Appendix F: Aspen-Pitkin County Regional Airport 2017 Inventory Memo

Aspen Pitkin County Airport

2017 Greenhouse Gas Inventory

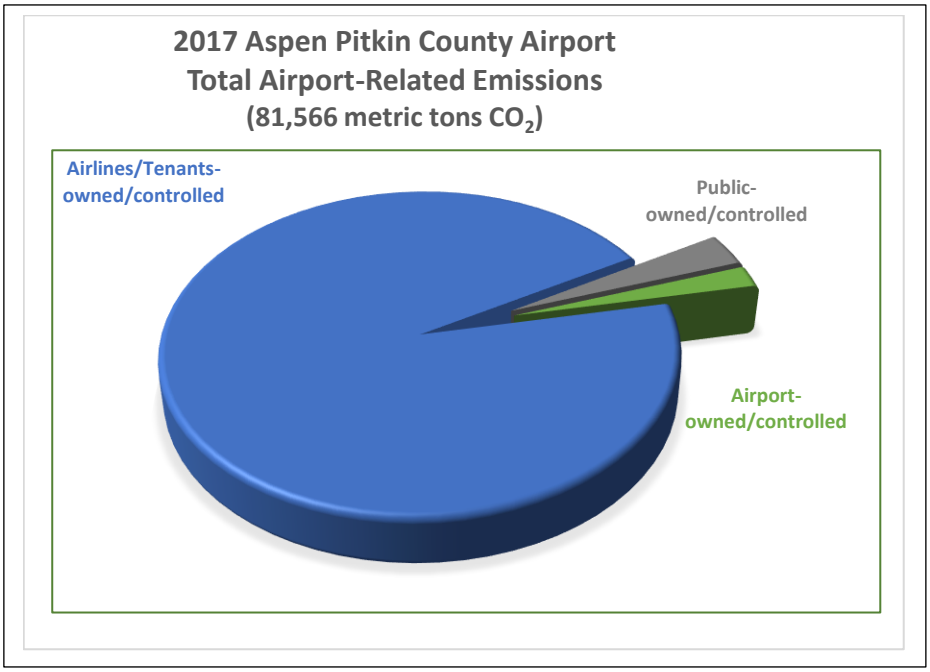
Pitkin County was one of the first airports in the US to prepare a total airport-related emissions inventory that captured the emissions of sources by ownership and/or control. The County has performed its updated emissions inventory for year 2017. Pitkin County has voluntarily prepared a greenhouse gas emissions inventory associated with its Airport Section, which operates Aspen/Pitkin County Airport. The approach used by the Airport reflects the Airport Cooperative Research Program (ACRP) Report 11 *Guidebook on Preparing Airport Greenhouse Gas Emissions Inventories*. The approach used by Pitkin County is intended to dovetail with the City of Aspen's Canary Initiative which relies on the guidance of the International Council for Local Environmental Initiatives (ICLEI) for community-based emissions inventories.[23]

Most notable in the approach, is that the emissions are separated by those sources that the Airport has ownership or control, versus emissions owned and controlled by tenants/users or the general public that uses the Airport.

Results

Table 1 shows the results of the 2017 inventory in comparison to the 2014, 2011, and 2006 inventories.[24] In 2017, total airport-related emissions were 81,566 metric tons of carbon dioxide (CO_2). Key findings:

- Pitkin County owns and/or controls sources at the Airport that represent 2.1% of total emissions
  - Pitkin County-owned or controlled emissions **decreased** 0.5% in 2017 over 2014 levels;
  - While emissions are greater than 2006, Airport-owned and controlled emissions have **decreased** from 2011 to 2014 and **decreased** again from 2014 to 2017.



[23] The ICLEI guidance suggests the use of ACRP Report 11 for the airport portion of the community inventories.

[24] The GHG inventory for Aspen-Pitkin County Airport is updated every three years.

- Aircraft operator/tenant emissions reflect 94.7% of total airport-related emissions.
  - Aircraft emissions reflect 89.3% of total airport-related emissions.
  - Total tenant-owned and controlled emissions **increased** 32.5% between 2014 and 2017.
  - Tenant ground support equipment emissions **decreased** 31% between 2014 and 2017.
- Public owned and controlled emissions, from travel to and from the Airport, increased 13.7% over 2014, but represents only 3.2% of total airport-related emissions

The inventory prepared by Pitkin County for the Airport, is used by the City of Aspen Canary Initiative to identify airport emissions so the methodology remains consistent. For the Canary Initiative inventory, specific lines in the information in **Table 1** are used:

- Airport owned or controlled ground support equipment (fleet vehicles) – 256 metric tons (**decreased**)
- Aircraft emissions – 72,879 metric tons in 2017 (**increased**)
- Airline/tenants ground support equipment – 4,319 metric tons (**decreased**)
- Subtotal – 77,454 metric tons in 2017, an **increase** of 32 percent over 2014 (58,525 metric tons)

This increase is due to the increase in the quantity of Jet A fuel dispensed, which increased by 40% between 2014 and 2017.

The Canary Initiative does not use the Airport's building/facility emissions or ground travel emissions, as those emissions are rolled up into the overall city building/facility and ground travel emissions.

