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Unlocking the Skies: Empowering Urban Air Mobility through Vertiport Simulation

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About Archer

- Archer is developing an electric vertical takeoff and landing aircraft for use in urban air mobility.

- Our goal is to replace 60-90 minute commutes by car, with 10-20 minute electric flights that are safe, sustainable, low noise and cost competitive

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Midnight

PERFORMANCE

Range	Up to 100 miles; optimized for 20-50 mile rapid back-to-back trips with minimal charge time
Speed	Up to 150 mph
Payload	Industry leading ~1,000 lbs; 1 pilot + 4 passengers

ADVANTAGES

Safety	Designed to standards similar to today's commercial airliners
Sustainable	All electric, no local emissions
Low Noise	100x quieter than a helicopter
Cost	Goal is for consumer pricing to be competitive with ground based ride share

Vertiports: the Essential Pillars of the UAM Ecosystem

- The UAM industry goes beyond eVTOL technology.
- Creating an efficient ecosystem is crucial for widespread adoption.
- The vertiports network is a key component of the UAM ecosystem.
- This requires careful consideration of vertiport operations.

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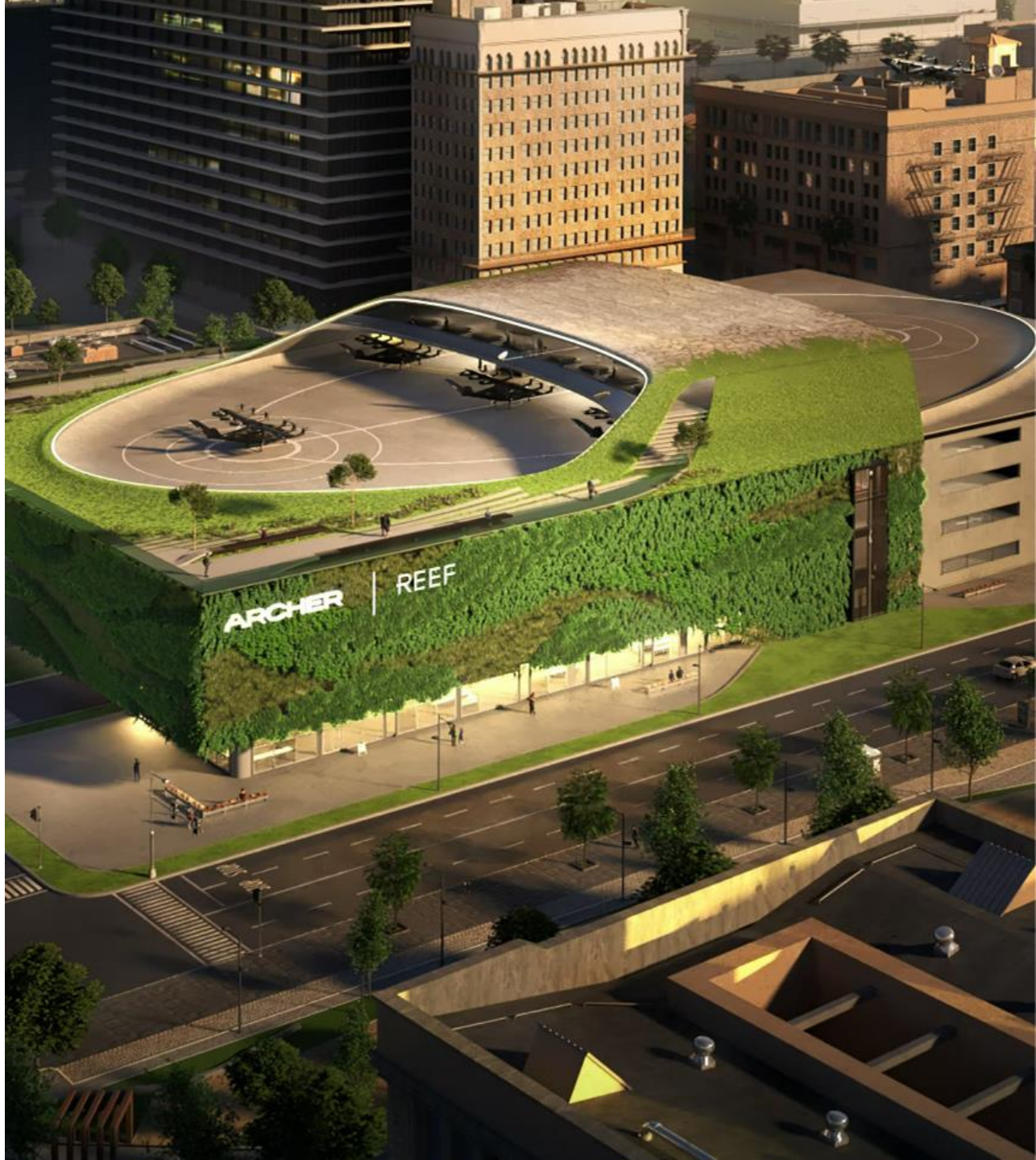
What is a vertiport?

