

Decisions for Trump

Reviving a market

Deterring North Korea

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CO₂ Watchdogs



Monitoring carbon dioxide emissions from orbit could someday hold polluters accountable. Will the US participate?

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Shaping the Future of Aerospace

DECISION TIME FOR TRUMP

5 Aviation Decisions

Henry Canaday sees an aviation industry that wants Trump's help to grow, but safely and cleanly.



CANADAY

1. Should air traffic management be separated from FAA safety regulation to speed up the NextGen air traffic modernization?

ANALYSIS – The Trump team may know that NextGen, with its GPS-based navigation approach, offers dramatic reductions in time, cost, fuel burn and emissions for air travel, along with increasing the capacity of the airspace and improving safety. The president-elect's administration will need to decide whether these gains could be achieved faster outside the FAA.

So far, new navigation and communications equipment has been installed on the ground and on aircraft under the array of programs within

NextGen. But changes in flight paths and rules that represent the real aim of this vast initiative have taken longer to implement. Most U.S. and international airlines want to spin off traffic management from the FAA into a nonprofit corporation controlled by a board of public and private stakeholders to expedite NextGen. The body could raise funds on capital markets, charge for services and set priorities without political pressures. On the other hand, transitioning traffic controllers to a new organization might interrupt NextGen activities. And some worry that airlines would dominate the new entity's decisions, disadvantaging non-commercial aviation, labor or other interests.

2. Should the U.S. preserve and expand Open Skies agreements?

ANALYSIS – The U.S. and the European Union countries are among those that favor free-market competition among passenger and cargo carriers in both the domestic and international passenger markets, rather than setting ticket prices or limiting airlines to particular routes. The chief mechanism for ensuring international competition has been the Open Skies policy, agreements the U.S. has negotiated with 120 foreign partners, representing 70 percent of America's international departures. These allow unlimited flights between agreeing nations.

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With President-elect Donald Trump promising big, but still-evolving, policy changes, we asked two leading aerospace journalists to analyze the most important decisions facing the incoming administration.



Associated Press

5 Space Decisions

Warren Ferster says Trump is arriving at a pivotal era for those involved in space, whether for exploration, business or science.



1. Should NASA operate the International Space Station beyond 2024?

ANALYSIS – This is a linchpin decision for president-elect Trump and his team. NASA has pledged to fly the orbiting lab for seven more years, and its international partners have followed suit or are expected to do so. The question is whether to extend operations even longer, to at least 2028, or whether to steer the more than 400,000-kilogram behemoth into the atmosphere, where it would break apart with surviving pieces splashing down in the Pacific Ocean.

A decision to abandon the station in 2024 would surprise many observers, given that assembly was not completed until 2011.

“I can’t imagine that, in 2028, you’re going to dump a \$100 billion asset into the ocean,” Robert Walker, a former U.S. congressman who began advising the Trump campaign in October, told the FAA’s Commercial Space Transportation Advisory Committee before the election.

If the Trump administration decides to extend the station, it must weigh whether more responsibilities can be handed off to the private sector to reduce today’s approximately \$4 billion annual expenditure on space station operations and support. Currently, SpaceX and Orbital ATK are under contract to deliver cargo to the station, while Sierra Nevada is developing its Dream Chaser spacecraft for station logistics, too. SpaceX and Boeing have contracts for commercial crew launches, which could start in 2018.

NASA officials are looking at three broad operating schemes: limiting NASA dollars to those space station activities that further the agency’s deep space exploration goals; investing in activities that support exploration and also commercialization goals; and investing NASA dollars more aggressively in commercialization

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▲ **Robert Walker,** a Trump administration adviser and former U.S. congressman, sees the International Space Station continuing beyond 2024 but with operations shifted more toward the private sector.

►► **AVIATION DECISIONS** Continued from page 34

To keep this competitive momentum going, many free-marketers would like Open Skies agreements with the countries that account for the remaining 30 percent of international departures. The U.S. also would need to renegotiate its Open Skies agreement with the United Kingdom, because the U.K. is leaving the European Union and will no longer be covered by the U.S.-EU agreement.

But Open Skies, like other free-trade policies, has its critics. Major U.S. passenger carriers complain that Persian Gulf carriers have used oil revenue to subsidize rapid growth in world markets under Open Skies. Then again, challenging this behavior could endanger the Open Skies approach. The Trump administration faces the challenge of preserving competition and ensuring that it is fair competition.

3. How far should the U.S. go on reducing aviation emissions?

ANALYSIS – The president-elect's team will quickly learn that advocates of cleaner flight see 2016 as a turning-point year. A committee of the International Civil Aviation Organization in February agreed on carbon dioxide emission limits for new aircraft to be applied in the early 2020s. In October, the U.S. joined 190 other nations in agreeing to an ICAO program in which carbon dioxide offsets could be applied to limit carbon emissions. An airline might, for instance, pay another entity or project outside aviation to reduce carbon dioxide emissions in order for the airline to continue emitting CO₂ at more than the level of 2000.

The U.S. signed up for a voluntary offset program, which starts in 2021. ICAO plans on mandatory offsets from 2027 to 2035. If the Trump administration

and Congress accept the offsets, many implementation questions will need to be answered by 2020. Which government department will ensure U.S. compliance? How will carbon dioxide emissions be measured? Will the year 2000 base levels apply to airlines individually or as a whole? Which entities and projects will be eligible for offsets, and how will double counting of offsets be avoided?

