5. INFRASTRUCTURE, LAND USE & PLACE

Aviation infrastructure is part of the built environment. It occupies land, connects to utilities, depends on surface access, affects surrounding development, and creates impacts that communities experience on the ground.

Every aircraft operation depends on physical facilities, utility systems, transportation connections, emergency access, communications networks, surrounding land uses, and the communities that host them. As a result, aviation infrastructure should not be viewed solely as an aviation issue. It is also a land-use issue, an infrastructure issue, a transportation issue, and a community planning issue.

The previous section examined how transportation planners evaluate aviation through accessibility, network performance, and public benefit. This section shifts from transportation outcomes to the physical places that make those outcomes possible. The focus is now on how aviation infrastructure fits into communities.

For communities evaluating Advanced Air Mobility (AAM), Regional Air Mobility (RAM), eVTOL Air Taxi, unmanned aircraft systems (UAS), or related services, one of the most important questions is not what aircraft may operate in the future. It is whether the community's existing places, infrastructure systems, and development patterns can support the intended use.

Many discussions begin with future vertiports, new facilities, or entirely new aviation districts. Existing planning principles suggest a different starting point. Before creating new aviation infrastructure, communities should first understand the aviation assets, transportation connections, utility systems, and development patterns that already exist.

5.1 Starting on the Ground: Prioritizing Existing Aviation Assets

Utah already possesses an extensive network of airports, heliports, transportation corridors, utility systems, industrial districts, logistics centers, and employment areas. Many of these assets were built through decades of federal, state, local, and private investment. Together, they represent a substantial foundation upon which future aviation activity may build.

This principle appears throughout transportation planning and infrastructure planning. Communities are generally encouraged to make effective use of existing assets before extending infrastructure into entirely new locations. The same logic applies to aviation.

The Regional Air Mobility literature reaches a similar conclusion. Rather than relying on entirely new infrastructure networks, early Regional Air Mobility concepts emphasize building upon the extensive and often underutilized investment already present in local and regional airports (Antcliff et al. 2021). Existing airports provide something that is difficult and expensive to recreate elsewhere: aviation-compatible land uses, established transportation access,

emergency response relationships, utility connections, communications infrastructure, aviation services, and community familiarity with aviation activity.

For many communities, these facilities may represent the most practical starting point for evaluating future aviation opportunities. This does not mean every airport is suitable for every use case, nor does it mean future off-airport facilities, such as vertiports or droneports, will never be appropriate. It recognizes that existing assets deserve careful consideration before communities pursue entirely new infrastructure.

This principle is particularly relevant for Regional Air Mobility, aviation logistics, emergency response operations, maintenance activities, workforce development, aircraft charging infrastructure, and many early AAM applications. Existing airports often provide a platform for these activities with fewer implementation hurdles than entirely new sites.

The same concept extends beyond airport property. Existing industrial districts, logistics corridors, freight centers, inland port facilities, employment centers, and transportation hubs may also provide opportunities to support aviation-related activity while remaining consistent with broader planning goals.

Several Utah planning documents reinforce this approach. Regional transportation plans emphasize concentrating investment within established centers, employment districts, and transportation corridors. State and local planning efforts consistently encourage communities to leverage existing infrastructure before extending development into entirely new areas. These same principles can guide aviation planning.

The goal is not to force every aviation activity onto an airport. The goal is to understand what assets already exist before assuming new infrastructure is necessary.

5.2 Airports as Connected Activity Centers

Historically, airports were often planned as isolated facilities. Their primary function was to support aviation operations, while surrounding transportation systems, land uses, and development patterns were treated as separate planning concerns. Over time, this approach frequently produced a disconnect between airports and the communities around them.

UDOT's Airports as Connected Activity Centers research challenges that model directly. It defines a connected activity center as a place where "an airport and the area around it become dense, mixed use, intermodal, and highly connected," while recognizing that many airports remain poorly connected because fencing and safety needs limit connectivity with adjacent land uses (McKee Miller et al. 2022, 12). This does not eliminate the need for secure airport boundaries. It does mean communities should plan the airport edge deliberately, so aviation facilities connect to surrounding transportation, employment, tourism, logistics, and public-service systems where appropriate.