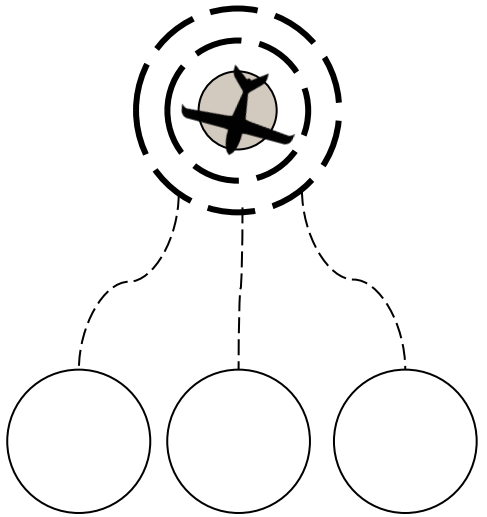
- A vertiport is a facility designed for the takeoff, landing, and servicing of the eVTOL aircraft.
- Vertiports are analogous to airports for traditional fixed-wing aircraft but cater to the unique requirements of eVTOL operations.



Essential Terminology for UAM and Vertiport Understanding

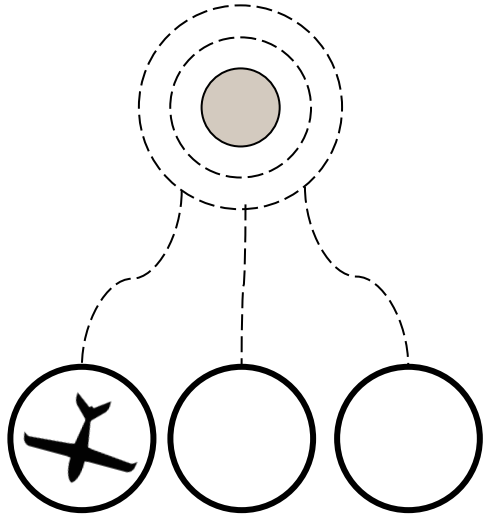
- **FATO: Final Approach and Takeoff Area**

  refers to the designated area on a vertiport where aircraft take off and land safely.



Essential Terminology for UAM and Vertiport Understanding

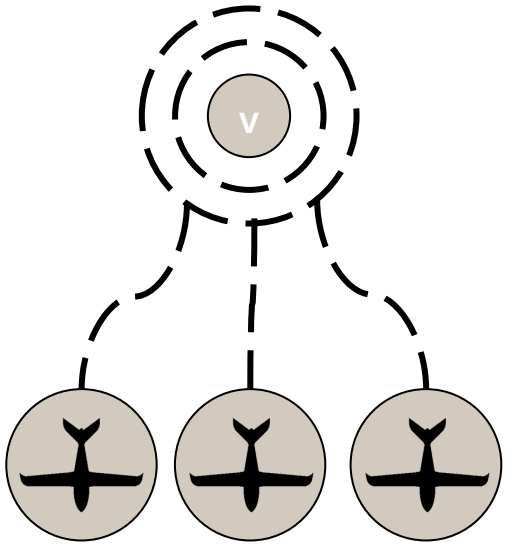
- **Gate:** refers to a designated area where eVTOL aircraft can park, load and unload passengers



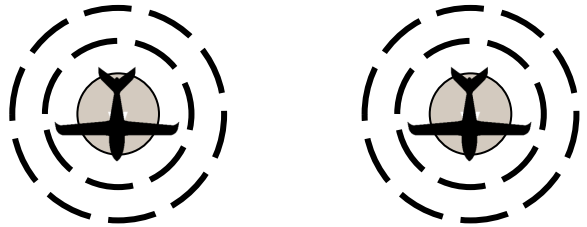
Essential Terminology for UAM and Vertiport Understanding

