APPENDIX G – GIS DOCUMENTATION

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North Dakota State Aviation System Plan

State Projected Population Percentages

GIS Methodology and Documentation

Data Sources

Population Projection Data

Demographic data published by Woods & Poole Economics, Inc. as part of the ***2014 Complete Economic and Demographic Data Source*** (CEDDS) were the basis for population analyses shown in this report. Woods & Poole publishes US, state, and county projections for total population, age, sex, race, and Hispanic origin, covering years 2010 to 2040, and benchmarked to 2010 US Census results. Projections of total population for the years 2013, 2018, and 2025 for each county were used for this study.

Data Tools and Analyses

Many maps in this report display the percent of North Dakota population for a given year within specific drive time areas of airports based on different classification schemes (e.g., primary commercial service airports, NPIAS airports, or public airports). Other maps show a simple-ring or buffer of 30 nautical miles from selected airports.

ESRI Business Analyst 2012 extension for ArcGIS 10.1 (ESRI, Inc.) was used to calculate 30-, 60-, and 90-minute drive time areas from selected airports. The drive time areas are the estimated geographic area in which a person can travel by car within the specified time period. These areas were calculated using street networks and driving times based on attributed speed limits, are approximate, and no generalization of the generated drive time areas was performed. ESRI Business Analyst was also used to create 30 nautical mile rings within specific airports shown on some of the maps.

A custom Business Analyst Dataset (BDS) for 2013, 2018, and 2025 population projections was created using the Custom Data Setup wizard from the Woods & Poole county population projection data joined to a county geographic base. When an analysis cuts across a geography (for example, part of a county), an apportionment method must be assigned to the BDS layer when it is created that determines how a variable is apportioned to the analysis geography. Several apportionment methods are available in the Business Analyst extension: area, population, households, or housing units. For this study, the population apportionment method was chosen for the custom county population BDS layer as this best reflects the source of the data.

To calculate the percent of North Dakota population for the years 2013, 2018, and 2025 that falls within drive time areas or 30 nautical mile rings, the projected population for each drive time or ring was appended from the custom county BDS layer using the Append Data wizard. This wizard performs a spatial overlay analysis of the overlay data layer (drive time area or ring) and the input data layer (county population BDS layer) and apportions the population variables to the drive time area or ring. The percentage of state population for each year was calculated using State projected population from the Woods & Poole data.