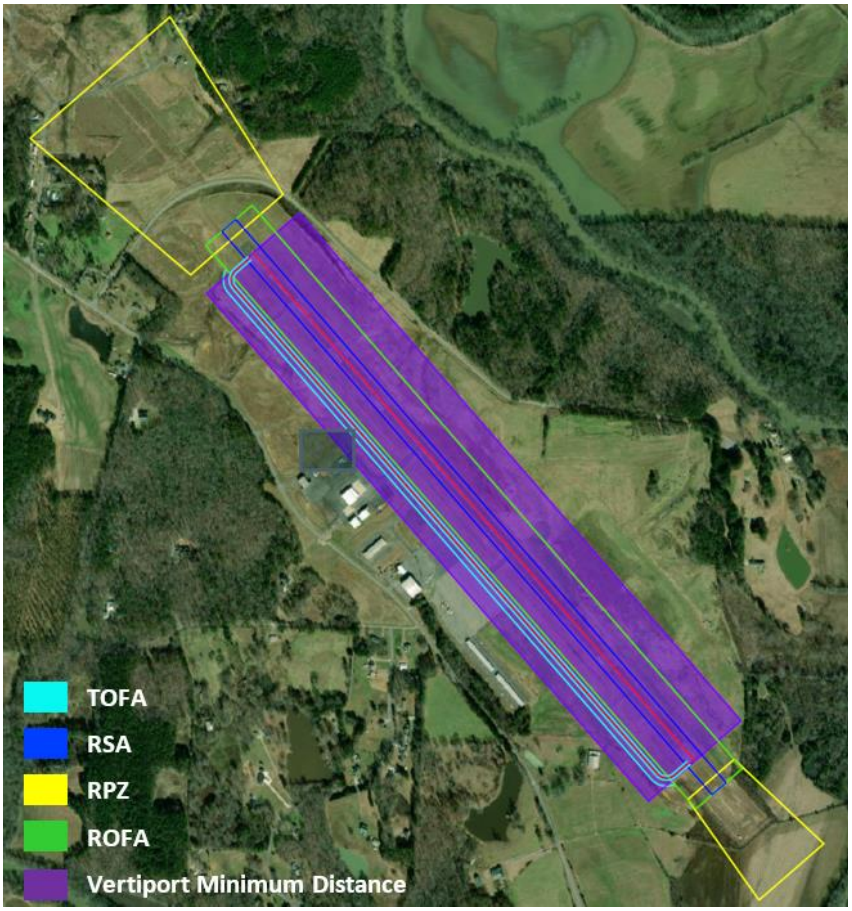
- Sites that interfere with the operation of existing aircraft operations, including taxiing, takeoff, and landing
- Sites that overlap or are encompassed by critical airport design surfaces and areas, including the runway protection zone, runway safety area, runway object-free area, and taxiway object-free area
- Siting which is less than the minimum distance from the runway based on the weight of the airport's critical aircraft, as referenced in EB 105

More compatible locations include those which:

- Minimize the distance needed to taxi the aircraft for passenger pickup and drop-off
- Minimize the distance needed to reach the electric aircraft charging station
- Minimize the distance needed to reach tiedown or hangar parking areas

To determine the viability of establishing a new landing area dedicated to eVTOL aircraft, the airport design surfaces mentioned above were mapped out to identify areas that would need to be avoided. These surfaces are shown in **Figure 2-10.**

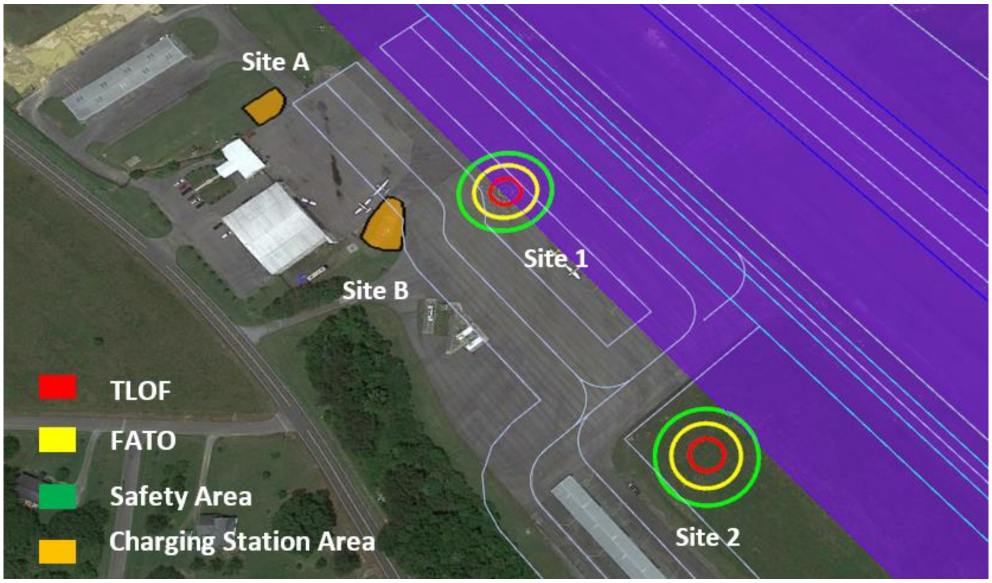
Figure 2-10: DNN Critical Airport Design Components



Source: Google Earth, DNN Airport Layout Plan, Woolpert Analysis

Once these areas are mapped, more compatible areas for vertiport siting can be identified. The planning team identified two potential areas for vertiports and electric aircraft charging stations at DNN. These areas are shown in **Figure 2-11** below. The areas shown include geometry for the TLOF, FATO, and Safety Area utilizing the 50-foot, 100-foot, and 150-foot diameter parameters specified earlier in this report. The siting of these areas was drawn with planning-level precision; more precise siting efforts would be conducted with further study should the airport choose to proceed with the development of such a site.

Figure 2-11: Potential Charging and Vertiport Site Locations



Source: Google Earth, Woolpert Analysis

The first option for locating a vertiport at DNN is an interim measure to simply expand and mark the existing helicopter landing area to accommodate eVTOLs. While the site would not meet EB 105 criteria as an onsite vertiport, it is a simple measure that could be undertaken with minimal effort. A facility here would facilitate eVTOL traffic in a very similar way to how helicopters operate at these TLOFs today. This site is adjacent to the airport's main apron area, providing the landing site with immediate access to the airport terminal for passenger pickup and drop-off. Overall, this site provides easy access to the airport terminal as well as potential charging stations.

The second option is to locate the vertiport southeast of the main apron, in front of the T-hangars on the south side of the airport. This site fits outside of the minimum vertiport distance from EB 105, and the TLOF and FATO are both clear of airport safety areas and object free areas. This area is farther away from the airport terminal and potential charging sites, but it is generally clear of obstacles and could operate without interrupting traffic on the airport apron or runway.

Three additional considerations apply for each of these sites: lighting, fencing, and signage. Engineering Brief 105 specifies that vertiport lighting is required for nighttime operation. Fencing should be installed outside of the safety area to deter malicious actors, and a vertiport caution sign should be erected at all access points. Additional details regarding lighting, fencing, and signage requirements and guidance for vertiports can be found in Chapter 3.5 of EB 105.

Electric Aircraft Charging

The planning team also identified two potential electric charging station sites. Charging Site A is located on a grass area just northwest of the main apron by the airport terminal, and Charging Site B is located to the southeast of the airport terminal on the apron adjacent to the conventional hangar nearby. These sites are shown above in **Figure 2-11.**

The benefits of Charging Site A are its location directly next to the airport terminal as a site in this location would allow seamless access for eVTOL passengers to deplane, enter the terminal, and for the aircraft to charge, all in one location at the airport. Additionally, the proximity of the site to the existing buildings and roads at the airport means that electric power is nearby and would not require significant additional power lines to provide electrical power to the charging station

The benefits of Site B are its closer to either of the vertiport sites and the connector taxiways. It is also adjacent to a nearby hangar and thus likely has some existing power nearby. There appears to be use in that location, so the existing use would have to be evaluated and either planned around or moved.

At this time, installing one electric charging station at DNN is a prudent step to ensuring DNN is compatible and can support electric aircraft operations. To do so, DNN should consult with local utilities to understand their existing electric supply and capacity, and work to increase that capacity if needed. A more thorough siting selection exercise will identify the exact redesign and utilities needed to enable the charging station.

Electric Fire Safety

DNN is not a Part 139 airport, so it is not required to have onsite ARFF. To ensure the safety of all parties involved, airport management should collaborate with the local firefighting agency to make them aware of electric aircraft and develop a protocol for a response to such aircraft. This protocol should be established in coordination with the airport management, local firefighters, and consultation with NFPA guidance as it is released. The protocol should give top priority to the safety of pilots, passengers, staff, and neighboring infrastructure.

Supporting Infrastructure

Weather

DNN has an ASOS onsite. No additional weather infrastructure is needed to support AAM at this time.

High-speed Data/Broadband

High-speed data is not necessary but is a standard for site readiness. If DNN does not have this infrastructure, the airport should explore upgrading internet lines to provide this.

ADS-B

ADS-B capability is required in Class A, Class B, and Class C airspace. DNN is Class E airspace, which means that aircraft do not need ADS-B capabilities to operate at the airport or in its airspace. Still, it is prudent for DNN to acquire an ADS-B receiver if it does not already have one, to future-proof the facility as the use of ADS-B grows in scope.

Overall Compatibility and Next Steps

In summary, Dalton Municipal Airport is fully capable of accommodating AAM aircraft with some necessary preparations. Since the airport has ample capacity, there is no need to construct new landing infrastructure for electric aircraft like eVTOLs, as they can use the existing infrastructure. However, segregating these aircraft from the current infrastructure is an option, and several potential vertiport sites that meet the design criteria from EB 105 have been suggested for further evaluation.

Installing an electric charging station at DNN would allow these aircraft to recharge while at the airport. Various potential charging sites have been identified, with consideration given to access to existing electric lines and terminal connectivity. Although there is currently no fire safety guidance for electric aircraft from the NFPA at this time, DNN should collaborate with the local firefighting agencies to develop a protocol for electric fire hazards. Lastly, DNN has weather observation infrastructure and should strive to develop any additional supporting infrastructure it may need, such as high-speed data/broadband and ADS-B receivers.

DeKalb-Peachtree Airport

Airport Capacity and Landing Infrastructure

To determine if eVTOLs at DeKalb-Peachtree Airport (PDK) would need segregated landing areas or if they should operate via existing runways, the airport's current annual operations were compared to its estimated annual service volume.

PDK has three runways: Runway 3R/21L, the primary runway, Runway 16/34, the crosswind runway, and RUNWAY 3L/21R, a secondary runway parallel to Runway 3R/21L. The runways have full parallel taxiways with several connectors. Using AC 150/5060-5, an approximate ASV at PDK can be determined.

