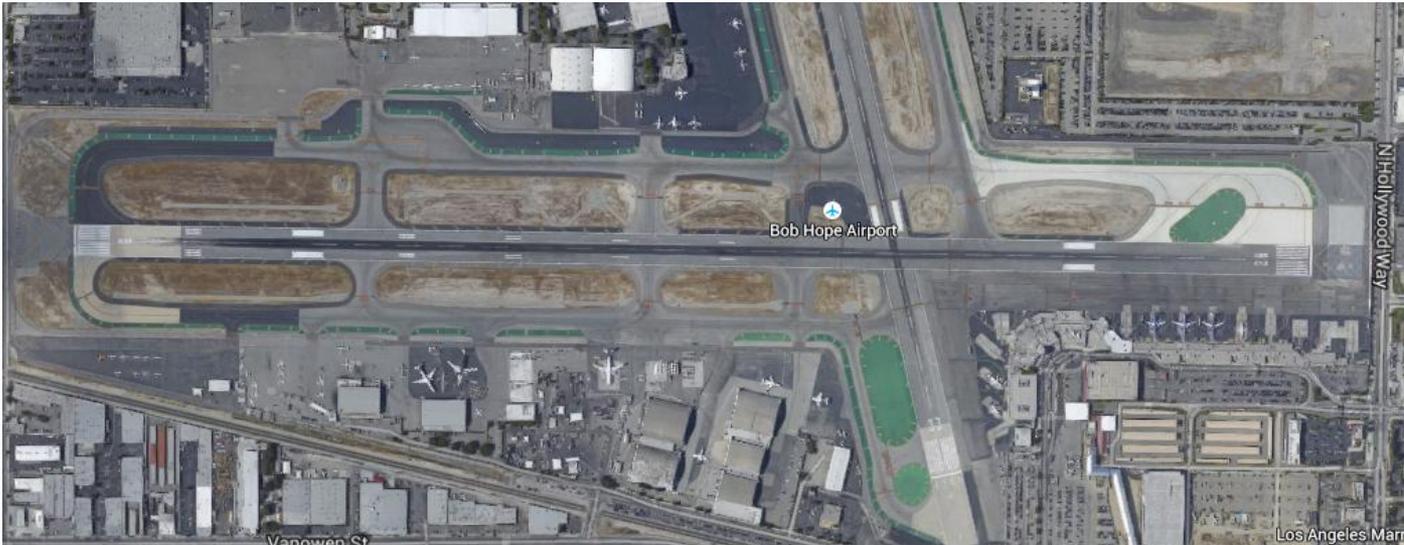




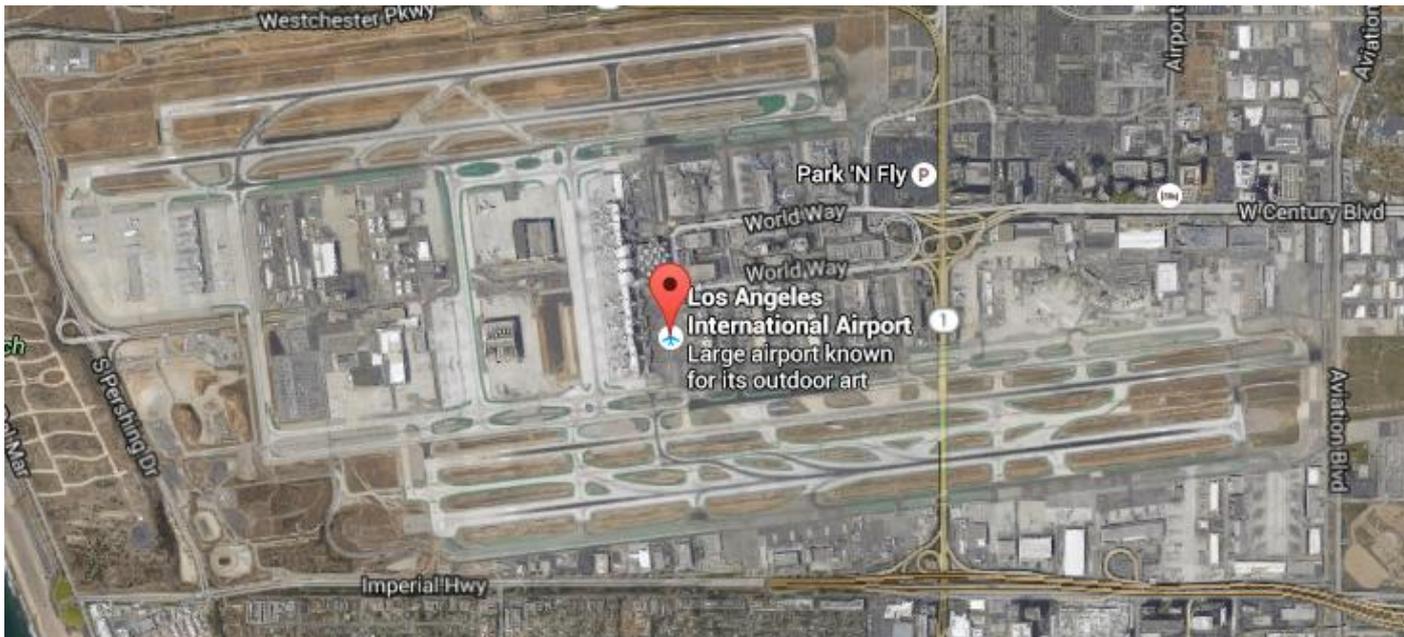
SWA Environmental Services  
Adam Walters

## CA GSE Progress

- Electric infrastructure installed at all CA airports served by Southwest
- Significant reduction of diesel engines – replaced with electric, gasoline, or propane
- At each airport, a few diesel powered engines are necessary to respond to emergencies or remote aircraft parking
- Remaining diesel engines replaced or repowered with at least Tier III.



