Washington Electric Aircraft Feasibility Study

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Planning for the Next Aviation Revolution

- Electric aircraft are flying today, with more companies entering the market
  - Over 200 models under development

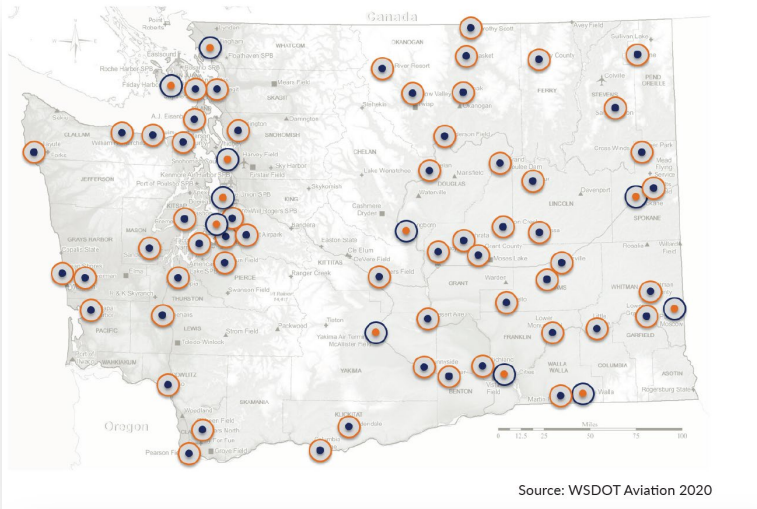
- November 2020 WSDOT completed a one-year consultant lead study on the potential impacts of electric aircraft for Washington State

- There is great potential to open up new markets for air travel while reducing greenhouse gas emissions

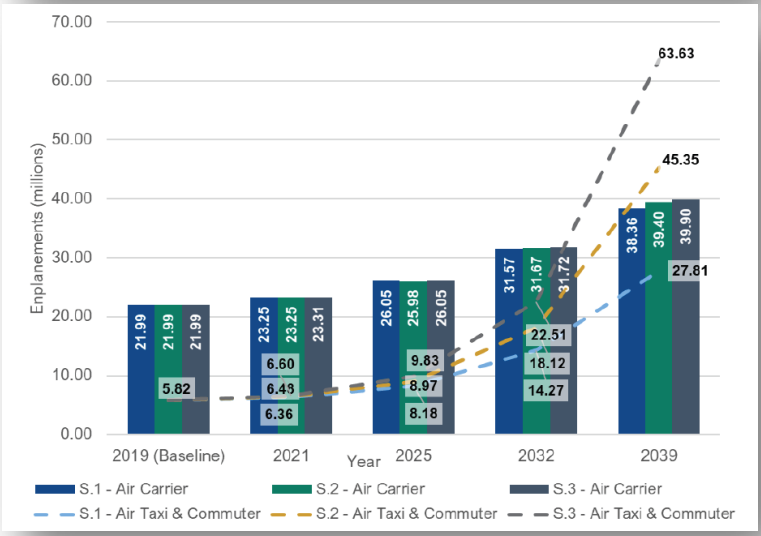
- Planning for implementation of electric aviation is key to successful adoption

eAircraft Feasibility Study Findings

- eA has potential to increase access to commercial aviation for individuals and businesses
  - Leading to economic growth supporting jobs and creating business revenues
- Air taxi & commuter operations to increase in 2025, with dramatic growth after 2032
  - Until larger passenger aircraft are viable airline operations will not see as much growth
- Aviation represents 0.46% of emissions in Washington State and 2.4% of global CO2 emissions and is projected to increase
  - Electric aircraft could help reduce the aviation emissions and noise
- Electric propulsion is key for Advanced Air Mobility



Source: WSDOT Aviation 2020



eAircraft Feasibility Study Findings

- Batteries will initially limit the size of all-electric aircraft
  - Small regional aircraft
  - Air taxis
  - Advanced Air Mobility
- Larger aircraft will most likely be powered with combustible fuels for quite some time
  - Aircraft produced today will be flying through 2040
- A more sustainable path forward could include powering aviation with:
  - Sustainable Aviation Fuel
  - Electric Propulsion
  - Hydrogen Fuel Cells

What is next for eA in Washington?