Based on the current runway configuration, the minimum ASV is approximately 275,000 (Federal Aviation Administration, 1983). There are two estimates of AGS's existing operations: the FAA ADIP and the FAA TAF for 2022. As per ADIP, the airport has 158,104 annual operations, (Federal Aviation Administration, 2023) and the TAF reports 187,097 annual operations (Federal Aviation Administration, 2022). The estimates indicate that the airport is operating at 10-12 percent of its ASV. FAA Order 5090.5, Formulation of the NPIAS and ACIP, states that planning for added capacity should start at 60 percent ASV, and development should occur at 80 percent of ASV (Federal Aviation Administration, 2019). Based on these numbers, annual operations at PDK already exceed 60 percent of ASV and thus exploring segregated sites for eVTOL infrastructure may be needed if the airport expects eVTOL operations to take place at the airport.

According to FAA TFMSC data from June 1, 2022, to May 31, 2023, there were 59 helicopter operations at PDK. A breakdown of these operations is documented in **Table 2-5**. It's important to keep in mind that FAA TFMSC data doesn't cover all helicopter activity at PDK, particularly flights conducted under visual flight rules. This means that it is possible that additional helicopter activity occurred during this period, even if it wasn't captured by TFMSC.

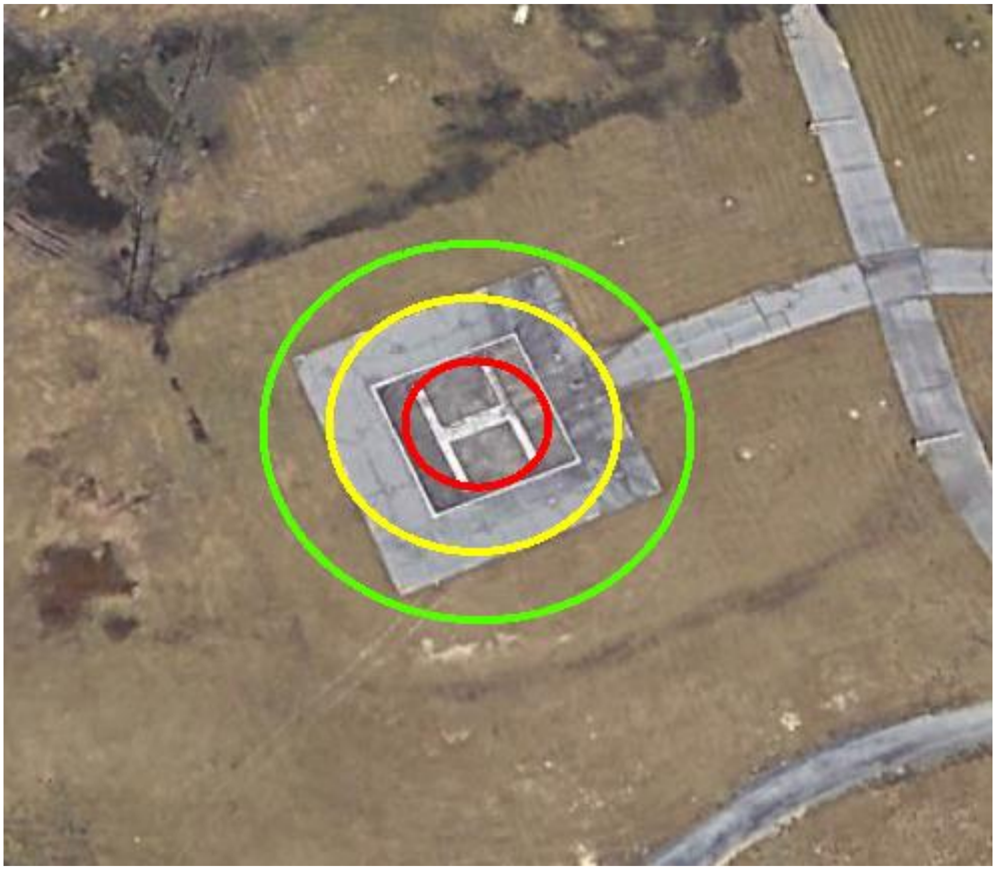
Table 2-5: Helicopter Operations at PDK

User Class	Operations June 2022 - May 2023	Percentage of Total
Air Carrier	9	15%
Air Taxi	1	2%
General Aviation	24	41%
Military	24	41%
Other	1	2%
Sum of Ops	**59**	**100%**

Source: (Federal Aviation Administration, 2023), Woolpert Analysis

PDK does have a heliport on its property, located in the RPZ north of RWY 16/34 and shown in **Figure 2-12.** According to measurements on Google Earth, the TLOF is has a diameter of 50 feet, the FATO has a diameter of 100 feet (including the TLOF) and there is not a clearly marked Safety Area. However, the space surrounding the FATO is clear of obstacles and thus the space is adequate for eVTOL operations based on the dimensions specified in EB 105.

Figure 2-12: PDK Helicopter Landing Area Overlay (EB 105 Dimensions)



Source: Google Earth, Woolpert Analysis

Should PDK choose to build a vertiport onsite to accommodate eVTOLs, there are several key factors to consider, including locations to avoid and locations that are more compatible. Locations to avoid include:

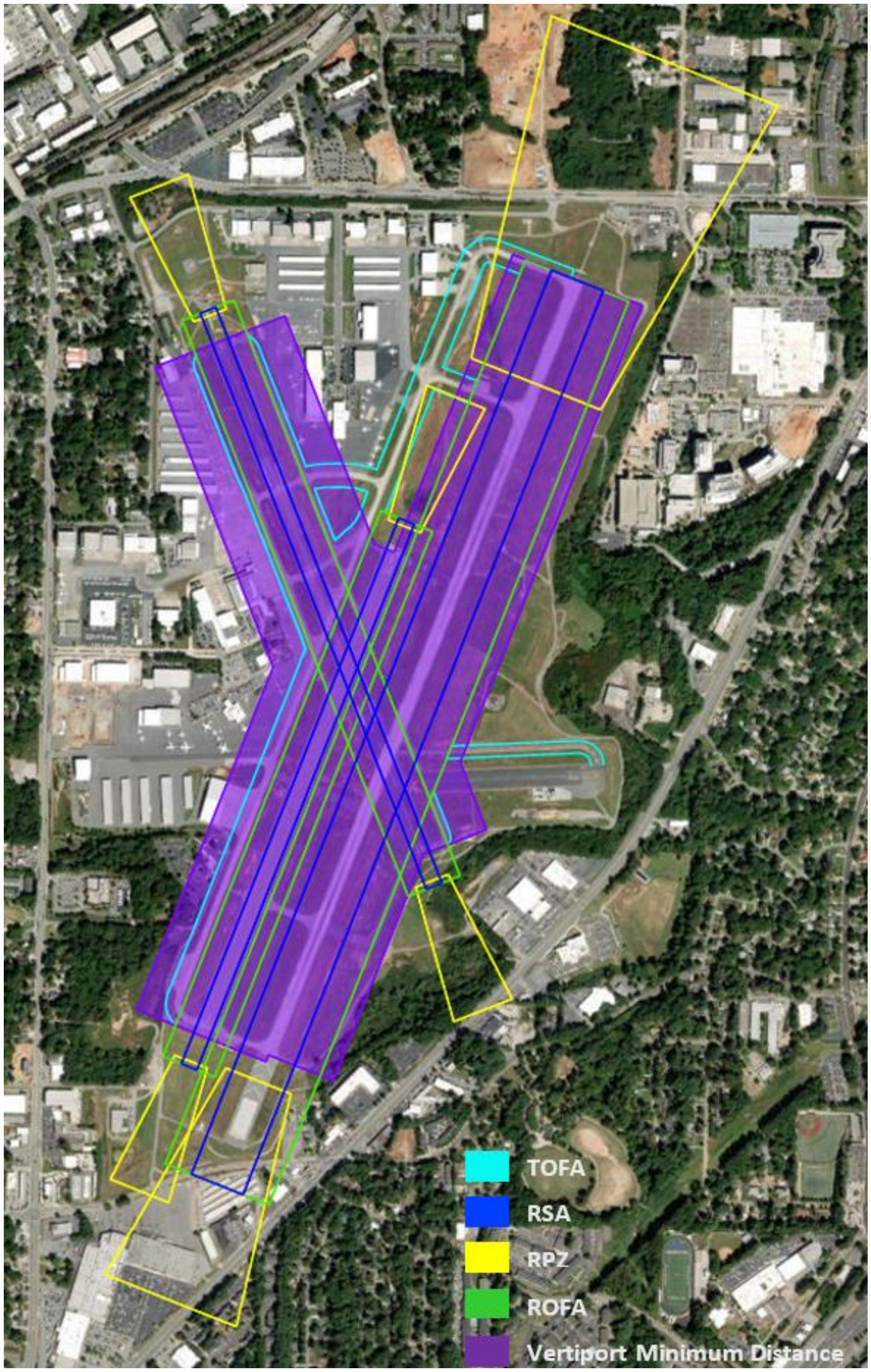
- Sites that interfere with the operation of existing aircraft operations, including taxiing, takeoff, and landing.
- Sites that overlap or are encompassed by critical airport design surfaces and areas, including the runway protection zone, runway safety area, runway object-free area, and taxiway object-free area.
- Siting which is less than the minimum distance from the runway based on the weight of the airport's critical aircraft, as referenced in EB 105.

Locations that are more compatible include those which:

- Minimize the distance needed to taxi the aircraft for passenger pickup and drop-off.
- Minimize the distance needed to reach the electric aircraft charging station.
- Minimize the distance needed to reach tiedown or hangar parking areas.

To determine the viability of establishing a new landing area dedicated to eVTOL aircraft, the airport design surfaces mentioned above were mapped out to identify areas that would need to be avoided. These surfaces are shown in **Figure 2-13**.

Figure 2-13: PDK Critical Airport Design Components



Source: Google Earth, PDK Airport Layout Plan, Woolpert Analysis

Once these areas are mapped, more compatible areas for vertiport siting can be identified. In this instance, however, there appears to be extremely limited space for a vertiport. Nearly all pavement outside the site safety areas is currently in use or would obstruct access to hangars in proximity.

The existing heliport on site is in a problematic location as well. EB 105 states that any vertiport located on airport property should be outside of the RPZ. Because the heliport is directly in the RPZ for Runway 16/34, it would not be advisable to host any significant number of operations at this site, regardless of the aircraft type.

In summary, locating a vertiport at PDK would be a difficult task that would require significant planning and a likely redesign of existing facilities. While PDK is not at capacity, it is approaching the point for which planning for additional capacity should begin. At this time, any eVTOL operations that take place at PDK would take place on existing infrastructure. In low volumes, the impact of these aircraft is minimal. Should operations scale, planning efforts may be needed to identify opportunities to mitigate the impact to capacity. Coordination between airport management, airport FBOs, and the air traffic control tower will be an important step for incorporating eVTOL operations at the PDK.