This perspective is particularly useful for Utah because many airports already function as gateways to larger regional systems. The Utah Aviation Development Strategy notes that airports provide access to national parks, recreation areas, ski destinations, public lands, rural communities, business centers, and regional transportation networks. In many communities, the airport serves as one of the most important connections between local activity and the broader region.

Viewing airports as connected activity centers changes the planning conversation. Instead of focusing exclusively on runways, taxiways, hangars, or terminal facilities, planners begin evaluating how airports relate to transportation access, employment areas, industrial districts, tourism destinations, educational institutions, workforce development programs, public safety operations, and regional economic activity.

This perspective does not require every airport to become a large-scale airport city or aerotropolis. In fact, one of the most important lessons from the connected activity center framework is that airports should be scaled to their context. The same research warns against treating airport integration as a one-size-fits-all development model. Some airports may support major employment districts or logistics activity, while others may function more effectively as gateway nodes that connect visitors, businesses, emergency services, or local industries to regional assets. The planning value is in matching the airport's role to the surrounding community, not forcing every airport into the same growth template (McKee Miller et al. 2022).

For a major commercial airport, a connected activity center may include extensive transportation connections, employment districts, logistics facilities, commercial development, and regional transit integration.

For a smaller general aviation airport, the activity center may look very different. It may function as a recreational gateway, a logistics node, a workforce development asset, a flight training center, an emergency response hub, or a business access point. The scale changes, but the planning principle remains the same.

This distinction is particularly important as communities begin evaluating future aviation proposals. A small municipal airport does not need to pursue a global aerotropolis model to support aviation-related growth. In many cases, a right-sized activity center that strengthens local transportation access, workforce development, recreation, emergency response, tourism, or logistics functions may be far more appropriate.

Connected activity centers also create an opportunity to rethink how communities approach aviation-related development. Traditionally, discussions about Advanced Air Mobility and emerging aviation services often focus on bringing aviation closer to destinations. In some situations, communities may find equal value in bringing complementary destinations, services, and activities closer to existing aviation assets.

This approach can reduce transportation friction while making better use of infrastructure that already exists. Rather than creating entirely new aviation facilities in locations where land, utilities, community acceptance, and transportation access may be constrained, communities can evaluate whether certain activities are better located near existing airports and aviation facilities.

For some airports, this may include logistics services, workforce training, maintenance activities, business services, emergency response functions, or aviation-supporting industries. For others, it may include tourism, recreation, outfitter services, hospitality, equipment rental, or other activities that support how visitors already use the region. Utah's airports frequently serve as gateways to recreation areas, national parks, public lands, hunting destinations, ski resorts, and rural communities. Understanding the movement of people, goods, and services between the airport and these destinations may reveal opportunities to reduce friction, improve visitor experience, and strengthen local economic activity.

This perspective does not suggest that every airport should become a destination unto itself. It encourages communities to evaluate how existing aviation assets can better connect with, support, and complement the destinations, services, and experiences that already define the region.

The planning question therefore becomes: How can existing aviation assets support the broader goals of the surrounding community?

That question creates a useful bridge to the next topic. Whether a community is evaluating an airport improvement, logistics facility, drone operations center, charging infrastructure, or future vertiport, the physical requirements of aviation infrastructure extend far beyond the landing surface itself.

5.3 Infrastructure Is More Than a Landing Surface

Aviation infrastructure is often imagined as a runway, heliport, vertiport, or drone landing area. Those features are visible, but they are only part of the system. The more difficult planning questions often involve the supporting infrastructure that makes aircraft operations safe, reliable, and efficient.

For traditional airports, that supporting infrastructure may include taxiways, aprons, hangars, fuel systems, lighting, weather reporting, navigation aids, maintenance areas, emergency access, fencing, and surface transportation connections. For emerging aviation facilities, the list may expand to include charging systems, battery storage, fire suppression, data networks, security systems, passenger processing, cargo staging, communications systems, and utility upgrades.

