

Service Area Analysis

Bridgetown, Lawrencetown, Middleton

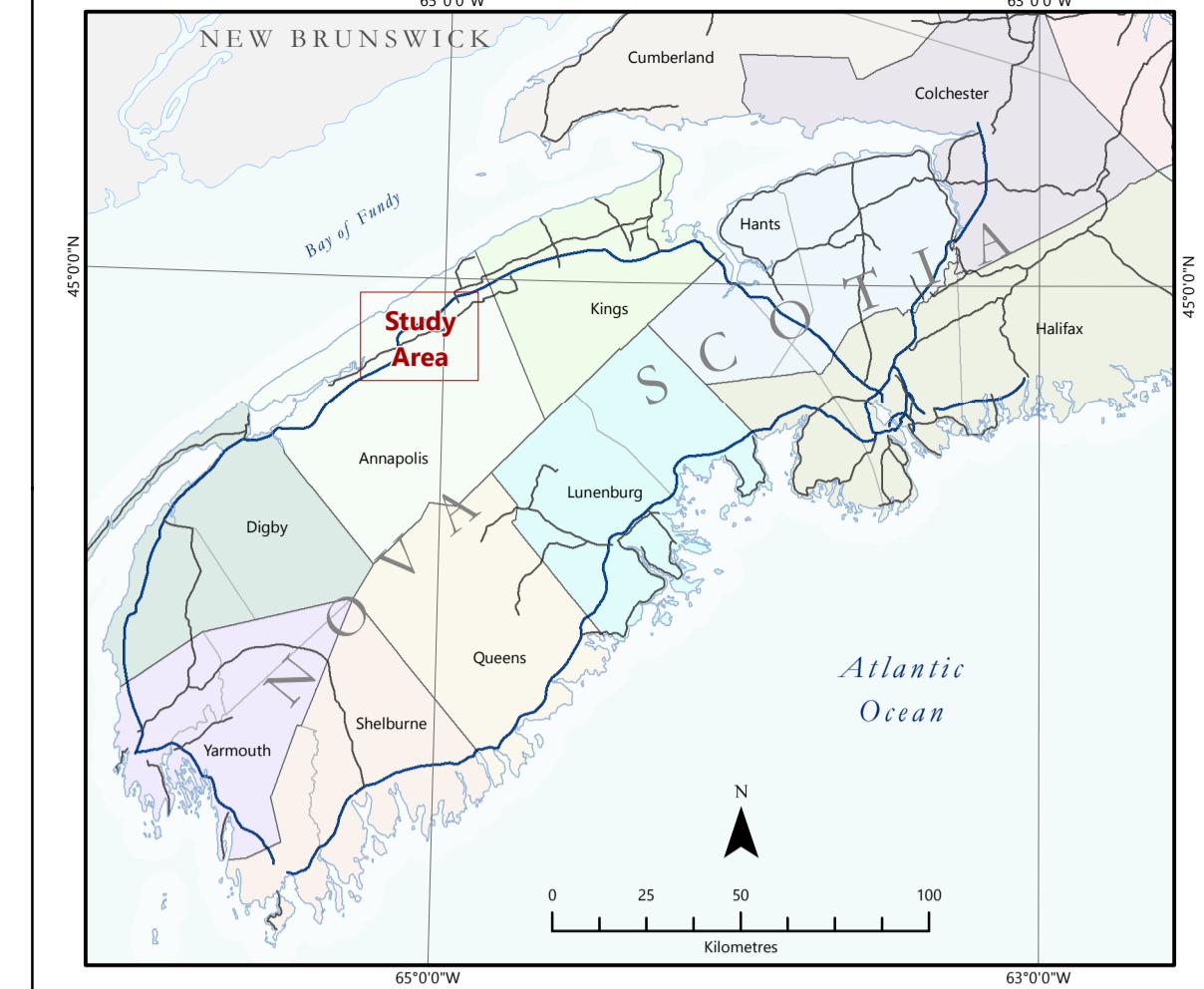
&
Surrounding Areas

Annapolis County
Nova Scotia

Scale: 1:50,000

0 0.5 1 2 3 4 Kilometres

Projection: Universal Transverse Mercator, Zone 20 North
Datum: North American Datum 1983 (NAD83)
Correction: Canadian Spatial Reference System 1998 (CSRS98)



This map demonstrates the use of ArcGIS for Desktop 10.6's Network Analyst tools for Service Area Analysis. This type of analysis is useful for evaluating accessibility, for example, identifying how many people or what portion of land will be served by a facility. In this study, a network representing a portion of Annapolis County, Nova Scotia, was used to identify a 10-minute concentric service area for a local fire using a Turn Feature Class created for this purpose and ArcGIS' editing tools.

To perform the analysis, a new Service Area analysis layer was created within ArcGIS using the Network Analyst tools. The location of a fire station was added using a custom Address Locator created for use with this network. Analysis parameters such as impedance and break intervals were specified as properties of this layer. The service area was then automatically generated by the software.

The source for the network model was Nova Scotia Civic Address (NSCAF) road data in vector geodatabase format. This data had to be modified to ensure proper connectivity, preparing it for inclusion in a functioning network model. To do this, the roads data was first imported into an ArcGIS file geodatabase as a feature class, allowing it to be accessed by Network Analyst functionality. Next, values representing speed limits and traffic flow direction (one-way or two-way) were manually input into the feature class's attribute table.

A cartographic layout was created in ArcGIS to display the results of analysis. This was accomplished using 1:10,000 vector layers obtained from the Nova Scotia Topographic Database (NSTDB). These layers were imported into the geodatabase, clipped to the study area, and merged, in batch operations automated by a custom ArcGIS Script Tool created with Python.

Text labels for relevant geographic features were derived from existing attribute data or the Nova Scotia GeoNames database. These were then converted to annotation feature classes to further refine label placement. A hierarchical approach consistent with cartographic standards was used for all text, producing a readable and intuitive design.

Using the modified road layer, a new Network Dataset was created with minutes and length specified as impedance values. From here, constraints were added to accurately model turns

Point Features

- Arterial Highway (100 Series)
- Collector Highway (200-300 Series)
- Trunk Highway (1-99 Series)
- Local Road
- Local Unpaved
- Swamp
- Seasonal Dry Weather Road
- Cart Track
- Trail
- Abandoned Railroad

Area Features

- Cliff
- River, Stream, Coastline
- Contour
- Contour Approximate
- Tree Area, Line, Row or Orchard
- Depression Contour
- Index Contour
- Pipeline Underground
- Gravel Pit
- Power Transmission Line
- River, Stream, Coastline
- Campground
- Cemetery
- Cut or Fill
- Dump
- Recreation Area
- Hydrography
- Sewage Treatment Plant
- Swamp
- Vegetation

Magnetic North
November 2018
Calculated magnetic
declination: 17° 2' 19" W
Latitude: 44° 55' 13" N
Longitude: 65° 10' 07" W

This map is produced as a portion of the requirements of the
Geographic Sciences Program
at the Centre of Geographic Sciences, NSCC, Lawrencetown, Nova Scotia.
The product is unedited, unverified and intended
for educational purposes only.
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Produced by: Nicole White
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