- **Vertiport Topology (Layout)**

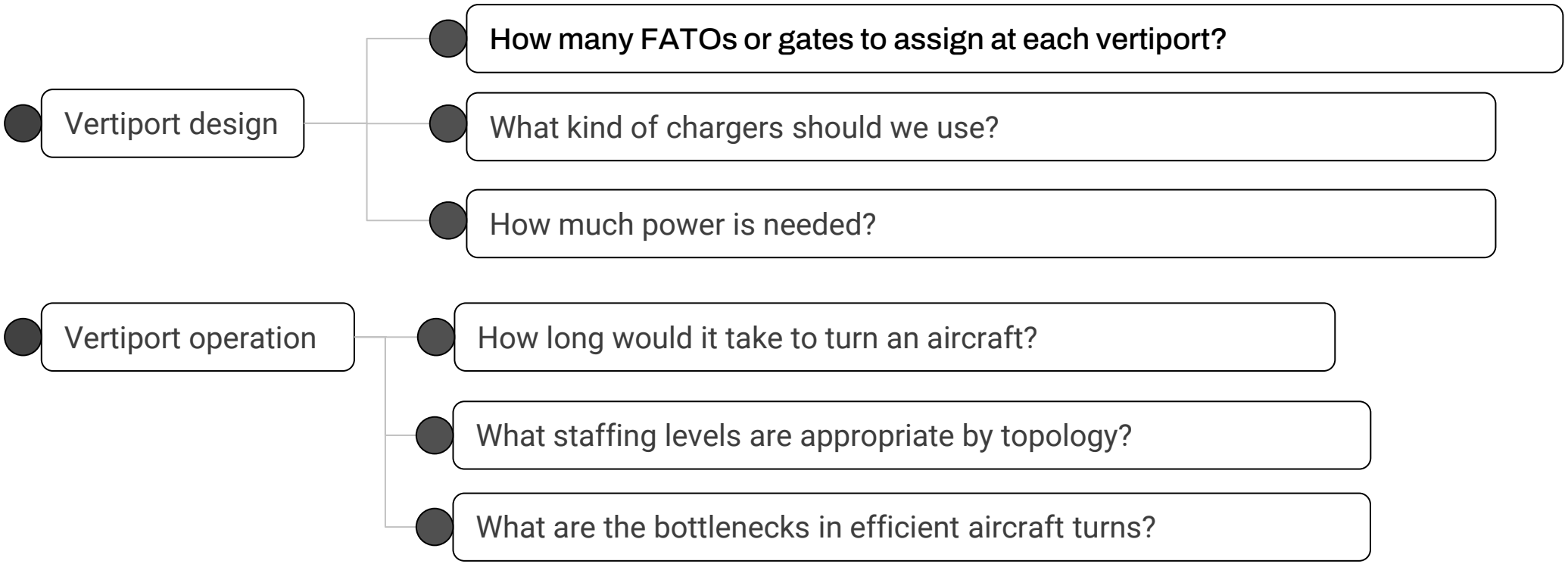
1 FATO(s), **3** Gate(s)