Tracking Key Metrics

Table 2 lists many of the key metrics that are used in the underlying greenhouse gas inventory. This is the same methodology that has been used in the previous four reports. Most notable in the changes between 2014 and 2017 are:

- Total operations increased by 19.8% whereas the number of passengers increased by 11.1%
- A 5% increase in the use of electricity by airport facilities
- A 10% reduction in airport facility use of natural gas
- A 64% increase in airport fleet vehicle unleaded gas use with a reduction of 15% in the use of diesel gas in the airport fleet vehicles
- A 40% increase in the quantity of Jet A fuel dispensed (sold) to aircraft: at the Airport
  - Commercial Jet fuel sales represented 40.6% of total fuel sold in 2017
  - General Aviation Jet fuel sales represented 59.4% of fuel sold in 2017
  - Increase in overall fuel dispensed/sold at the Airport is tied to a 19.8% increase in operations paired with an over 20% increase in the overall stage length (i.e. the distance an aircraft flies).
- Avgas sold to general aviation aircraft increased 3.8%
- Rental car activity increased by 16.8%

- Use of the Airport's parking lot decreased. This decrease was likely due to a change in the reporting process during 2017 that will show a notable increase in 2018.

Mitigation Measures

The following mitigation measures have been identified in the Pitkin County Climate Action Plan by the Airport for implementation as funds become available.

- Replace the old terminal with more energy efficient terminal
- Consider geo thermal or other renewables as part of the terminal complex
- Identify high emission vehicles that are in line for replacement and replace earlier
- Consider replacing airfield lighting with LED lighting
- Aircraft: Encourage reliance on alternative fuels
- AUP use of apron parking—installation of preconditioned air and electric GPUs
- Rental Cars: with the new facility, include energy efficiency and water conservation in the QTA
- Investigate rewards for increase vehicle occupancy/ride share
- Increase ridership of public transportation
- Require taxi and airport shuttles to meet an MPG standard
- Rental Cars: require rental car operators to meet an MPG standard for on-site rental agreements

TABLE 1 – Aspen-Pitkin County Airport CO2 Emissions (metric tons)

User/Source Category	2017 CO2 (tons/year)	Percent of User	Percent of Total	2014 CO2 (tons/year)	2011 CO2 (tons/year)	2006 CO2 (tons/year)	% change 2014-2017
Airport-owned/controlled							
Facilities/Stationary Sources	1,334	77.2%	1.6%	1,350	1,529	1,326	-1.2%
Ground Support Equipment	256	14.8%	0.3%	256	147	155	0.1%
Ground Access Vehicles							
Passenger vehicles (on-airport roads)	15	0.9%	0.0%	15	16	15	3.5%
Hotel shuttles (on-airport roads)	6	0.3%	0.0%	6	6	7	0.0%
Rental Cars (on-airport roads)	6	0.4%	0.0%	5	3	1	16.8%
Airport Employee Commute (all roads)	111	6.4%	0.1%	105	80	81	6.3%
Subtotal	**1,728**	**100.0%**	**2.1%**	**1,736**	**1,781**	**1,584**	-0.5%
Airlines/Tenants/Aircraft Operator-owned/controlled							
Aircraft							
Approach	3,357	4.3%	4.1%	2,236	1,852	2,110	50.1%
Taxi/Idle/Delay	2,503	3.2%	3.1%	3,644	3,017	3,433	-31.3%
Takeoff	10,183	13.2%	12.5%	4,110	3,402	3,869	147.8%
Climb out	2,556	3.3%	3.1%	1,069	886	1,009	139.0%
Residual/Cruise/APU	54,281	70.3%	66.5%	40,915	33,877	38,560	32.7%
Sub-total	72,879	94.4%	89.3%	51,974	43,034	48,982	40.2%
Ground Support Equipment	4,319	5.6%	5.3%	6,295	5,210	5,924	-31.4%
Ground Access Vehicles							
Tenant GAV	0	0.0%	0.0%	0	0	0	0.0%
Tenant Employee Commute (all roads)	29	0.0%	0.0%	23	25	25	25.0%
Stationary Sources	0	0.0%	0.0%	0	0	0	0.0%
Subtotal	**77,227**	**100.0%**	**94.7%**	**58,292**	**48,270**	**54,931**	32.5%
Public-owned/controlled							
Passenger Vehicles (off-airport roads)	584	22.4%	0.7%	561	603	557	4.1%
Rental Car Travel (on-airport roads)	2,022	77.4%	2.5%	1,731	1,929	589	16.8%
Hotel Shuttles (off airport roads)	6	0.2%	0.0%	6	6	6	0.0%
Subtotal	**2,612**	**100.0%**	**3.2%**	**2,298**	**2,537**	**1,152**	13.7%
Total	**81,566**		**100%**	**62,326**	**52,588**	**57,667**	30.9%

Note: In 2017, the Airport's aircraft emissions in the LTO were calculated using AEDT, the FAA's new emissions model.

TABLE 2 TRACKING METRICS

User/Source Category	2017	2014	2011
Airport-owned/controlled			
Facilities/Stationary Sources			
- Electricity (kWh)	1,652,578	1,551,872	1,491,019
- Natural Gas (ccf)	42,675	47,688	49,636
Terminal	28,786.0	30,435.0	33,613.0
Airport Main Term-TSA	661.0	305.0	824.0
AOC	13,228.0	16,948.0	15,199.0
Airport Fleet Vehicles (gallons)			
- Fleet Vehicles Gas	8,789.40	5,371.20	4,820.60
- Fleet Vehicles Diesel	17,499.50	20,471.30	10,242.50
Subtotal			
Airlines/Tenants/Aircraft Operator-owned/controlled			
Aircraft (annual Operations)	42,426	35,395	37,671
- Jet A (gallons)	7,587,108	5,403,433	4,472,392
- Avgas (gallons)	33,804	32,559	28,797.00
Subtotal			
Public-owned/controlled			
Passengers (total passengers)	487,287	438,258	432,586
Rental Car Travel (assuming 6- day rental)	21,488	18,398	18,527
Parking Lot (parking exits x 2)	63,072	64,776	69,390

Note: Rental cars - reflect 128,931 rental days in 2017 @ 6 days rental