Electric Aircraft Charging

Installing an electric charger would allow PDK to accommodate electric aircraft operations on their existing infrastructure, at least in the near term while the count of operations remains low.

The planning team identified two potential electric charging station sites, shown in **Figure 2-14.**

Figure 2-14: PDK Potential Charging Sites

Source: Google Earth, Woolpert Analysis

Charging Site A is located at the Signature Aviation FBO on the north side of the airport. Locating a charger outside an FBO is a logical step for a general aviation airport. In addition to this, street-view imagery from Google Earth demonstrated that helicopters park on this part of the ramp, at least for some period. Thus, siting a charging station in the vicinity may allow for eVTOLs to be handled similarly to helicopters.

Charging Site B is located at another major FBO at PDK, Atlantic Aviation. Similar to the explanation above, locating a charger near this FBO would allow for the FBO to service eVTOL aircraft into their existing operations model.

In both instances, the charger may be able to access the auto parking lot across from the apron and allow for electric cars to charge in those spaces in times when an eVTOL is not using the charger.

At this time, installing one electric charging station at PDK is a prudent step to ensure that PDK is compatible and can support electric aircraft operations. To do so, PDK should consult with local utilities to understand their existing electric supply and capacity, and work to increase that capacity if needed. A more thorough siting selection exercise will identify the exact redesign and utilities needed to enable the charging station.

Electric Fire Safety

PDK is equipped with a fire rescue station on its premises. To ensure the safety of all parties involved, airport management should collaborate with these personnel to make them aware of the distinct fire response traits of electric aircraft. A protocol for fire response to such aircraft should be established in coordination with the onsite fire response team, with top priority given to the safety of pilots, passengers, staff, and neighboring infrastructure.

Supporting Infrastructure

Weather

PDK has an ASOS onsite. No additional weather infrastructure is needed to support AAM at this time.

High-speed Data/Broadband

High-speed data is not necessary but is a standard for site readiness. If PDK does not have this infrastructure, the airport should explore upgrading internet lines to provide this.

ADS-B

ADS-B capability is required in Class A, Class B, and Class C airspace. PDK is in Class D airspace, which means that aircraft do not need ADS-B capabilities to operate at the airport or in its airspace. However, PDK is within the Mode C veil for ATL’s Class B airspace, and thus operations taking off from their airport are required to have an ADS-B transponder to operate in the airspace. Thus, it is presumed that PDK has an ADS-B receiver already, and if not, it should work to acquire one.

Overall Compatibility and Next Steps

In summary, Dekalb-Peachtree is fully capable of accommodating AAM aircraft with some necessary preparations, though it may need to identify solutions to increase capacity should conventional operations increase or eVTOL operations reach a high volume. At this time, airport staff should coordinate with FBOs and the air traffic control tower at the airport to develop a protocol for eVTOL operations.

Installing an electric charging station at PDK would allow these aircraft to recharge while at the airport. Various potential charging sites have been identified, with consideration given to access to existing electric lines and terminal connectivity. Although there is currently no fire safety guidance for electric aircraft from the NFPA at this time, PDK should collaborate with their onsite firefighting team to develop a protocol for electric fire hazards. Lastly, PDK has weather observation infrastructure and should strive to develop any additional supporting infrastructure it may need.

Fulton County Executive Airport

Airport Capacity and Landing Infrastructure

To determine if eVTOLs at Fulton County Executive Airport (FTY) would need segregated landing areas or if they should operate via existing runways, the airport's current annual operations were compared to its estimated annual service volume.

FTY has two runways: Runway 8/24, the primary runway, and Runway 14/32. Each runway has a full parallel taxiway as well as several connector taxiways. Using AC 150/5060-5, an approximate ASV at FTY can be determined.

Based on the current runway configuration, the minimum ASV is approximately 200,000 (Federal Aviation Administration, 1983). There are two estimates of FTY's existing operations: the FAA Airport Data Inventory Program (ADIP) and the FAA Terminal Area Forecast (TAF) for 2022. As per ADIP, the airport has 79,449 annual operations, (Federal Aviation Administration, 2023) while the TAF reports 79,860 annual operations. (Federal Aviation Administration, 2022) Both estimates indicate that the airport is operating at 40 percent of its ASV. FAA Order 5090.5, Formulation of the NPIAS and ACIP, states that planning for added capacity should start at 60 percent ASV, and development should occur at 80 percent of ASV. (Federal Aviation Administration, 2019) Based on these numbers, annual operations at FTY would have to increase from 79,860 operations to 120,000 operations. Therefore, eVTOL aircraft could utilize the existing runways for takeoff and landing without overwhelming the existing aviation capacity at FTY, at least for some time.

Aside from FTY's runway, the airport also has a marked helicopter landing area near a tie-down area in the center of the apron. According to FAA Traffic Flow Management System Counts (TFMSC) data from June 1, 2022, to May 31, 2023, there were thirteen helicopter operations at FTY. A breakdown of these operations is documented in **Table 2-6.** It's important to keep in mind that FAA TFMSC data doesn't cover all helicopter activity at FTY, particularly flights conducted under visual flight rules. This means that the number of flights recorded may not fully represent the total helicopter traffic at the airport.

Table 2-6: Helicopter Operations at FTY

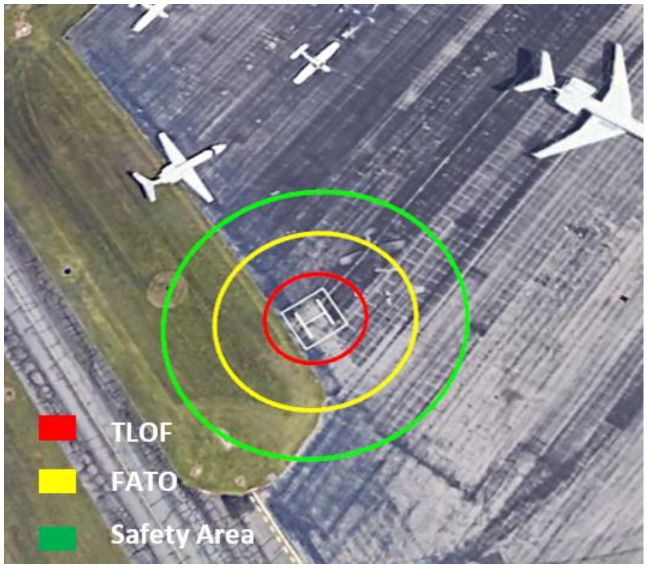
User Class	Operations June 2022 - May 2023	Percentage of Total
Military	4	31%
General Aviation	2	15%
Other	7	54%
Sum of Ops	**13**	**100%**

Source: (Federal Aviation Administration, 2023), Woolpert Analysis

According to measurements on Google Earth, the helicopter landing area has a diameter of 25 ft., and there is no marked FATO or Safety Area. This means that the existing dimensions fall short of the dimensions specified for an agnostic eVTOL in EB 105.

The surrounding pavement is paved and clear of obstacles. Theoretically, eVTOL operations could take place in this area, though the area falls within the vertiport minimum distance zone for the adjacent runway and would not meet requirements to that distance. EB 105 dimensions are overlayed onto the existing TLOF dimensions in **Figure 2-15.**

Figure 2-15: FTY Helicopter Landing Area Overlay (EB 105 Dimensions)



Source: Google Earth, Woolpert Analysis

Should FTY choose to build a vertiport onsite to accommodate eVTOLs, there are several key factors to consider, including locations to avoid and locations that are more compatible. Locations to avoid include:

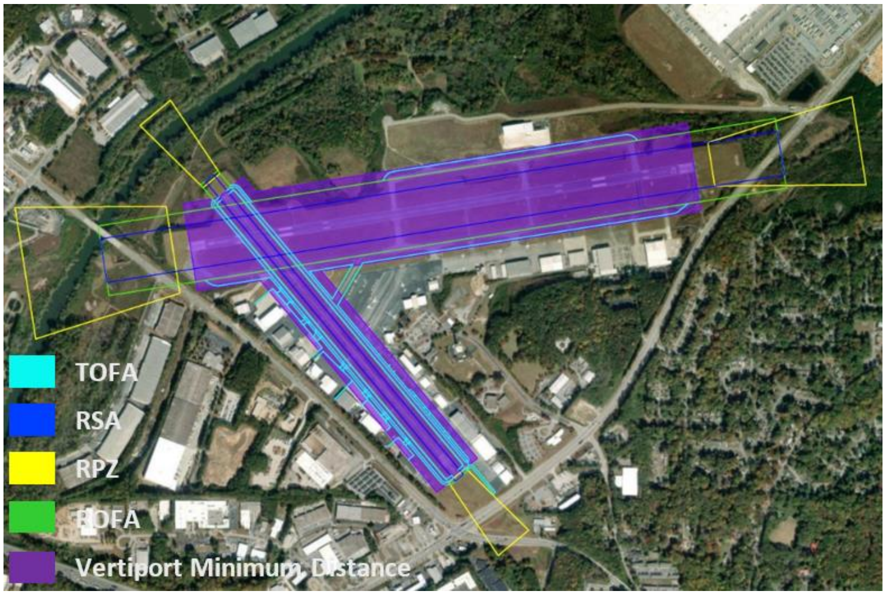
- Sites that interfere with the operation of existing aircraft operations, including taxiing, takeoff, and landing
- Sites that overlap or are encompassed by critical airport design surfaces and areas, including the runway protection zone, runway safety area, runway object-free area, and taxiway object-free area
- Siting which is less than the minimum distance from the runway based on the weight of the airport's critical aircraft, as referenced in EB 105

More compatible locations include those which:

- Minimize the distance needed to taxi the aircraft for passenger pickup and drop-off
- Minimize the distance needed to reach the electric aircraft charging station
- Minimize the distance needed to reach tiedown or hangar parking areas

To determine the viability of establishing a new landing area dedicated to eVTOL aircraft, the airport design surfaces mentioned above were mapped out to identify areas that would need to be avoided. These surfaces are shown in **Figure 2-16**.

Figure 2-16: FTY Critical Airport Design Components



Source: Google Earth, FTY Airport Layout Plan, Woolpert Analysis

FTY recently published a master plan for the airport that includes considerations for an onsite vertiport. The master plan suggests that the vertiport should be located on the central apron so that it can function as a common-use facility that utilizes the FBO for service just like traditional aircraft do today. It also states that the design aircraft for the vertiport at FTY is based on the Mobi eVTOL (now referred to as the Sigma-6) designed by Airspace Experience Technologies. It is unclear how this decision was reached, but it is important to note that the master plan states the controlling dimension for this aircraft is 40 ft. – smaller than most early entrant eVTOLs. As explained in Error! Reference source not found.**,** vertiports on public use airports should b e designed to be agnostic to support the needs of as many eVTOL designs as possible. Thus, it is recommended that any vertiport built at FTY should meet a controlling dimension of 50 ft. instead of 40 ft.