4. How can flights of drones be expanded safely in the years ahead?

ANALYSIS – The FAA's new regulations for unmanned aircraft that went into effect in August are unlikely to be the last word on the topic of drones in the national airspace. The regulations allow flights of small drones in many areas but also limit their operating altitudes and create no-drone zones around airports. FAA is working on a system to protect descent and takeoff paths around airports. Many more decisions lie ahead if the Trump administration wants to set the conditions for this market to grow safely. When should geofencing — software that keeps drones from entering certain airspace or forces wayward drones to land — be applied? What rules can best ensure safety, and how can they be enforced? How does drone size affect safety? How should regulation of small, hobbyist drones differ from rules for larger business drones?

5. Should the Ex-Im Bank assist U.S. exports with loan guarantees?

ANALYSIS – The U.S. Export-Import Bank has financed foreign purchases of U.S. aircraft and serves as a counterweight to the export assistance given by other nations to their aerospace industries. But free-market purists in the U.S. consider Ex-Im loan guarantees to be subsidies. Opponents were successful in suspending Ex-Im programs for a while and have limited recent guarantees to \$10 million. Aerospace manufacturers want the \$10 million limit lifted and a regular Ex-Im appropriation bill passed, rather than another continuing resolution. ★

Henry Canaday is a former energy economist who has written for *Air Transport World*, *Aviation Week* and other aviation publications for more than two decades.

initiatives, even if they don't support classic exploration goals. NASA Chief of Staff Mike French described these options at the same advisory committee meeting where Walker spoke.

Walker — a longtime supporter of commercial space “before it was cool,” as one industry executive put it — envisions the station as a beehive of private sector activity. Companies and an expanded set of international partners, potentially including China, would chip in for operations and upkeep.

2. Should new military satellites be “disaggregated”?

ANALYSIS — U.S. planners will surely brief the Trump team about proposals to make military satellite constellations less vulnerable to any antisatellite weapons that China or Russia might wield, either launched from the ground or maneuvering in space. The Pentagon wants to decide very soon what the replacement systems will look like for today's missile warning and nuclear command-and-control satellites. That way, work can begin toward fielding them a decade or two from now. One strategy under discussion, called disaggregation, calls for dispersing communication payloads and sensors across lots of smaller satellites, rather than concentrating them on large, vulnerable platforms.

3. Which agency should study Earth's climate, land and oceans?

ANALYSIS — It's no secret that many Republicans in Congress don't see the wisdom of NASA spending between \$1.5 billion and \$2 billion per year studying Earth when there is a whole solar system and beyond to explore.

The question is whether the Trump administration should try to move NASA's Earth sciences mission portfolio to NOAA, which operates weather satellites and is viewed by some lawmakers as a more appropriate home for that activity.

Moving those programs to NOAA would be complicated and messy and likely require congressional

authorization. Advocates for Earth sciences worry the dollars might not be transferred with the portfolio. The move also could encounter fierce institutional resistance from NASA.

Politically, the powerful U.S. Sen. Barbara Mikulski, D-Maryland, is set to retire in January, so this could be a tempting time to try. Mikulski has been a longtime patron of NASA's Earth sciences work, much of which is performed in her state at the Goddard Space Flight Center.

4. Should the U.S. team with China on space projects?

ANALYSIS — Working with China in space has long been a political taboo for NASA and the Pentagon because of China's growing military power, antisatellite testing, military and industrial espionage, and suppression of dissident groups. But if Robert Walker, a Trump adviser and former U.S. congressman, has his druthers, the president-elect's administration would usher in a thaw in Sino-U.S. civil space relations, similar to that with Russia. He doesn't think U.S. know-how would be at risk:

“The fact is, I think we're probably in a position now where we can learn from China as much as they would potentially learn from us, and there's no doubt that they have some fairly expansive views of utilizing space,” Walker said at a meeting of the FAA's Commercial Space Transportation Advisory Committee before the election.

Perhaps, but whether Capitol Hill's current denizens feel the same remains to be seen.

5. Should FAA manage space traffic?

ANALYSIS — The world's spacefaring nations have long leaned on the Pentagon as their de facto space traffic cop, but military leaders increasingly see this role as a burden and distraction. Commercial satellites are about to explode in numbers, which will make tracking them more challenging. The U.S. military would rather focus on China and Russia, which have maneuvered spacecraft in manners that suggest work toward antisatellite weapons in space. In 2007, China destroyed one of its weather satellites with an antisatellite rocket. Given that trend, the Pentagon wants the FAA to take on the job of providing standard collision avoidance warnings to government and commercial operators, since it already has a commercial space regulatory role. The FAA's Office of Commercial Space Transportation says such a transition could work. It could fall on the Trump administration to give this novel idea an official thumbs-up — or down. ★

Warren Ferster is a senior analyst with the space consulting practice of The Tauri Group in Alexandria, Virginia. He was editor-in-chief of Space News, where he worked for 21 years, starting as the national affairs and policy reporter.

▼ The FAA implemented new regulations

for unmanned aircraft in August, but questions remain on how rules for larger business drones should differ from hobbyist drones, such as Parrot's Bebop 2.