2 FATO(s) , **0** Gate(s)

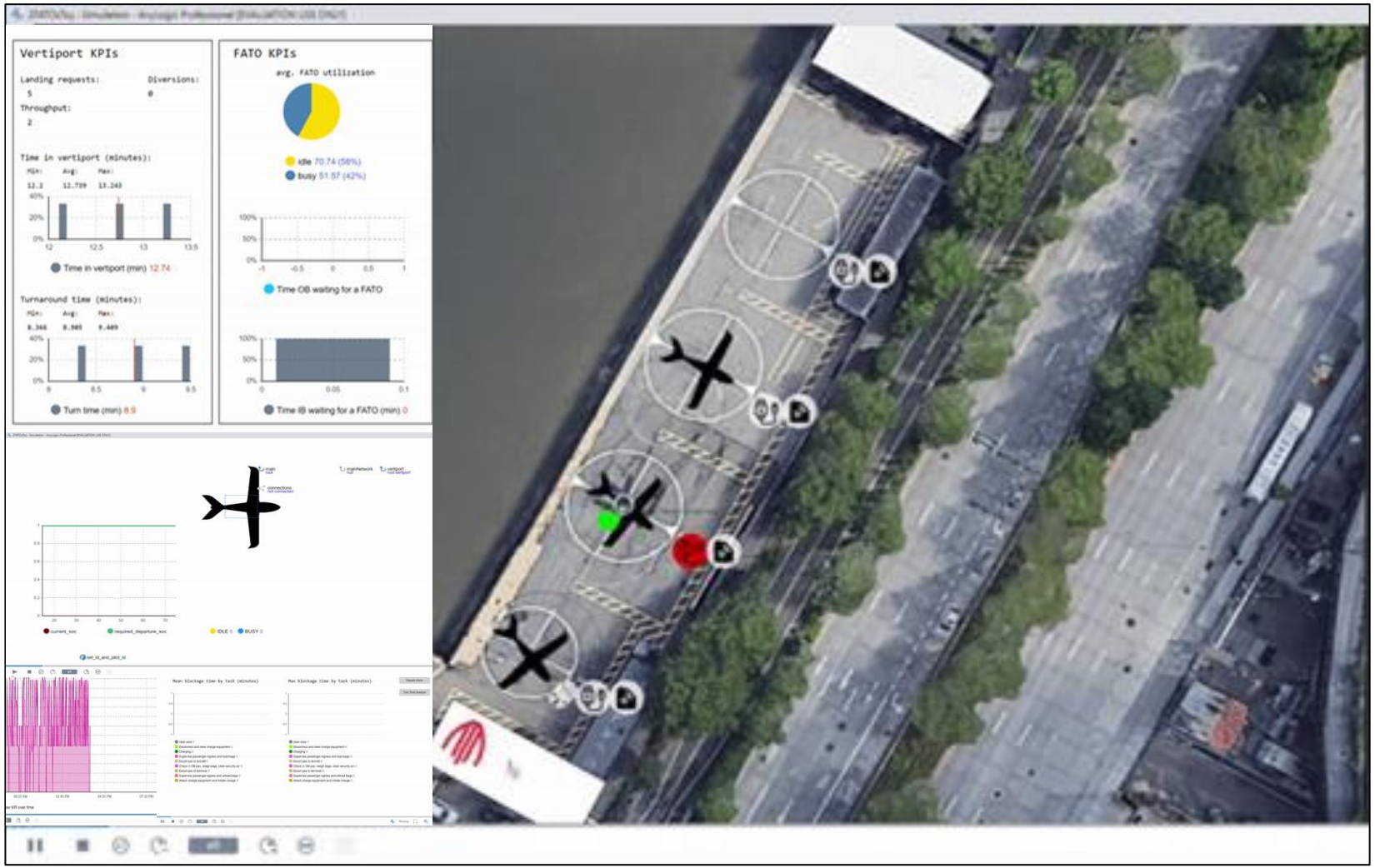


Launching a UAM Service: **Key Questions to Address**



Our goal: is to take a data driven approach to quantify the trade-offs between different designs and operational alternatives

The Solution: **Zoey Vertiport Simulation Model**



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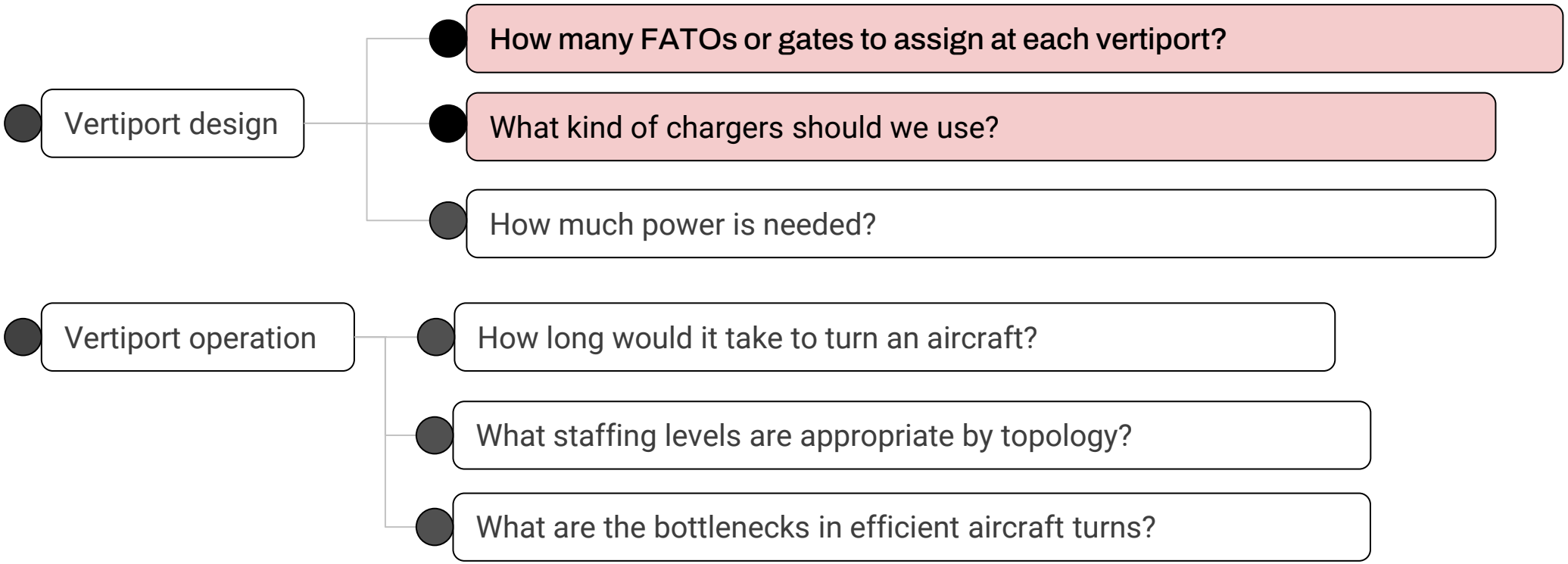
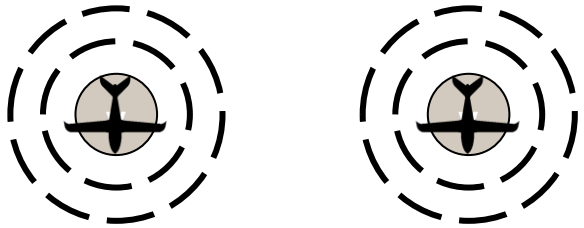


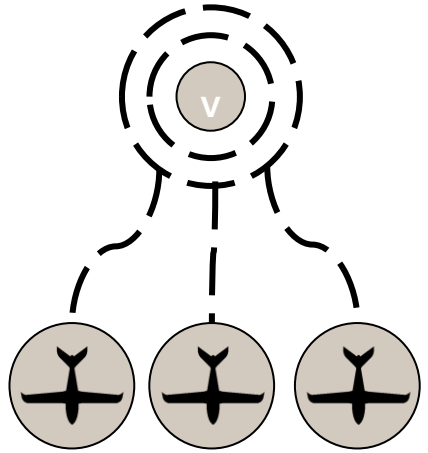
Use Case 1: **Topology Evaluation**

- Urban areas often have *very limited* available space for infrastructure like vertiports
- While certain layouts offer greater capacity, others offer high aircraft utilization
- How do they compare in terms of throughput?

