**ASCENT COE Notice of Funding Opportunity (COE-2016-43)**

**Project Title:** Noise Power Distance Re-evaluation

**FAA Project Manager:** Bao Tong (bao.tong@faa.gov)

**Nominal Funding Level:** $150,000

**Period of Performance:** One Year

**Deadline for response to this NFO:** April 15, 2016

**Project Description**:

The standard technique for evaluating noise from flight procedures is through Noise Power Distance (NPD) relationships. Noise calculations in the Aviation Environmental Design Tool (AEDT) rely on NPD curves derived from engine certification data. This dataset reflects representative aircraft families at set power levels and aircraft configurations. Noise levels are obtained as a function of observer distance via spherical spreading through a standard atmosphere. Other correction factors are applied to obtain the desired sound field metrics at the location of the receiver. The current NPD model does not take into account the aircraft configuration (e.g., flap settings) or alternative flight procedures being implemented. This is important as the noise characteristics of an aircraft depend on thrust, aircraft speed and airframe configuration, among other contributing factors such as ambient conditions.

The objective of this project is to identify and evaluate possible improvements to the existing NPD methodologies for noise propagation modeling. This work is expected to build upon the research of ASCENT Project 23 in which a framework was developed to assess the noise impacts of certain advanced operational procedures. In this new task, the focus will be on building NPD datasets that can capture aircraft configuration, speed, and thrust. These improved NPD “plus configuration” (or NPDC) curves should represent different “states” of the aircraft through the incorporation of speed and configuration to complement the standard input parameters of power and distance. These multi-configuration NPDC curves should be developed for a range of aircraft types that represent the current fleet of aircraft.

Responses to this NFO received before COB April 15, 2016 will be evaluated and selected university or team of universities will be requested to provide a full length proposal for further evaluation and possible funding to carry out the work.