The master provides several alternatives for FTY to consider locating the vertiport. These sites are displayed in **Figure 2-17.**

Figure 2-17: FTY Master Plan Vertiport Alternatives

Source: FTY Master Plan 2023

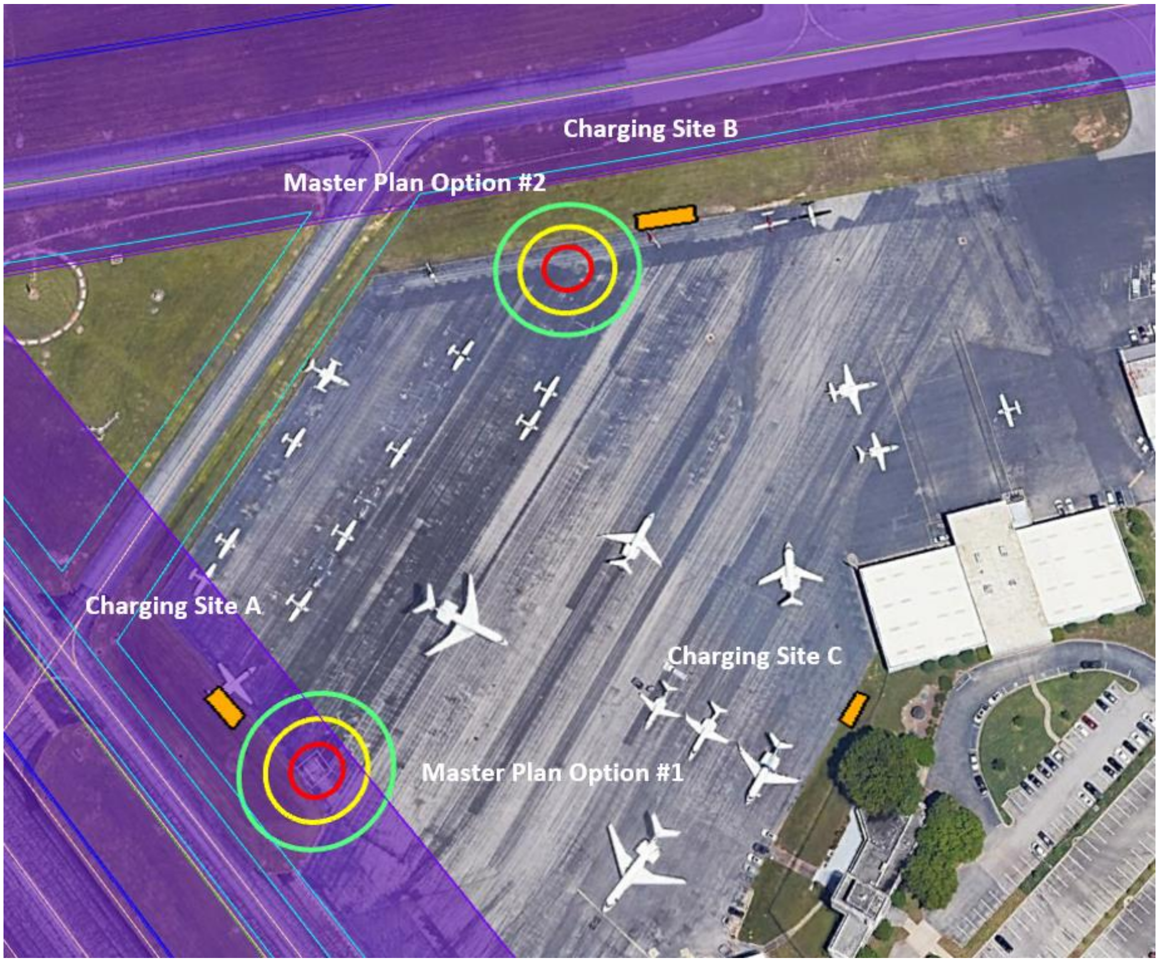
Option 1 falls within the vertiport minimum distance for RWY 14/32. While eVTOLs could land "at their own risk" on a non-movement area at the airport, establishing an official vertiport site at this location could be problematic due to the distance from RWY 14/32.

Option 2 is described as near the same location as the existing helipad at FTY, though Google Earth imagery suggests the current helipad is in the same location as Option 1. This site is outside the vertiport minimum distance for RWY 8/26 and appears to be a feasible option.

Option 3 is outside of this vertiport minimum distance for both runways, but it is pushed up against the airport terminal and would likely inhibit the use of this space for other airport operations, thus it is an inferior option.

Ultimately, the master plan suggests Option 1 is the best because it is a less utilized part of the ramp than the other two options. Due to the distance vertiport minimum distance standards from EB 105, Option 2 should be given equal, if not more, consideration than Option 2. Both options are mapped along with the critical airport design components in **Figure 2-18**.

Figure 2-18: FTY Vertiport Options 1 & 2



Source: Google Earth, Woolpert Analysis

Three additional considerations apply for each of these sites: lighting, fencing, and signage. Engineering Brief 105 specifies that vertiport lighting is required for nighttime operation. Fencing should be installed outside of the safety area to deter malicious actors, and a vertiport caution sign should be erected at all access points. Additional details regarding lighting, fencing, and signage requirements and guidance for vertiports can be found in Chapter 3.5 of EB 105.

Electric Aircraft Charging

The planning team identified three potential electric charging station sites, shown in **Figure 2-18**. Charging Site A is located adjacent to Vertiport Site Option 1. Should FTY choose to develop Site 1 into a vertiport, this location would ensure easy access to charging stations. eVTOLs would be able to land, taxi to the parking position, and charge, without significant taxi time. Charging Site B is located adjacent to Option 2. Should FTY develop this site into a vertiport, a charger in this location would allow for the same easy access that Site A does for the first vertiport site. Charging Site C is farther away from either of the vertiport sites, but it is near the airport terminal building. eVTOLs would have to taxi to the airport terminal to drop off passengers anyway, so a site in this location would allow charging to take place near that pick-up/drop-off location. In addition, it is closer to existing roadways and buildings and thus is likely closer to existing electric power lines, possibly minimizing the cost of utility development to support the charger.

At this time, installing one electric charging station at FTY is a prudent step to ensuring FTY is compatible and can support electric aircraft operations. To do so, FTY should consult with local utilities to understand their existing electric supply and capacity, and work to increase that capacity if needed. A more thorough siting selection exercise will identify the exact redesign and utilities needed to enable the charging station.

Electric Fire Safety

FTY is not a Part 139 airport, so it is not required to have onsite ARFF. To ensure the safety of all parties involved, airport management should collaborate with the local firefighting agency to make them aware of electric aircraft and develop a protocol for a response to such aircraft. This protocol should be established in coordination with the airport management, local firefighters, and consultation with NFPA guidance as it is released. The protocol should give top priority to the safety of pilots, passengers, staff, and neighboring infrastructure.

Supporting Infrastructure

Weather

FTY has an AWOS-3PT onsite. No additional weather infrastructure is needed to support AAM at this time.

High-speed Data/Broadband

High-speed data is not necessary but is a standard for site readiness. If FTY does not have this infrastructure, the airport should explore upgrading internet lines to provide this.

ADS-B

ADS-B capability is required in Class A, Class B, and Class C airspace. FTY is Class D airspace, which means that aircraft do not need ADS-B capabilities to operate at the airport or in its airspace. However, FTY is within the Mode C veil for ATL's Class B airspace, and thus operations taking off from their airport are required to have an ADS-B transponder to operate in the airspace. Thus, it is presumed that FTY has an ADS-B receiver already, and if not, it should work to acquire one.

Overall Compatibility and Next Steps

In summary, Fulton County Executive Airport is fully capable of accommodating AAM aircraft with some necessary preparations. Since the airport has ample capacity, there is no need to construct new landing infrastructure for electric aircraft like eVTOLs, as they can use the existing infrastructure. However, segregating these aircraft from the current infrastructure is an option, and several potential vertiport sites that meet the design criteria from EB 105 have been suggested for further evaluation.

Installing an electric charging station at FTY would allow these aircraft to recharge while at the airport. Various potential charging sites have been identified, with consideration given to access to existing electric lines and terminal connectivity. Although there is currently no fire safety guidance for electric aircraft from the NFPA at this time, FTY should collaborate with the local firefighting agencies to develop a protocol for electric fire hazards. Lastly, FTY has weather observation infrastructure and should strive to develop any additional supporting infrastructure it may need, such as high-speed data/broadband and ADS-B receivers.

Jackson County Airport

Airport Capacity and Landing Infrastructure

To determine if eVTOLs at JCA would need segregated landing areas or if they should operate via existing runways, the airport's current annual operations were compared to its estimated annual service volume.

JCA has one runway: RWY 17/35. The runway has a full parallel taxiway with several connectors. Using AC 150/5060-5, an approximate ASV at JCA can be determined.

Based on the current runway configuration, the minimum ASV is approximately 195,000 (Federal Aviation Administration, 1983). There are two estimates of AGS's existing operations: the FAA ADIP and the FAA TAF for 2022. As per ADIP, the airport has 35,000 annual operations, (Federal Aviation Administration, 2023) and the TAF also reports 35,000 annual operations (Federal Aviation Administration, 2022). Both estimates indicate that the airport is operating at 18 percent of its ASV. FAA Order 5090.5, Formulation of the NPIAS and ACIP, states that planning for added capacity should start at 60 percent ASV, and development should occur at 80 percent of ASV (Federal Aviation Administration, 2019). Based on these numbers, annual operations at JCA would have to increase from 35,000 operations to 117,000 operations. Therefore, eVTOL aircraft could utilize the existing runways for takeoff and landing without overwhelming the existing aviation capacity at JCA, at least for a significant period.

According to FAA TFMSC data from June 1, 2022, to May 31, 2023, there were no helicopter operations at JCA. It's important to keep in mind that FAA TFMSC data doesn't cover all helicopter activity at JCA, particularly flights conducted under visual flight rules. This means that it is possible that helicopter activity occurred during this period, even if it wasn't captured by TFMSC. Regardless, JCA does not have a designated landing area and thus helicopters operating at the facility would land on the runway and air taxi to the apron or land on the apron itself. This protocol could also be established for eVTOL aircraft.