2-FATO : 0-Gates
smaller capacity -> lower deployment
higher aircraft utilization (no taxing needed)

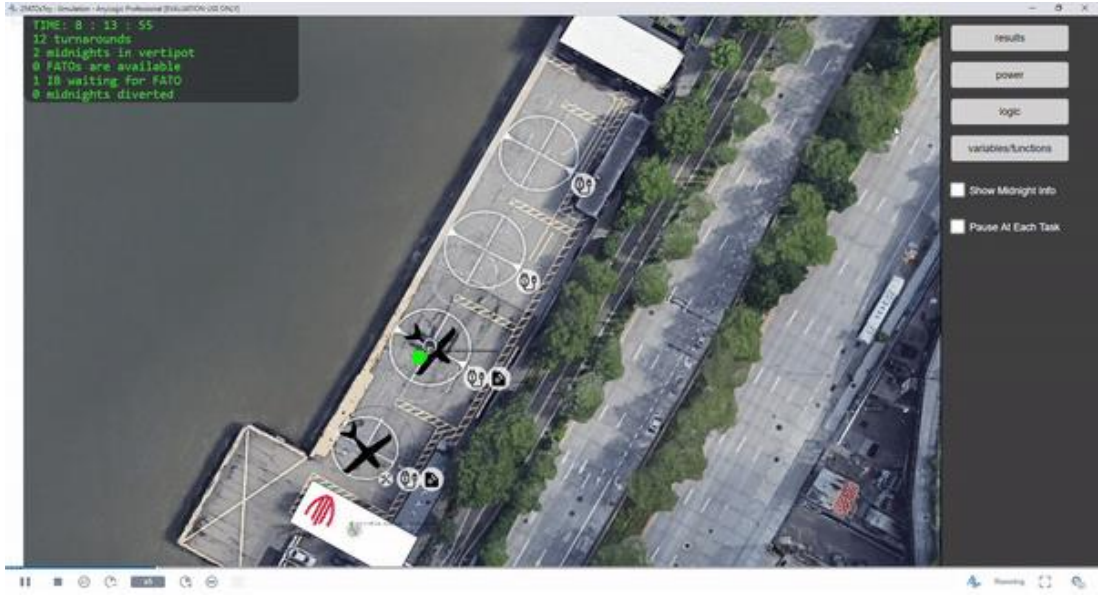


1-FATO : 3-Gates
larger capacity -> higher deployment
lower aircraft utilization (needs taxiing)