**BUR**



**LAX**

## Aircraft Changes

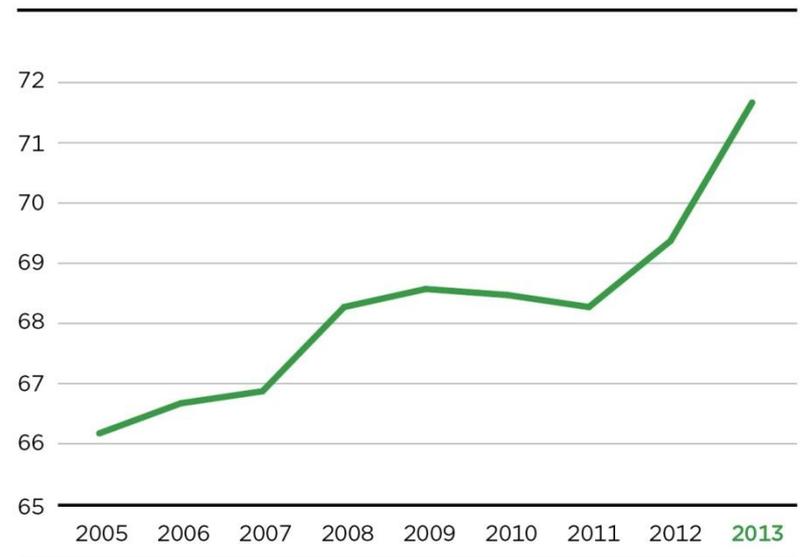
- Fleet modernization – Addition of 737NG-700s & -800s, retirement of Classics
- Winglets (Split Scimitar and Blended) – Most effective modification measure – savings of >50 million gallons of fuel in 2013 alone
- Galley dry goods weight reductions
- Engine wash
- Electronic flight bags-2014
- Red Rock Biofuels – 3MM Gal per year intended for boarding in the CA Bay Area