Should JCA choose to build a vertiport onsite to accommodate eVTOLs, there are several key factors to consider, including locations to avoid and locations that are more compatible. Locations to avoid include:

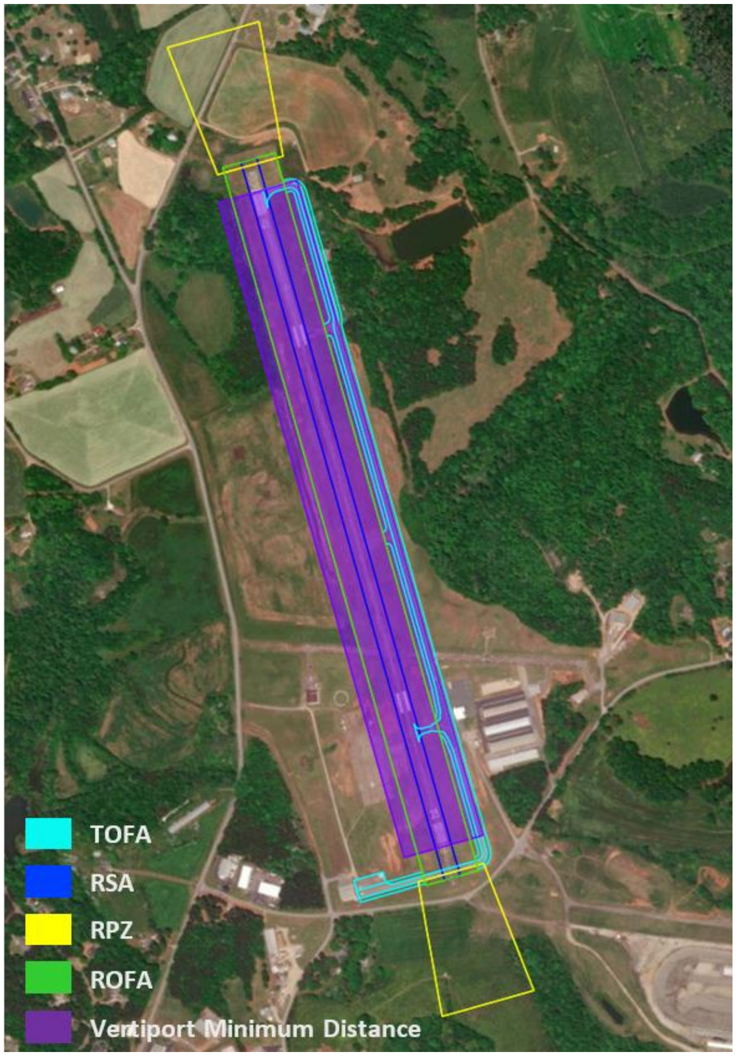
- Sites that interfere with the operation of existing aircraft operations, including taxiing, takeoff, and landing.
- Sites that overlap or are encompassed by critical airport design surfaces and areas, including the runway protection zone, runway safety area, runway object-free area, and taxiway object-free area.
- Siting which is less than the minimum distance from the runway based on the weight of the airport's critical aircraft, as referenced in EB 105.

More compatible locations include those which:

- Minimize the distance needed to taxi the aircraft for passenger pickup and drop-off.
- Minimize the distance needed to reach the electric aircraft charging station.
- Minimize the distance needed to reach tiedown or hangar parking areas.

To determine the viability of establishing a new landing area dedicated to eVTOL aircraft, the airport design surfaces mentioned above were mapped out to identify areas that would need to be avoided. These surfaces are shown in **Figure 2-19**.

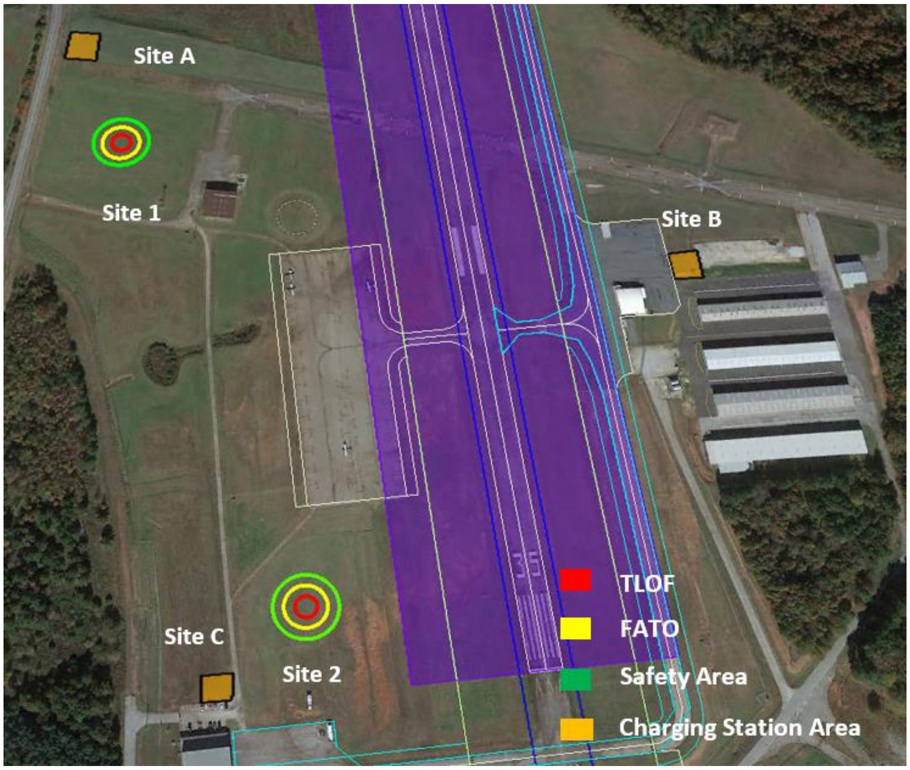
Figure 2-19: JCA Critical Airport Design Components



Source: Google Earth, JCA Airport Layout Plan, Woolpert Analysis

Once these areas are mapped, more compatible areas for vertiport siting can be identified. The planning team identified two potential areas for vertiports and three potential areas for electric aircraft charging stations at JCA. These areas are shown in **Figure 2-20** below. The areas shown include geometry for the TLOF, FATO, and Safety Area utilizing the 50-foot, 100-foot, and 150-foot diameter parameters specified earlier in this report. The siting of these areas was drawn with planning-level precision; more precise siting efforts would be conducted with further study should the airport choose to proceed with the development of such a site.

Figure 2-20: Potential Charging and Vertiport Site Locations



Source: Google Earth, Woolpert Analysis

Because of the significant canopy of trees and the existing development on the east side of the airport, both options for a vertiport are located on the west side of the airport. Site 1 is located farther north, away from existing development but with lots of room to expand if needed. Site 2 is located near the southwest hangar at the airport, closer to the existing fuel farm but potentially conflicting with future development based on the airport's ALP.

Site 1 is located northwest of the segmented circle at JCA and is relatively distant from the existing development. The site however would likely face minimal to no conflicts with the runway and existing facilities. However, because this site is located far from the existing development, additional taxiways or roadways may be needed to fully access the site.

The second option is to locate the vertiport just north of the existing fuel farm and southwest hangar. This area is closer to existing airport facilities but still fits outside of the minimum vertiport distance from EB 105, and the TLOF and FATO are both clear of airport safety areas and object free areas. Based on the ALP for the airport, there is already development planned for this location, so should the airport choose to build a vertiport in this location, those plans would have to change.

Three additional considerations apply for each of these sites: lighting, fencing, and signage. Engineering Brief 105 specifies that vertiport lighting is required for nighttime operation. Fencing should be installed outside of the safety area to deter malicious actors, and a vertiport caution sign should be erected at all access points. Additional details regarding lighting, fencing, and signage requirements and guidance for vertiports can be found in Chapter 3.5 of EB 105.

Electric Aircraft Charging

The planning team also identified two potential electric charging station sites. Charging Site A is located on a grass area on the northwest side of the airport. Charging Site B is located to the east of the runway near the existing terminal building. Charging Site C is located near the existing fuel farm near the southwest hangar. These sites are shown above in **Figure 2-20.**

The benefits of Charging Site A are its location directly next to Vertiport Site 1 and would be the best site should the airport construct a vertiport at that site. However, it is far from existing airport amenities and would require aircraft to taxi to the terminal and the charging station separately, on opposite sides of the runway. Because the site is located near a major roadway, power lines may already be close to the site.

Site B is likely the site that makes the most sense should JCA choose to rely on existing infrastructure. It is near the airport terminal and existing aprons and hangars. eVTOLs could land on the apron or runway, and taxi to this site where passengers could deplane.

A third site, Site C, was identified to provide another option for charging at JCA. This site is near the vertiport Site 2, west of the runway and near the southwest hangar. This site is near existing auto parking and could be utilized to support a charger that can charge both electric aircraft and electric cars.

At this time, installing one electric charging station at JCA is a prudent step to ensuring JCA is compatible and can support electric aircraft operations. To do so, JCA should consult with local utilities to understand their existing electric supply and capacity, and work to increase that capacity if needed. A more thorough siting selection exercise will identify the exact redesign and utilities needed to enable the charging station.

Electric Fire Safety

JCA is not a Part 139 airport, so it is not required to have onsite ARFF. To ensure the safety of all parties involved, airport management should collaborate with the local firefighting agency to make them aware of electric aircraft and develop a protocol for a response to such aircraft. This protocol should be established in coordination with the airport management, local firefighters, and consultation with NFPA guidance as it is released. The protocol should give top priority to the safety of pilots, passengers, staff, and neighboring infrastructure.

Supporting Infrastructure

Weather

JCA has an AWOS-3 onsite. No additional weather infrastructure is needed to support AAM at this time.

High-speed Data/Broadband

High-speed data is not necessary but is a standard for site readiness. If JCA does not have this infrastructure, the airport should explore upgrading internet lines to provide this.

ADS-B

ADS-B capability is required in Class A, Class B, and Class C airspace. JCA is Class E airspace, which means that aircraft do not need ADS-B capabilities to operate at the airport or in its airspace. Still, it is prudent for JCA to acquire an ADS-B receiver if it does not already have one, to future-proof the facility as the use of ADS-B grows.

Overall Compatibility and Next Steps

In summary, Jackson County Airport is fully capable of accommodating AAM aircraft with some necessary preparations. Since the airport has ample capacity, there is no need to construct new landing infrastructure for electric aircraft like eVTOLs, as they can use the existing infrastructure. However, segregating these aircraft from the current infrastructure is an option, and several potential vertiport sites that meet the design criteria from EB 105 have been suggested for further evaluation.

Installing an electric charging station at JCA would allow these aircraft to recharge while at the airport. Various potential charging sites have been identified, with consideration given to access to existing electric lines and terminal connectivity. Although there is currently no fire safety guidance for electric aircraft from the NFPA at this time, JCA should collaborate with the local firefighting agencies to develop a protocol for electric fire hazards. Lastly, JCA has weather observation infrastructure and should strive to develop any additional supporting infrastructure it may need, such as high-speed data/broadband and ADS-B receivers.

Middle Georgia Regional Airport

Airport Capacity and Landing Infrastructure

To determine if eVTOLs at Middle Georgia Regional Airport (MCN) would need segregated landing areas or if they should operate via existing runways, the airport's current annual operations were compared to its estimated annual service volume.

MCN has two runways: Runway 5/23, the primary runway; and Runway 14/32, the crosswind runway. The primary runway has a full parallel taxiway with several connectors. Using AC 150/5060-5, an approximate ASV at MCN can be determined.