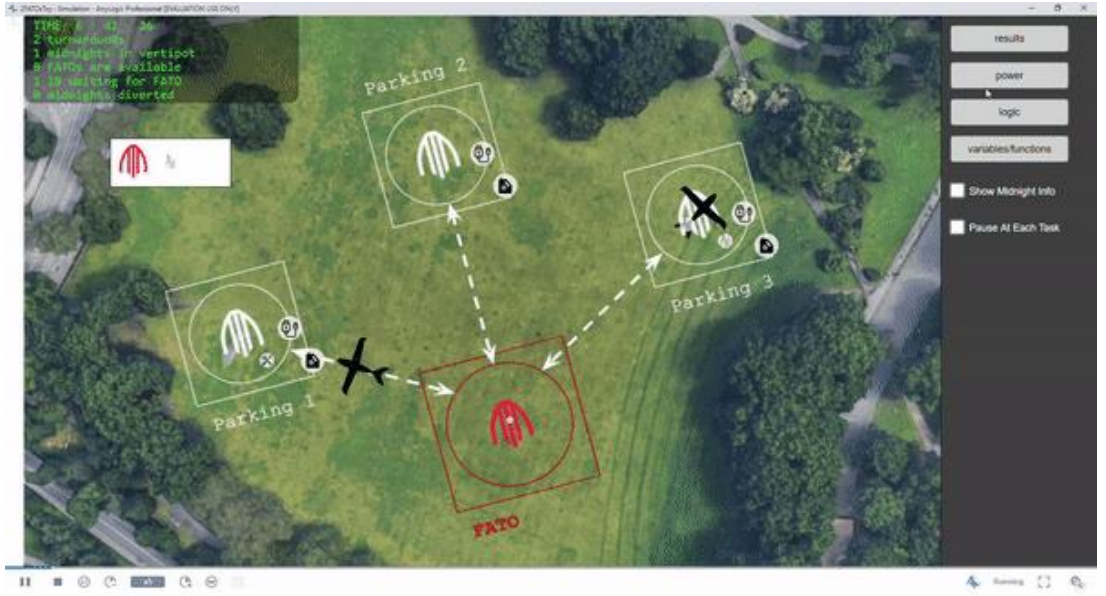


Use Case 1: **Topology Evaluation**

2-FATO : 0-Gates

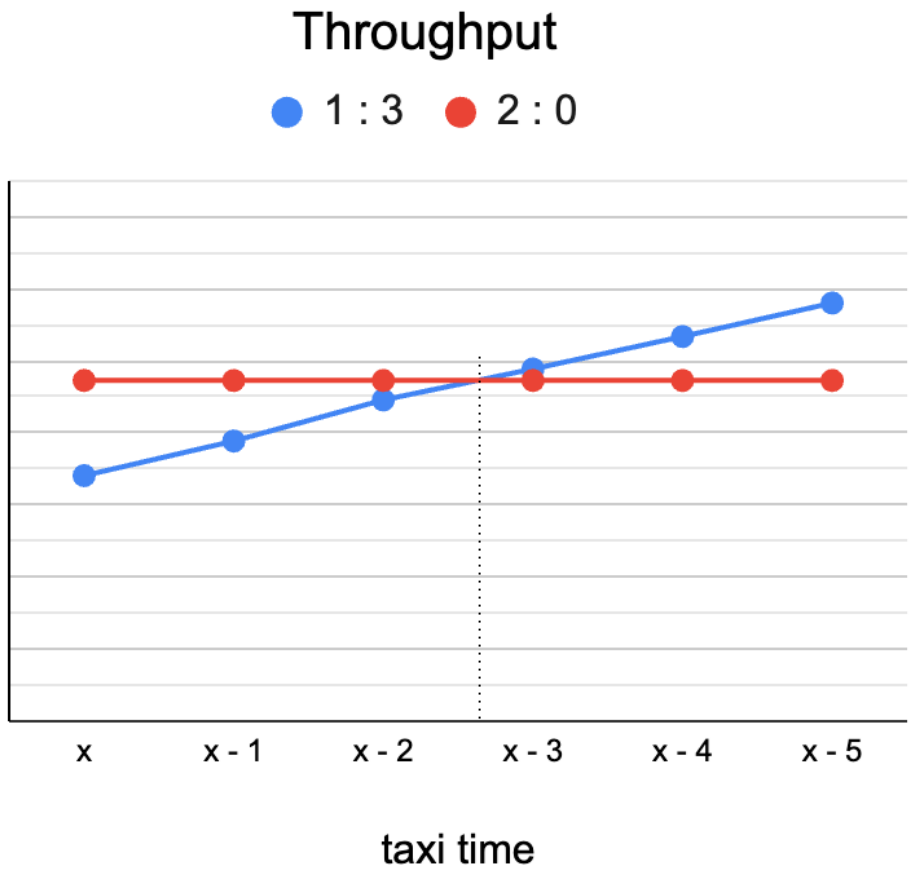


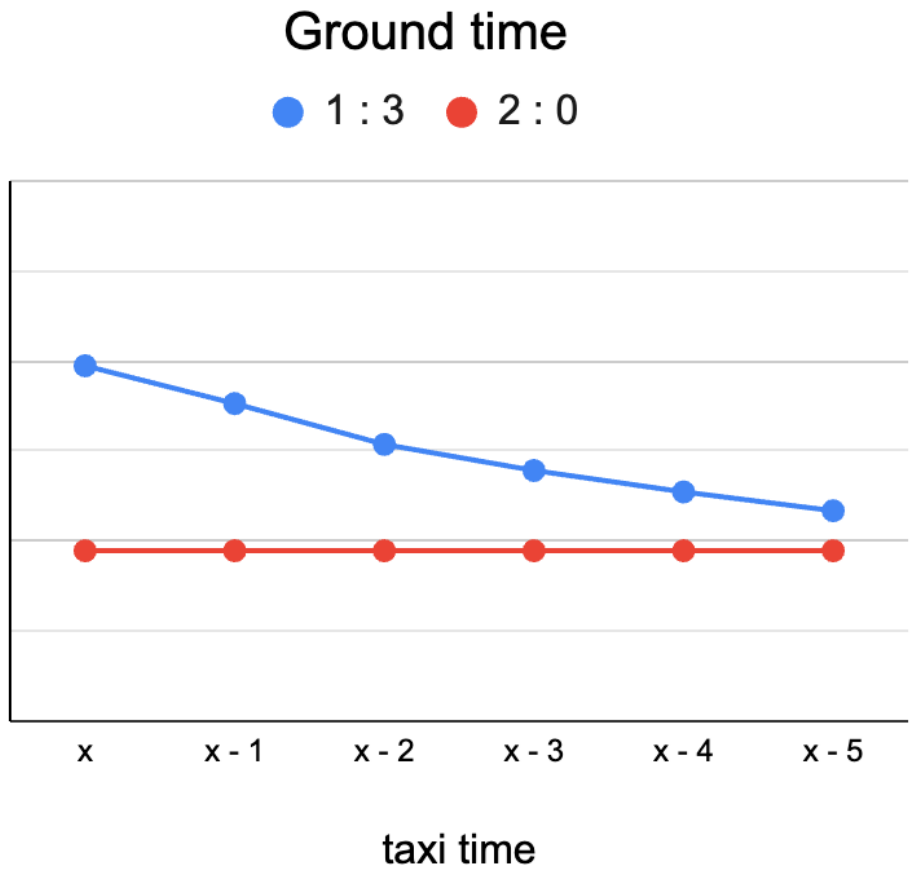
1-FATO : 3-Gates



How do these topologies compare?