Setting the conditions for Advanced Air Mobility in Washington State

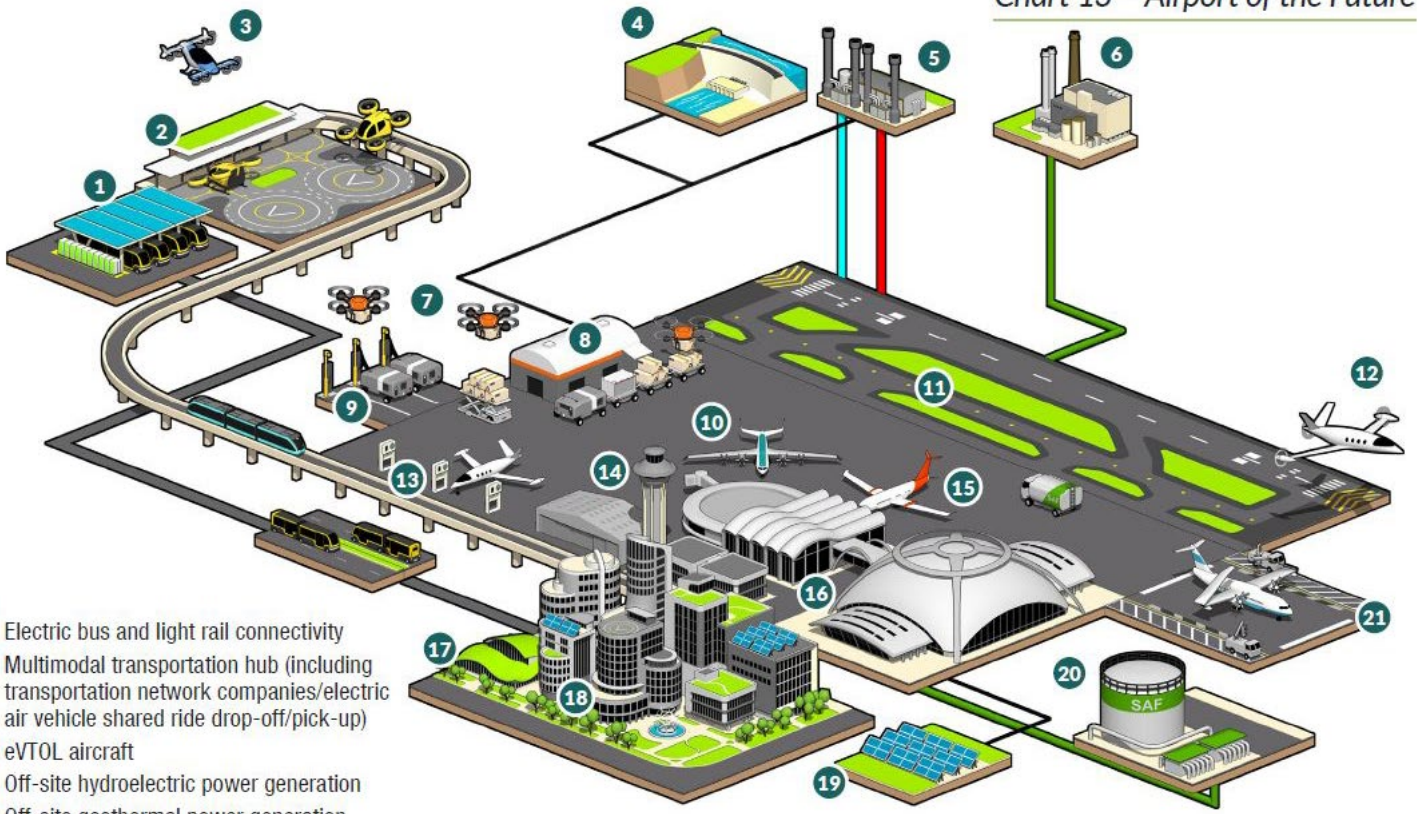
- Emerging technology could help address aviation capacity
- Washington Aviation System Plan
  - Further planning for eA adoption
  - Identification of eA opportunities
- WSDOT Strategic Vision for AAM and Sustainable Aviation
  - Vision for future of aviation in Washington
  - Continue to partner with airports pursuing electric and sustainable aviation technology

WSDOT Strategic Vision for AAM and Sustainable Aviation

- **Planning Initiatives**
  - Encourage airports to include electric and sustainable aviation in their master planning efforts
  - Work to create multimodal connections with airports
  - Keep pace with industry
- **Policy Initiatives**
  - Promote and champion the use of alternative, more environmentally friendly fuel sources
  - Work with partners within the state and local jurisdictions to develop policy around sustainable aviation
  - Promote public acceptance
- **Funding Initiatives**
  - FY 2022: 10% of the annual state grant funds available to airports through WSDOT to fund planning and infrastructure grants to electrify airports

Airport of the Future

Chart 13 – Airport of the Future



1. Electric bus and light rail connectivity
2. Multimodal transportation hub (including transportation network companies/electric air vehicle shared ride drop-off/pick-up)
3. eVTOL aircraft
4. Off-site hydroelectric power generation
5. Off-site geothermal power generation
6. Off-site biomass refinery
7. UAS operating below 400 feet above ground level (AGL)
8. Air cargo handling facility
9. Electric ground support equipment (GSE)
10. Alternative propulsion aircraft
11. Light-emitting diode (LED) taxiway lighting
12. Short take-off and landing (STOL) aircraft
13. Electric aircraft charging stations
14. Air traffic control tower (airspace management/routing considerations)
15. Electric 150+ passenger jet
16. Natural lighting in commercial terminal
17. Green roof
18. Mixed-use landside development
19. On-site renewable energy generation with microgrid connectivity
20. SAF
21. Centralized deicing facility with glycol runoff collection system

Source: Kimley-Horn

Thank you!

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