Based on the current runway configuration, the minimum ASV is approximately 200,000 (Federal Aviation Administration, 1983). There are two estimates of AGS's existing operations: the FAA ADIP and the FAA TAF for 2022. As per ADIP, the airport has 20,661 annual operations, (Federal Aviation Administration, 2023) and the TAF reports 23,461 annual operations (Federal Aviation Administration, 2022). The estimates indicate that the airport is operating at 10-12 percent of its ASV. FAA Order 5090.5, Formulation of the NPIAS and ACIP, states that planning for added capacity should start at 60 percent ASV, and development should occur at 80 percent of ASV (Federal Aviation Administration, 2019). Based on these numbers, annual operations at MCN would have to increase from 23,461 operations to 120,000 operations. Therefore, eVTOL aircraft could utilize the existing runways for takeoff and landing without overwhelming the existing aviation capacity at MCN, at least for a significant period.

According to FAA TFMSC data from June 1, 2022, to May 31, 2023, there were 124 helicopter operations at MCN. A breakdown of these operations is documented in **Table 2-7.** It's important to keep in mind that FAA TFMSC data doesn't cover all helicopter activity at MCN, particularly flights conducted under visual flight rules. This means that it is possible that helicopter activity occurred during this period, even if it wasn't captured by TFMSC. Regardless, MCN does not have a designated landing area and thus helicopters operating at the facility would land on the runway and air taxi to the apron or land on the apron itself. This protocol could also be established for eVTOL aircraft.

Table 2-7: Helicopter Operations at MCN

User Class	Operations June 2022 - May 2023	Percentage of Total
Military	123	99%
General Aviation	1	1%
Sum of Ops	**124**	**100%**

Source: (Federal Aviation Administration, 2023), Woolpert Analysis

Should MCN choose to build a vertiport onsite to accommodate eVTOLs, there are several key factors to consider, including locations to avoid and locations that are more compatible. Locations to avoid include:

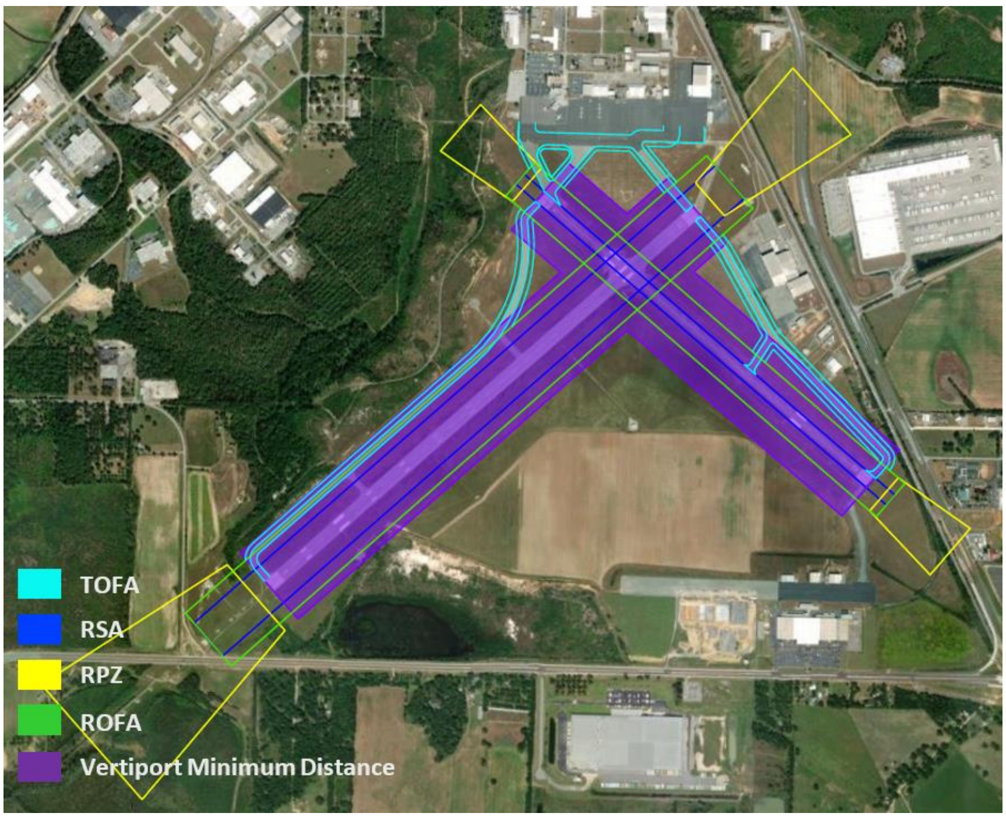
- Sites that interfere with the operation of existing aircraft operations, including taxiing, takeoff, and landing.
- Sites that overlap or are encompassed by critical airport design surfaces and areas, including the runway protection zone, runway safety area, runway object-free area, and taxiway object-free area.
- Siting which is less than the minimum distance from the runway based on the weight of the airport's critical aircraft, as referenced in EB 105.

More compatible locations include those which:

- Minimize the distance needed to taxi the aircraft for passenger pickup and drop-off.
- Minimize the distance needed to reach the electric aircraft charging station.
- Minimize the distance needed to reach tiedown or hangar parking areas.

To determine the viability of establishing a new landing area dedicated to eVTOL aircraft, the airport design surfaces mentioned above were mapped out to identify areas that would need to be avoided. These surfaces are shown in **Figure 2-21**.

Figure 2-21: MCN Critical Airport Design Components



Source: Google Earth, MCN Airport Layout Plan, Woolpert Analysis

Once these areas are mapped, ideas for vertiport siting can be identified. At MCN, the analysis found that siting an independent onsite vertiport would be difficult, given the layout of the apron and terminal at the airport, as well as the runway configuration.

Locating a vertiport on the main apron would face challenges due to the large number of tie-downs that it would affect, thus impacting the ability of the airport to accommodate conventional aircraft traffic. Locating a vertiport on the south apron (home to airport tenants Dean Baldwin Painting and Boeing) would limit the practical use of the facility to those tenants. Similarly, locating the vertiport on the east apron (home to airport tenants Embraer and Central Georgia Technical College) would limit the practical use of the facility to those tenants.

The team identified a landside location for a vertiport, shown in **Figure 2-22**. The area shown includes geometry for the TLOF, FATO, and Safety Area utilizing the 50-foot, 100-foot, and 150-foot diameter parameters specified earlier in this report. The siting of these areas was drawn with planning-level precision; more precise siting efforts would be conducted with further study should the airport choose to proceed with the development of such a site.

Figure 2-22: Potential Charging and Vertiport Site Locations

Source: Google Earth, Woolpert Analysis

A landside vertiport would include space beyond the landing area itself because airside facilities, like FBO services and apron parking space, would not be available. Space would be needed for the aircraft to taxi away from the landing area, unload passengers, charge the aircraft, as well as any passenger facilities. For these reasons, a larger area than just the landing area was included in the Site 1 option. It is assumed that a charger would be located in or adjacent to this site.

Three additional considerations apply for this site: lighting, fencing, and signage. Engineering Brief 105 specifies that vertiport lighting is required for nighttime operation. Fencing should be installed outside of the safety area to deter malicious actors, and a vertiport caution sign should be erected at all access points. Additional details regarding lighting, fencing, and signage requirements and guidance for vertiports can be found in Chapter 3.5 of EB 105.

Electric Aircraft Charging

The planning team also identified an airside potential electric charging station site, shown above in **Figure 2-22**. Because MCN is not approaching capacity, a less costly step would be to install a charging station at MCN and have eVTOLs land on the existing infrastructure.

The charging site is located adjacent to Lowe Aviation, the FBO at MCN. A charging station in this area would allow for electric aircraft to charge near the FBO, where it is assumed, passengers would load and unload. It is also adjacent to an auto parking lot and could have a dual function of charging electric cars in addition to aircraft.

At this time, installing one electric charging station at MCN is a prudent step to ensuring MCN is compatible and can support electric aircraft operations. To do so, MCN should consult with local utilities to understand their existing electric supply and capacity, and work to increase that capacity if needed. A more thorough siting selection exercise will identify the exact redesign and utilities needed to enable the charging station.

Electric Fire Safety

As a Part 139 airport, MCN is equipped with a fire rescue station on its premises. To ensure the safety of all parties involved, airport management should collaborate with Aircraft Rescue and Firefighting (ARFF) personnel to make them aware of the distinct fire response traits of electric aircraft. A protocol for ARFF response to such aircraft should be established in coordination with the onsite fire response team, with top priority given to the safety of pilots, passengers, staff, and neighboring infrastructure.

Supporting Infrastructure

Weather

MCN has an ASOS onsite. No additional weather infrastructure is needed to support AAM at this time.

High-speed Data/Broadband

High-speed data is not necessary but is a standard for site readiness. If MCN does not have this infrastructure, the airport should explore upgrading internet lines to provide this.

ADS-B

ADS-B capability is required in Class A, Class B, and Class C airspace. MCN is Class D airspace, which means that aircraft do not need ADS-B capabilities to operate at the airport or in its airspace. Still, it is prudent for MCN to acquire an ADS-B receiver if it does not already have one, to future-proof the facility as the use of ADS-B grows.

Overall Compatibility and Next Steps

In summary, Middle Georgia Regional Airport is fully capable of accommodating AAM aircraft with some necessary preparations. Since the airport has ample capacity, there is no need to construct new landing infrastructure for electric aircraft like eVTOLs, as they can use the existing infrastructure. However, segregating these aircraft from the current infrastructure is an option, and several potential vertiport sites that meet the design criteria from EB 105 have been suggested for further evaluation.

Installing an electric charging station at MCN would allow these aircraft to recharge while at the airport. Various potential charging sites have been identified, with consideration given to access to existing electric lines and terminal connectivity. Although there is currently no fire safety guidance for electric aircraft from the NFPA at this time, MCN should collaborate with the local firefighting agencies to develop a protocol for electric fire hazards. Lastly, MCN has weather observation infrastructure and should strive to develop any additional supporting infrastructure it may need, such as high-speed data/broadband and ADS-B receivers.

Paulding Northwest Atlanta Airport

Airport Capacity and Landing Infrastructure

To determine if eVTOLs at Paulding Northwest Atlanta Airport (PUJ) would need segregated landing areas or if they should operate via existing runways, the airport's current annual operations were compared to its estimated annual service volume.

PUJ has one runway: Runway 13/31. The runway has a full parallel taxiway with several connectors. Using AC 150/5060-5, an approximate ASV at PUJ can be determined.

Based on the current runway configuration, the minimum ASV is approximately 195,000 (Federal Aviation Administration, 1983). There are two estimates of AGS's existing operations: the FAA ADIP and the FAA TAF for 2022. As per ADIP, the airport has 51,000 annual operations, (Federal Aviation Administration, 2023) and the TAF reports 10,000 annual operations (Federal Aviation Administration, 2022). The estimates differ dramatically and depending on which metric is used, the airport is operating at either five percent or 26 percent of its ASV. FAA Order 5090.5, Formulation of the NPIAS and ACIP, states that planning for added capacity should start at 60 percent ASV, and development should occur at 80 percent of ASV (Federal Aviation Administration, 2019). Based on these numbers, annual operations at PUJ would have to rise from the higher estimate of 51,000 to 117,000 in order to justify plans for additional capacity.