The Utah Advanced Air Mobility Economic Impact Analysis makes this point directly by emphasizing the need to understand existing AAM-related infrastructure and the investments

required to retrofit or upgrade the system before network costs and revenues can be evaluated (UDOT Division of Aeronautics 2025). That principle applies equally to communities considering local policies or site decisions.A landing surface may be the most visible feature, but it is often not the factor that determines long-term readiness. This is why aviation infrastructure should be evaluated as a full site system. For emerging facilities, the landing area may be less difficult than the supporting requirements: power, fire access, passenger or cargo circulation, secure operating areas, communications, weather data, emergency response, and ground connections.

This is especially important for vertiports, droneports, cargo nodes, and other emerging aviation facilities. These sites may require space for passenger access, cargo handling, vehicle circulation, charging equipment, utility connections, emergency response, secure operating areas, and ground support activity. Depending on the use case, the facility may function more like a specialized transportation, logistics, or industrial site than a simple passenger stop.

The scale and complexity of aviation infrastructure should be evaluated in relation to the intended use. A small unmanned aircraft systems operation, public safety drone program, or airport-based charging project may have a modest footprint. A commercial cargo node, high-frequency passenger vertiport, or electric aircraft charging facility may require substantially more infrastructure. The planning response should match the use case.

The practical lesson is straightforward: communities should evaluate the whole facility, not only the landing area. Site plans, utility coordination, emergency access, surface circulation, staging needs, safety areas, and surrounding land uses all shape whether aviation infrastructure can function responsibly in a real place.

5.4 Utility and Infrastructure Readiness

Utility readiness may become one of the most important filters for future aviation infrastructure. Electric aviation, AAM, unmanned aircraft systems, and advanced logistics operations can depend on electrical capacity, broadband, weather information, communications systems, and reliable site access. These requirements can determine whether a site is practical long before a community reaches questions about design, zoning, or public support.

Electrical capacity deserves early attention. Fleet charging, electric aircraft support, battery storage, ground equipment, lighting, heating and cooling, fire systems, and facility operations may create demands that exceed what a site can support without upgrades. The Utah AAM Economic Impact Analysis specifically identifies the need to evaluate existing energy infrastructure and airport readiness for electrified AAM operations (UDOT Division of Aeronautics 2025). Other state AAM planning work has similarly emphasized the importance of power, connectivity, weather, and communications readiness (Kansas DOT 2024).

Stakeholder feedback in Utah reinforces this point. Local leaders and project participants have raised concerns that weather, infrastructure reliability, power availability, and implementation timelines could determine whether AAM infrastructure is seen as useful or unreliable by the

public (UDOT Division of Aeronautics 2025). For planners, that makes utility readiness a public-trust issue as much as a technical issue.

For local governments, this means utility coordination should begin early. A site that appears attractive on a map may be poorly suited if nearby electrical infrastructure lacks capacity, if broadband is unreliable, if emergency access is limited, or if weather and communications systems are insufficient for the intended operation. These constraints may not be visible in a zoning map, but they can determine whether a proposal is feasible.

Utility readiness also affects timing. Electrical upgrades, substation improvements, broadband extensions, roadway access improvements, and emergency-response coordination can take years to plan, fund, permit, and construct. Communities that are interested in aviation-related opportunities may benefit from identifying these constraints before a specific operator or developer appears.

This is another place where existing assets may provide an advantage. Airports, industrial districts, logistics areas, and employment centers may already have some combination of transportation access, utility service, emergency-response familiarity, and compatible surrounding uses. Those advantages do not remove the need for due diligence, but they may reduce uncertainty compared with isolated or speculative sites.

Communities do not need to solve every utility issue immediately. They do, however, benefit from understanding the infrastructure questions that may influence future opportunities. Electrical capacity, utility ownership, upgrade requirements, implementation timelines, broadband availability, weather information, emergency access, and transportation connectivity all influence whether a proposed aviation use is ready for near-term coordination or requires longer-term infrastructure planning.

These questions help communities distinguish between aviation concepts that are ready for near-term coordination and concepts that require longer-term infrastructure planning.

5.5 Land-Use Compatibility: Protecting Aviation and Surrounding Communities

Aviation infrastructure depends on compatible land use. A well-sited facility can support transportation access, emergency response, logistics, workforce development, and regional connectivity. A poorly matched land-use context can create conflicts that are difficult to solve after development occurs.