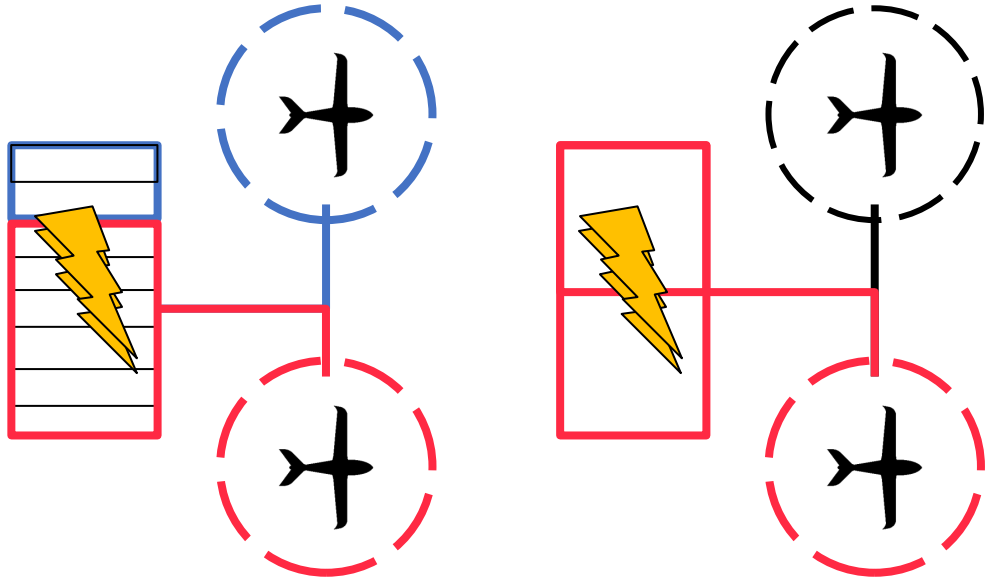
Use Case 1: **Topology Evaluation**





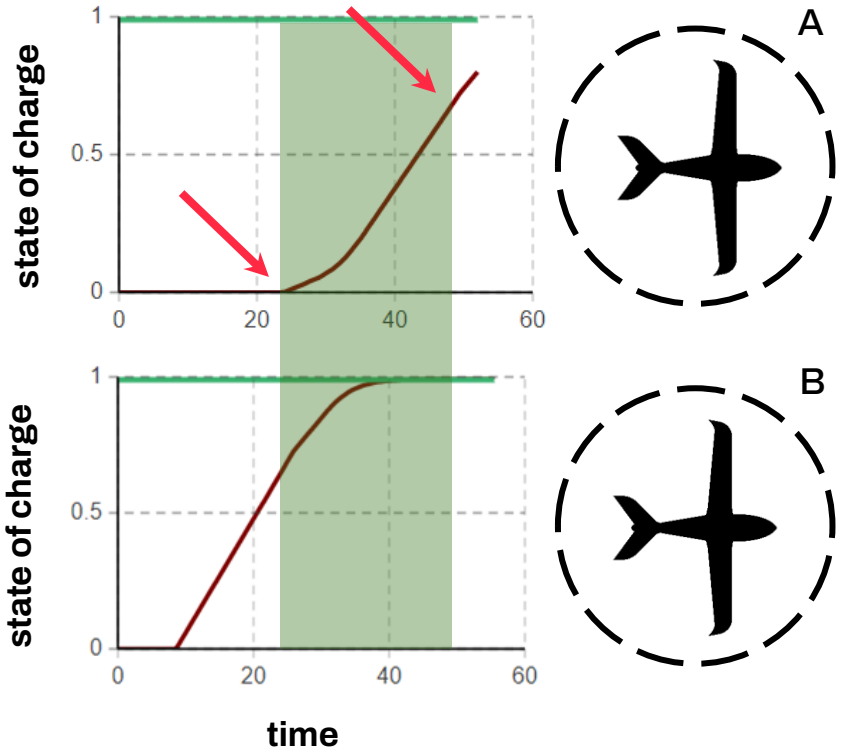
Use Case 2: **Charging Infrastructure**

- Chargers can built with one the following configurations: 2-module or 8-modules
- **Do the benefits of the increased granularity offset the higher costs?**