According to FAA TFMSC data from June 1, 2022, to May 31, 2023, there were 4 helicopter operations at PUJ. A breakdown of these operations is documented in **Table 2-8**. It's important to keep in mind that FAA TFMSC data doesn't cover all helicopter activity at PUJ, particularly flights conducted under visual flight rules. This means that it is possible that helicopter activity occurred during this period, even if it wasn't captured by TFMSC. Regardless, PUJ does not have a designated landing area and thus helicopters operating at the facility would land on the runway and air taxi to the apron or land on the apron itself. This protocol could also be established for eVTOL aircraft.

Table 2-8: Helicopter Operations at PUJ

User Class	Operations June 2022 - May 2023	Percentage of Total
General Aviation	1	25%
Military	3	75%
Sum of Ops	**4**	**100%**

Source: (Federal Aviation Administration, 2023), Woolpert Analysis

Should PUJ choose to build a vertiport onsite to accommodate eVTOLs, there are several key factors to consider, including locations to avoid and locations that are more compatible. Locations to avoid include:

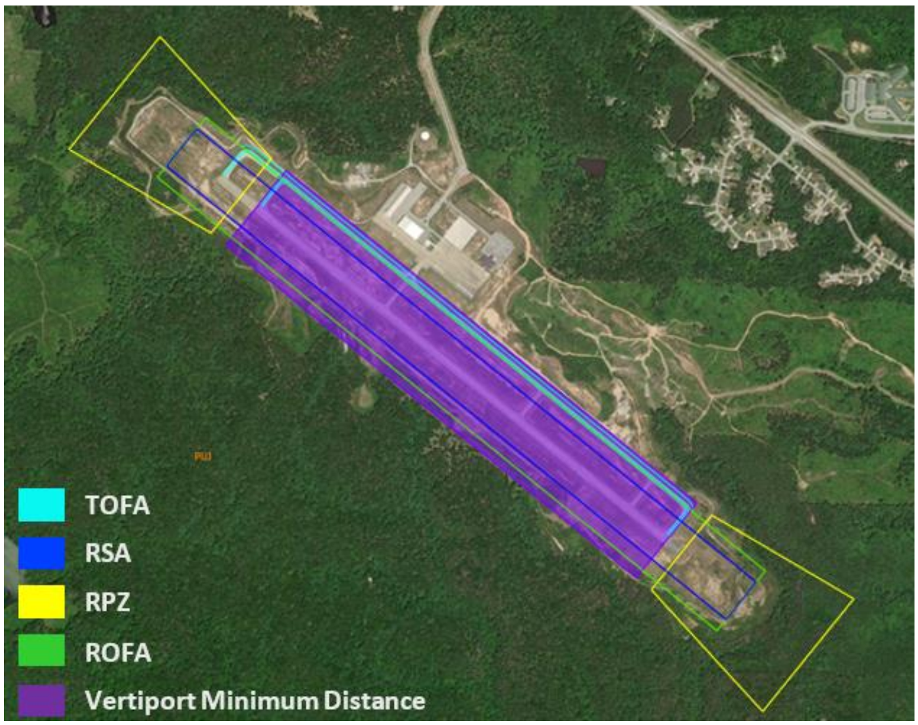
- Sites that interfere with the operation of existing aircraft operations, including taxiing, takeoff, and landing.
- Sites that overlap or are encompassed by critical airport design surfaces and areas, including the runway protection zone, runway safety area, runway object-free area, and taxiway object-free area.
- Siting which is less than the minimum distance from the runway based on the weight of the airport's critical aircraft, as referenced in EB 105.

More compatible locations include those which:

- Minimize the distance needed to taxi the aircraft for passenger pickup and drop-off.
- Minimize the distance needed to reach the electric aircraft charging station.
- Minimize the distance needed to reach tiedown or hangar parking areas.

To determine the viability of establishing a new landing area dedicated to eVTOL aircraft, the airport design surfaces mentioned above were mapped out to identify areas that would need to be avoided. These surfaces are shown in **Figure 2-23**.

Figure 2-23: PUJ Critical Airport Design Components



Source: Google Earth, PUJ Airport Layout Plan, Woolpert Analysis

When these areas are mapped, more compatible areas for vertiport siting can be identified. The planning team identified two potential areas for vertiports and electric aircraft charging stations at PUJ. These areas are shown in **Figure 2-24** below. The areas shown include geometry for the TLOF, FATO, and Safety Area utilizing the 50-foot, 100-foot, and 150-foot diameter parameters specified earlier in this report. The siting of these areas was drawn with planning-level precision; more precise siting efforts would be conducted with further study should the airport choose to proceed with the development of such a site.

Figure 2-24: Potential Charging and Vertiport Site Locations

Source: Google Earth, Woolpert Analysis

Site 1 is located on existing apron space northwest of the airport terminal. The airport has substantial apron space and this site is located well outside any of the critical airport design components that restrict siting. In this location, eVTOLs could land at the facility and have a short taxi to the airport terminal or to other tenants at the airport. Because of the lack of trees or buildings in the vicinity, the site would likely have clear approach and departure paths. Additionally, because it would be on existing pavement, little new infrastructure would be needed to establish the site as a vertiport. However, because it is on existing pavement, it could take away use from other aircraft that may typically use the area.

Site 1 is located southeast of the main airport apron, on undeveloped land. A vertiport in this site would function similarly to Site 1, but because it is on undeveloped property, it would not interfere with existing apron parking and other uses. Conversely, because the area is currently undeveloped, additional pavement would be needed to establish a vertiport. The site is very close to the airport terminal and taxiing to and from that terminal would require minimal effort.

Three additional considerations apply for each of these sites: lighting, fencing, and signage. Engineering Brief 105 specifies that vertiport lighting is required for nighttime operation. Fencing should be installed outside of the safety area to deter malicious actors, and a vertiport caution sign should be erected at all access points. Additional details regarding lighting, fencing, and signage requirements and guidance for vertiports can be found in Chapter 3.5 of EB 105.

Both sites offer reasonable locations for a vertiport, but it is worth reiterating that due to the lack of capacity constraints, it is simpler for the airport to accommodate any eVTOL traffic it receives with its existing infrastructure.

Electric Aircraft Charging

The planning team also identified two potential electric charging station sites. Charging Site A is located on a grass area on the northwest side of the airport. Charging Site B is located to the east of the runway near the existing terminal building. These sites are shown above in **Figure 2-24.**

Site A is located between Vertiport Site 1 and the airport terminal. In this location, the charging site would be easily accessible to any aircraft on the main portion of the apron. The charger would be located relatively close to the airport terminal and thus would theoretically reduce the distance power lines would have to travel to reach the charger.

Site B is on the east side of the airport terminal. It would function similarly to Site A and would have the same benefits that Site A does, proximity to the airport terminal. A charging station here would allow the eVTOL to taxi near the airport terminal, pick up/drop-off passengers, and charge, all in the same location.

At this time, installing one electric charging station at PUJ is a prudent step to ensuring PUJ is compatible and can support electric aircraft operations. To do so, PUJ should consult with local utilities to understand their existing electric supply and capacity, and work to increase that capacity if needed. A more thorough siting selection exercise will identify the exact redesign and utilities needed to enable the charging station.

Electric Fire Safety

PUJ is not a Part 139 airport, so it is not required to have onsite ARFF. To ensure the safety of all parties involved, airport management should collaborate with the local firefighting agency to make them aware of electric aircraft and develop a protocol for a response to such aircraft. This protocol should be established in coordination with the airport management, local firefighters, and consultation with NFPA guidance as it is released. The protocol should give top priority to the safety of pilots, passengers, staff, and neighboring infrastructure.

Supporting Infrastructure

Weather

PUJ has an AWOS-3 onsite. No additional weather infrastructure is needed to support AAM at this time.

High-speed Data/Broadband

High-speed data is not necessary but is a standard for site readiness. If PUJ does not have this infrastructure, the airport should explore upgrading internet lines to provide this.

ADS-B

ADS-B capability is required in Class A, Class B, and Class C airspace. PUJ is Class E airspace, which means that aircraft do not need ADS-B capabilities to operate at the airport or in its airspace. Still, it is prudent for PUJ to acquire an ADS-B receiver if it does not already have one, to future-proof the facility as the use of ADS-B grows in scope.

Overall Compatibility and Next Steps

In summary, Paulding Northwest Atlanta Airport is fully capable of accommodating AAM aircraft with some necessary preparations. Since the airport has ample capacity, there is no need to construct new landing infrastructure for electric aircraft like eVTOLs, as they can use the existing infrastructure. However, segregating these aircraft from the current infrastructure is an option, and several potential vertiport sites that meet the design criteria from EB 105 have been suggested for further evaluation.

Installing an electric charging station at PUJ would allow these aircraft to recharge while at the airport. Various potential charging sites have been identified, with consideration given to access to existing electric lines and terminal connectivity. Although there is currently no fire safety guidance for electric aircraft from the NFPA at this time, PUJ should collaborate with local firefighters to develop a protocol for electric fire hazards. Lastly, PUJ has weather observation infrastructure and should strive to develop any additional supporting infrastructure it may need, such as high-speed data/broadband and ADS-B receivers.

Savannah/Hilton Head International Airport

Airport Capacity and Landing Infrastructure

To determine if eVTOLs at Savannah/Hilton Head International Airport (SAV) would need segregated landing areas or if they should operate via existing runways, the airport's current annual operations were compared to its estimated annual service volume.

SAV has two runways: RWY 10/28, the primary runways, and RWY 1/19, the crosswind runway. The runways have dual full parallel taxiway with several connectors. Using AC 150/5060-5, an approximate ASV at SAV can be determined.

Based on the current runway configuration, the minimum ASV is approximately 200,000. (Federal Aviation Administration, 1983) There are two estimates of AGS's existing operations: the FAA Airport Data Inventory Program (ADIP) and the FAA Terminal Area Forecast (TAF) for 2022. As per ADIP, the airport has 116,654 annual operations, (Federal Aviation Administration, 2023) and the TAF reports 119,990 annual operations. (Federal Aviation Administration, 2022) The estimates differ but indicate that the airport is operating at between 58 and 60 percent of its ASV. FAA Order 5090.5, Formulation of the NPIAS and ACIP, states that planning for added capacity should start at 60 percent ASV, and development should occur at 80 percent of ASV. (Federal Aviation Administration, 2019) Based on these numbers, annual operations at SAV are nearly at the 60 percent of ASV indicated for additional capacity.