Compatibility works in both directions. Airports, heliports, vertiports, droneports, and aviation-supporting facilities need protection from surrounding development that may create hazards, operational constraints, or long-term complaints. Nearby communities also need protection from avoidable noise, visual impacts, traffic, lighting, emergency-response burdens, and incompatible industrial activity.

Airport-compatible land use is already a familiar planning concept. Local planners often use airport overlays, height limitations, noise compatibility policies, development review standards, and protection zones to reduce conflicts between airport operations and nearby development. Cedar City's planning documents, for example, direct the city to regulate land uses around the airport to protect current and future airport operations and to continue using its Airport Overlay Zone to manage airport-adjacent land uses that may restrict future operations through encroachment on safety zones or noise-sensitive areas (Cedar City 2023). These local tools show how compatibility planning becomes ordinary planning practice, not an abstract aviation concept.

Emerging aviation infrastructure should be evaluated through the same compatibility lens. The specific tools may vary by use case, but the planning questions are familiar. What land uses are nearby? Are there schools, homes, hospitals, senior facilities, parks, or other sensitive receptors close to the site? Are there industrial, logistics, transportation, airport business, or employment uses that are more compatible with the proposed activity? Would the proposal introduce new conflicts, or would it fit within an area already planned for transportation, logistics, aviation, or public-service functions?

Compatibility also includes invisible aviation infrastructure. Airports, heliports, and future vertiports depend on protected approach and departure paths that are free from obstructions that may be hazardous to air navigation. They may also depend on runway protection areas, clear areas, safety areas, object-free areas, obstruction evaluation surfaces, and other geometric design elements that are not obvious to the public but serve important safety and risk-reduction purposes. Aviation facilities are not designed only for routine operations. They are also designed to reduce risk when something goes wrong. Communities that treat aviation compatibility only as a parcel-level land-use issue may miss the broader three-dimensional space that aviation requires.

Industrial and logistics areas may be appropriate locations for some aviation-supporting uses, especially cargo, maintenance, testing, warehousing, and certain unmanned aircraft systems activities. Hospitals, emergency operations centers, campuses, public safety facilities, tourism gateways, and existing airports may also be appropriate for specific use cases. Compatibility depends on the intended operation, the surrounding land use pattern, the infrastructure available, and the community impacts that must be managed.

Compatibility also includes how impacts are distributed across a community. Noise, visual impacts, traffic, utility demands, and other operational effects may be experienced differently depending on location and surrounding land uses. Planning for compatibility therefore includes both reducing impacts where possible and ensuring that no single neighborhood or population disproportionately bears the burden of supporting regional aviation activity.

This is why aviation infrastructure should not be evaluated by facility type alone. A vertiport, droneport, charging site, or airport-supporting facility may be appropriate in one setting and poorly matched in another. The land-use question is not simply whether a community wants

aviation activity. It is whether the proposed site, surrounding uses, operational profile, infrastructure capacity, and public safety needs fit together.

Detailed zoning language, conditional use standards, and ordinance provisions belong in the toolkit's land-use and ordinance tools. At the planning level, the core principle is simpler: protect the aviation function, protect nearby communities, and avoid placing incompatible uses in conflict with one another.

5.6 Airport Urbanism and Place

Aviation facilities shape how people experience a place. For many visitors, an airport is one of their first points of contact with a community. It may function as a gateway to local businesses, recreation, tourism destinations, educational institutions, and public services, helping shape first impressions and influencing how people experience the region beyond the airport boundary.

That experience may come through noise, lighting, security fencing, vehicle circulation, walking routes, visual character, emergency access, or the way a facility connects to nearby streets, transit, employment areas, and public spaces. Even when the aviation operation is technically safe and operationally efficient, the ground-side experience can determine whether the facility feels integrated, isolated, or imposed.

Airport urbanism provides a useful planning lens for this issue. Rather than treating airports and aviation facilities only as operational sites, airport urbanism examines how they function within the everyday life of surrounding communities, including workers, passengers, visitors, service providers, businesses, transit users, pedestrians, cyclists, and nearby neighborhoods (Hirsh 2020). This is relevant for AAM because smaller aviation facilities may be closer to daily community life than traditional airports.