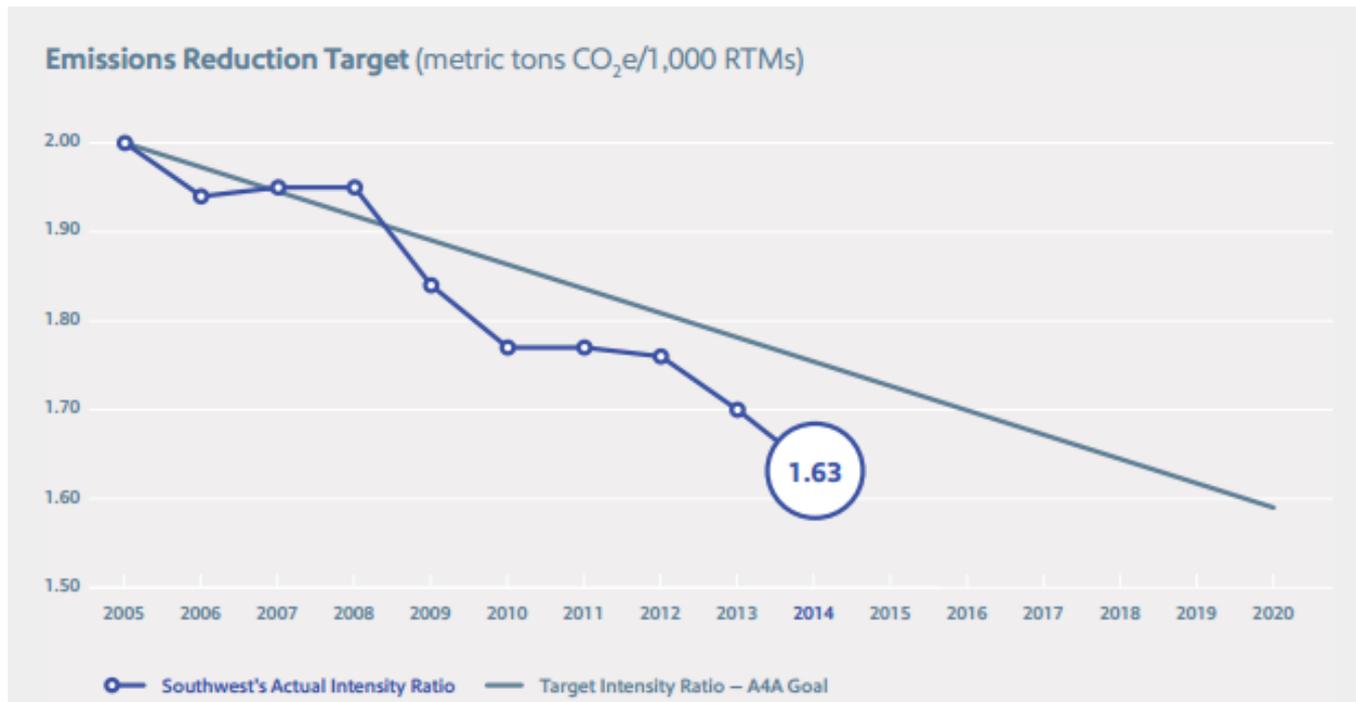
Southwest Airlines' fuel efficiencies led to an absolute decrease in GHG emissions in both 2013 and 2014.

## Operational Changes

- Required Navigation Performance (RNP)
- Single engine taxi
- Taxi fuel reduction
- Contingency fuel adjustments

Historic Jet Fuel Efficiency Improvement  
(ASMs/gallon)





- Industry Goal of 1.5% efficiency improvement based on revenue-ton-miles through 2020 (A4A)
- Cap industry-wide CO<sub>2</sub> emissions from 2020 (carbon-neutral growth) subject to critical aviation infrastructure and technology advances achieved by the industry and government
- Contribute to an industry-wide goal of reducing net CO<sub>2</sub> emissions by 50 percent by 2050, relative to 2005 levels

- Airlines want to work with AQMD to meet targets
- Funding for R&D on the next generation of aircraft and GSE
- Understand complexities with the Aviation Industry and regulating aircraft