According to FAA Traffic Flow Management System Counts (TFMSC) data from June 1, 2022, to May 31, 2023, there were 128 helicopter operations at SAV. A breakdown of these operations is documented in **Table 2-9.** It's important to keep in mind that FAA TFMSC data doesn't cover all helicopter activity at SAV, particularly flights conducted under visual flight rules. This means that it is possible that helicopter activity occurred during this period, even if it wasn't captured by TFMSC. Regardless, SAV does not have a designated landing area and thus helicopters operating at the facility would land on the runway and air taxi to the apron or land on the apron itself. This protocol could also be established for eVTOL aircraft.

Table 2-9: Helicopter Operations at SAV

User Class	Operations June 2022 - May 2023	Percentage of Total
Air Carrier	3	2%
General Aviation	26	20%
Military	91	71%
Other	8	6%
Sum of Ops	**128**	**100%**

Source: (Federal Aviation Administration, 2023), Woolpert Analysis

Should SAV choose to build a vertiport onsite to accommodate eVTOLs, there are several key factors to consider, including locations to avoid and locations that are more compatible. Locations to avoid include:

- Sites that interfere with the operation of existing aircraft operations, including taxiing, takeoff, and landing
- Sites that overlap or are encompassed by critical airport design surfaces and areas, including the runway protection zone, runway safety area, runway object-free area, and taxiway object-free area

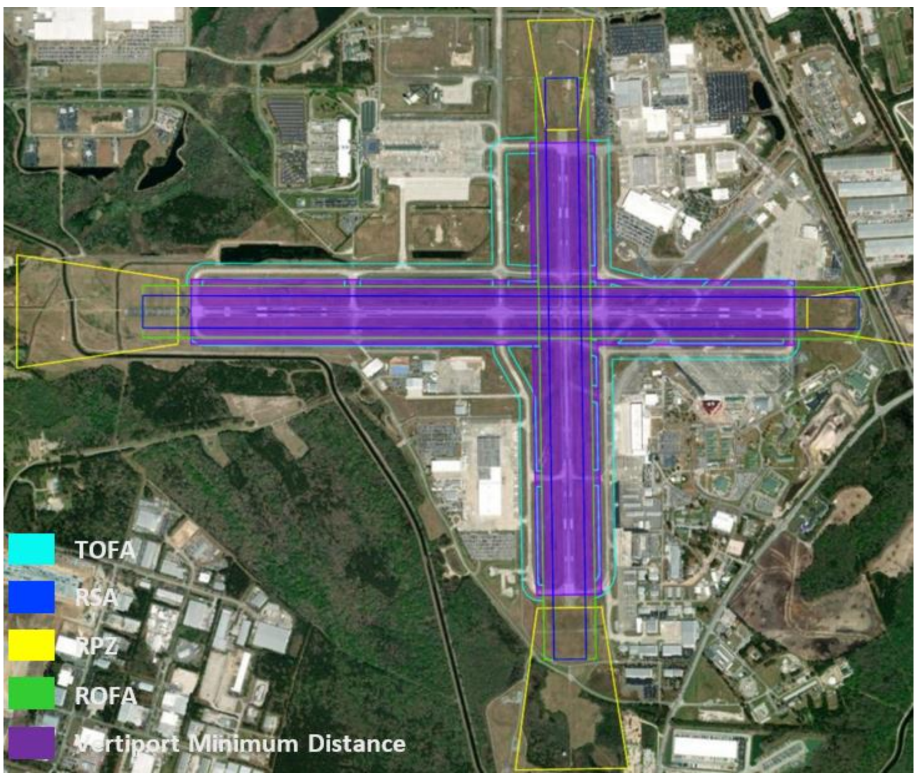
- Siting which is less than the minimum distance from the runway based on the weight of the airport's critical aircraft, as referenced in EB 105

More compatible locations include those which:

- Minimize the distance needed to taxi the aircraft for passenger pickup and drop-off
- Minimize the distance needed to reach the electric aircraft charging station
- Minimize the distance needed to reach tiedown or hangar parking areas

To determine the viability of establishing a new landing area dedicated to eVTOL aircraft, the airport design surfaces mentioned above were mapped out to identify areas that would need to be avoided. These surfaces are shown in **Figure 2-25**.

Figure 2-25: SAV Critical Airport Design Components

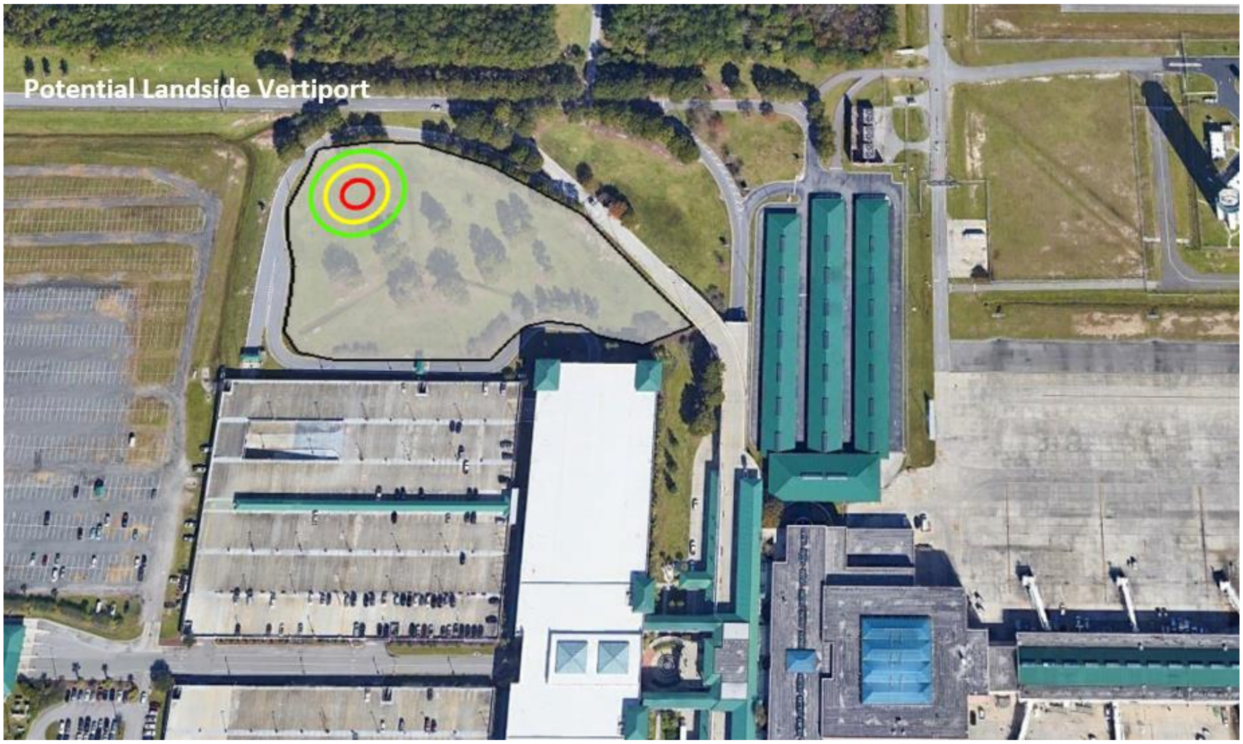


Source: Google Earth, SAV Airport Layout Plan, Woolpert Analysis

Once these areas are mapped, more compatible areas for vertiport siting can be identified. At SAV, limited areas are available for developing a vertiport, due to the significant number and size of the tenants at the airport.

One possibility for SAV is to establish a landside vertiport near the commercial service terminal. A possible site is highlighted in **Figure 2-26.** Because that location is on the landside of the airport, it wouldn't have access to existing aprons or taxiways to move aircraft around. Because of this, additional room is shown in the figure to demonstrate room for eVTOL movement and charging space. A layout of the space would have to be completed to determine if this space is adequate and how many parking or charging spaces it could support. While not highlighted specifically, the adjacent parking lot to the west could be incorporated or used as an alternative site. And, while the site is landside, it appears to have easy access to the commercial service passenger terminal.

Figure 2-26: SAV Landside Vertiport Option



Source: Google Earth, Woolpert Analysis

Three additional considerations apply for this site: lighting, fencing, and signage. Engineering Brief 105 specifies that vertiport lighting is required for nighttime operation. Fencing should be installed outside of the safety area to deter malicious actors, and a vertiport caution sign should be erected at all access points. Additional details regarding lighting, fencing, and signage requirements and guidance for vertiports can be found in Chapter 3.5 of EB 105.

Electric Aircraft Charging

The planning team also identified two potential electric charging station sites, one at each of the airport's FBOs. Charging Site A is on or near the ramp at Sheltair Aviation, near where fuel trucks park. A site here would pair like uses (charging and refueling) and there appears to be space to site a charger in the vicinity. Charging Site B is located near the Signature Flight Support FBO, should that FBO also service eVTOL aircraft. These sites are shown below in **Figure 2-27.**

Figure 2-27: SAV Potential Charging Sites

Source: Google Earth, Woolpert Analysis

At this time, installing one electric charging station at SAV is a prudent step to ensuring SAV is compatible and can support electric aircraft operations. To do so, SAV should consult with local utilities to understand their existing electric supply and capacity, and work to increase that capacity if needed. A more thorough siting selection exercise will identify the exact redesign and utilities needed to enable the charging station.

Electric Fire Safety

As a Part 139 airport, SAV is equipped with a fire rescue station on its premises. To ensure the safety of all parties involved, airport management should collaborate with Aircraft Rescue and Firefighting (ARFF) personnel to make them aware of the distinct fire response traits of electric aircraft. A protocol for ARFF response to such aircraft should be established in coordination with the onsite fire response team, with top priority given to the safety of pilots, passengers, staff, and neighboring infrastructure.

Supporting Infrastructure

Weather

SAV has an ASOS onsite. No additional weather infrastructure is needed to support AAM at this time.

High-speed Data/Broadband

High-speed data is not necessary but is a standard for site readiness. If SAV does not have this infrastructure, the airport should explore upgrading internet lines to provide this.

ADS-B

ADS-B capability is required in Class A, Class B, and Class C airspace. SAV is Class C airspace, which means that aircraft do not need ADS-B capabilities to operate at the airport or in its airspace. Still, it is prudent for SAV to acquire an ADS-B receiver if it does not already have one, to future-proof the facility as the use of ADS-B grows in scope.

Overall Compatibility and Next Steps

In summary, Savannah/Hilton Head International Airport is fully capable of accommodating AAM aircraft with some necessary preparations. Since the airport has ample capacity, there is no need to construct new landing infrastructure for electric aircraft like eVTOLs, as they can use the existing infrastructure. However, segregating these aircraft from the current infrastructure is an option, and a landside vertiport may be feasible to support passenger travel to and from the airport.

Installing an electric charging station at SAV would allow these aircraft to recharge while at the airport. Various potential charging sites have been identified, one at each FBO. Although there is currently no fire safety guidance for electric aircraft from the NFPA at this time, SAV should collaborate with onsite ARFF to develop a protocol for electric fire hazards. Lastly, SAV has weather observation infrastructure and should strive to develop any additional supporting infrastructure it may need, such as high-speed data/broadband and ADS-B receivers.

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