For AAM, vertiports, droneports, and other emerging aviation facilities, this lens is especially important. These facilities may be smaller than conventional airports, but they may also be closer to existing development, employment areas, hospitals, campuses, logistics districts, or civic destinations. Their success will depend not only on aircraft performance or site approval, but on how well they fit into the places around them.

This is also where the resiliency-hub concept may become useful. Some future aviation facilities could be planned not only as takeoff and landing sites, but as multimodal transportation centers, energy assets, and digital infrastructure nodes that support community resilience during normal operations and emergencies (Harper 2023). That concept should not be used to overstate every facility's role, but it gives communities a way to ask whether aviation infrastructure can create value beyond the flight operation itself.

Good site planning can reduce friction. Clear access routes, safe pedestrian connections, dedicated curb management for passenger and freight activity, transit and shuttle integration, emergency access, loading areas, wayfinding, lighting, and compatible adjacent uses can help

an aviation facility function as part of the community rather than as an isolated technical installation. Poor site planning can create the opposite result: long walks, confusing access, traffic conflicts, visual clutter, community frustration, and underused infrastructure.

The same principle applies to community character. A tourism gateway airport, rural public safety aviation facility, downtown vertiport, hospital landing site, or industrial drone logistics node will each have a different relationship to place. A facility near a national park gateway, historic downtown, university district, or residential neighborhood should not be designed the same way as a facility in a freight district or airport industrial area.

This does not mean every aviation facility should be treated as a civic plaza or mixed-use district. Some facilities will need to remain secure, industrial, operationally controlled, or separated from public activity. The planning task is to match the design, access, buffering, and public interface to the use case and context.

For communities, the design question is practical: How should this facility function as the transition point between aviation and the community it serves?

Communities that already have an airport may find it useful to step back and evaluate that asset through a broader planning lens.

Communities can evaluate how well the airport is integrated into the surrounding region, whether it provides intuitive access to major destinations and services, how efficiently people and goods move between the airport and the places they need to reach, and whether the airport functions primarily as an isolated aviation facility or as a connected activity center supporting broader community goals.

Many of the same questions communities are beginning to ask about AAM, Regional Air Mobility, and future aviation infrastructure can also be applied to existing airports today. In some cases, the greatest near-term opportunity may not be creating entirely new aviation facilities, but strengthening the connections between existing aviation assets and the communities they already serve.

These considerations bring together the major ideas in this section. Aviation infrastructure must be evaluated as part of the built environment. Existing assets should be considered before new infrastructure. Airports can function as connected activity centers when their role, edge conditions, access, infrastructure, and surrounding land uses are deliberately planned. Emerging aviation facilities require more than a landing surface. They require utility readiness, emergency access, surface transportation, compatible neighbors, and a public interface that fits the surrounding place.

Section 5 sets up the next planning question: if infrastructure, land use, and place conditions can support aviation activity, what economic development and investment considerations should communities evaluate before pursuing or responding to aviation-related opportunities?

References

Antcliff, Kenneth R., Michael J. Moore, Susan M. Goodrich, and others. 2021. Regional Air Mobility: Leveraging Our National Investment in Airports to Create an Integrated and Connected Aviation System. NASA Aeronautics Research Mission Directorate.

Cedar City. 2023. Cedar City General Plan Housing Update. Cedar City, UT: Cedar City.

Harper, Clint. 2023. Advanced Air Mobility (AAM) as a Foundation of Community Resiliency: A Visionary Response to the USDOT Request for Information on AAM Integration. Unpublished manuscript.

Hirsh, Max. 2020. Airport Urbanism: Infrastructure and Mobility in Asia. Minneapolis: University of Minnesota Press.

Kansas Department of Transportation (Kansas DOT). 2024. Kansas Advanced Air Mobility Strategy. Topeka: Kansas Department of Transportation.

McKee Miller, Monika, J. Peng, J. Metro, and D. Eskic. 2022. Airports as Connected Activity Centers. Report UT-22.08. Salt Lake City: Utah Department of Transportation Research & Innovation Division.

Utah Department of Transportation Division of Aeronautics. 2025. Utah Advanced Air Mobility Economic Impact Analysis. Salt Lake City: Utah Department of Transportation.

Utah Department of Transportation Division of Aeronautics. 2023. Utah Aviation Development Strategy. Salt Lake City: Utah Department of Transportation.