

## BULLET BACKGROUND PAPER

### ON

## DEPARTMENT OF THE AIR FORCE ELECTRIFICATION PILOT PROGRAMS

### PURPOSE

Provide an overview of Department of the Air Force (DAF) electrification strategy and ongoing base, fleet, and flightline electrification pilot programs at DAF installations.

### BACKGROUND

- To reduce operational risks and increase resilience, DAF is electrifying its installations, buildings, non-tactical vehicles (NTVs), and flightline equipment.
- In March 2023, the Department of Defense issued a memorandum, *Electrification of Standard Building Operations*, requiring all services to maximize the use of all-electric technologies in building design, construction, repair, and operations, where market-ready technologies exist.
  - The Office of the Deputy Assistant Secretary of the Air Force for Environment, Safety, and Infrastructure (SAF/IEE) will release an electrification memorandum providing interim guidance and an exceptions process for DAF installations to implement these requirements, posturing infrastructure for electrification and modernization without disruption to operations.
- Aligned with the Administration's priorities and national security imperatives, the DAF Climate Action Plan (CAP), released October 2022, outlines three major priorities for the Department: 1) Maintain Air and Space Dominance in the Face of Climate Risks, 2) Make Climate-Informed Decisions, and 3) Optimize Energy Use and Pursue Alternative Energy Sources. Electrifying installations supports several DAF CAP Key Results (KRs):
  - KR 1.6: DAF installations portfolio is net-zero emissions by Fiscal Year (FY) 2046, including a 50% emission reduction from 2008 levels by FY33.
  - KR 3.2.3: 100% carbon pollution-free electricity (CFE) on a net annual basis by FY30, including 50% 24/7 CFE.
  - KR 3.2.4: 100% zero emissions NTV acquisitions by FY35, including 100% zero emission light-duty vehicle and aircraft support equipment acquisitions by FY27 and FY32, respectively.

### DISCUSSION

- DAF is testing new, all-electric technologies at select DAF installations through a series of pilot programs focused on base, fleet, and flightline electrification. Lessons learned from the pilots will inform the Department's future policy approaches and investment needs to strengthen mission assurance and meet resilience goals.

### Base Electrification

- SAF/IEE launched the Base Electrification Pilot Program in 2023 to evaluate electrification pathways and grid impacts at selected installations.

### Fleet Electrification

- SAF/IEE, in partnership with Headquarters Air Force, Logistics (AF/A4L) and the Air Force Civil Engineering Center Office of Energy Assurance (AFCEC/CN), launched the NTV Fleet Electrification Pilot Program in December 2021 to evaluate fleet electrification opportunities and potential impacts at 2 initial domestic pilot installations. The pilot program has since added 16 locations in FY22 and 27 additional locations in FY23, for a total of 45 pilot locations.
  - SAF/IEE identified pilot locations through a tiering process that considered status of Installation Energy Plans, number of candidate vehicles for zero-emission vehicle (ZEV) transition, electric vehicle charging facility availability, diverse mission sets, and market conditions.
- SAF/IEE will release a policy letter supported by an NTV Fleet Electrification Framework to guide DAF installations through the project requirements to develop and install electric vehicle charging facilities and support a future-state 100% zero emission NTV fleet.

### Flightline Electrification

- Installation flightlines provide space for operations groups to load cargo and perform missions, and for maintenance groups to conduct routine inspections of aircraft and operational equipment. To ensure operations and missions are successfully completed, DAF installation flightlines must be properly maintained and modernized.
- The Air Force Research Laboratory (AFRL) is leading several pilots to develop and test prototypes of mobility aircraft cargo loaders, light carts, generators, and other flightline equipment.
  - The AFRL pilots are also evaluating full flightline electrification, including support equipment and vehicles, based on market availability and mission support compatibility.
  - Flightline and NTV fleet electrification pilots will be synchronized to strategically ensure charging infrastructure is streamlined and compatible with associated vehicles and equipment.

### RECOMMENDATIONS

- None, information purposes only.