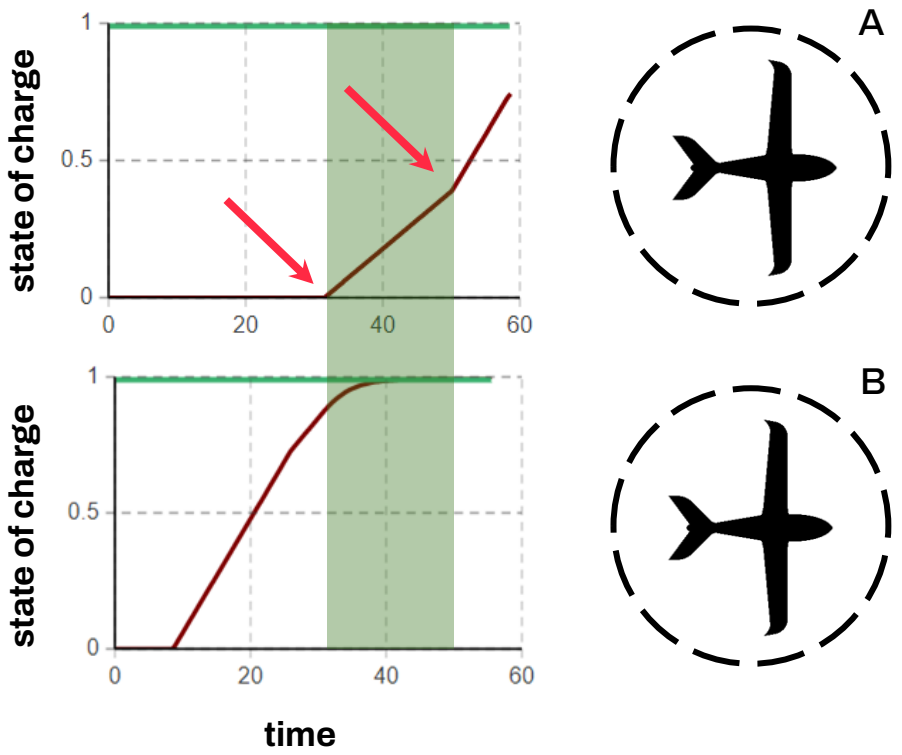


Use Case 2: **Charging Infrastructure**

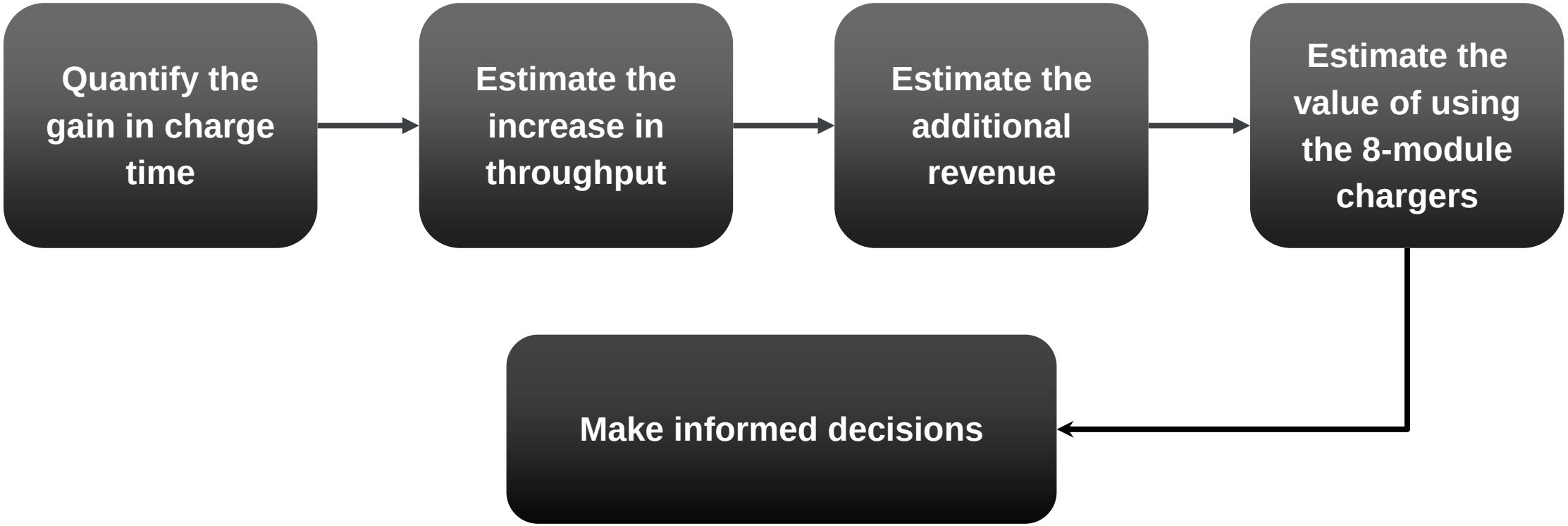
8-Module Charger



2-Module Charger



Use Case 2: **Charging Infrastructure**



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Thank You!