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Washington



Prices for launching commercial satellites to geostationary orbit have dropped in the past decade and show signs of continuing the trend, a study backed by Arianespace with participation by International Launch Services (ILS) finds.

Measured by kilograms-to-orbit, and adjusted for inflation, analysis by The Tauri Group finds a 34% drop in launch costs from 1999 to 2008. Measured in 2008 dollars, the price for launching a kilogram of payload to GEO fell to \$21,000 in 2007-08 from an average of \$32,000 in 1999-

2000.

One factor “driving this price down was the increase in satellite mass, so basically you’re getting a more efficient launch if you’re launching a larger satellite on the same vehicle that you were launching it on before,” says Tauri Group’s Elaine Gresham, who conducted the study. And vehicle capacity has increased for all major vehicles; up to a metric ton has been gained in the past 10 years.

Gresham and Carissa Bryce Christensen, the group’s managing partner, based their analysis on proprietary data from Arianespace and ILS, which launch commercial spacecraft to GEO with Ariane 5 and Proton vehicles, respectively. Extensive analysis of publicly available data generated price figures for other commercial vehicles —the Sea Launch and Land Launch Zenit, China’s Long March 3B and Atlas V.

“I think this is fairly unassailable data, and the results are the results,” says Christensen.

Clayton Mowry, president of Arianespace Inc., the company’s U.S. affiliate, says he ordered the study to check out complaints by launch customers that the Sea Launch bankruptcy filing and the unavailability of the U.S. military’s Evolved Expendable Launch Vehicles (EELV) for commercial launch were driving up prices (AW&ST Sept. 28, 2009, p. 19).

“Sea Launch goes into bankruptcy; the operators are all scrambling for what to do with their contracts,” Mowry says. “The operators’ reaction was to come back and form this coalition and say, ‘hey, there’s not enough launch capacity out there. We need access to the Chinese rockets and we need access to the EELVs,’ and basically the other thing they were saying was ‘launch prices are up.’”

The Tauri findings jibed with other studies of launch prices in the five years before 1999, and Gresham said preliminary analysis showed a “small” decline in rates in 2009, continuing the trend.

Different market conditions drove the fluctuations over the decade studied, Tauri noted, with decreasing demand and increasing supply in the middle of the period driving costs down below \$20,000/kg. in 2003-04 before registering a slight rebound. The study averaged prices in two-year increments at the time the launches were ordered.

A separate analysis of the price per kilogram by vehicle capacity, as opposed to payload weight, produced a similar trend line. Over the period the price per kilogram of vehicle capacity fell 30%, from an average of \$27,000/kg. in 1999-2000 to \$18,000/kg. in 2007-08.

The Tauri study found an average of 20 commercial launches to GEO in the decade analyzed, and noted an average from four different forecasts of 21-22 launches a year predicted in 2010-18. Capital expenditures by three of the four largest satellite operators in the next five years show a downward trend, suggesting demand-

driven downward pressure on prices.

Adding to that pressure will be the availability of new launch capacity, including the planned SpaceX Falcon 9, increased use of Japan's H-IIA with the easing of launch restrictions at Tanegashima, and the launch of Russian Soyuz rockets from the new pad at Kourou, French Guiana.

Photo: ESA

Editor's Note: ILS later said it did not provide pricing or other proprietary data to Tauri. The Tauri Group agreed that ILS provided no proprietary information, but said the company cooperated by providing "assistance in identifying sources where launch price information was available, and in determining which data were to be preferred," input that "significantly contributed to the quality and size of the data set" used in the study, which was funded by Arianespace.

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