



Disclaimer: Hennepin County does not endorse nor is responsible for the content of external sites, including open source GIS Software. Much of this handout content has been taken from [Esri websites](#).

What is GIS?

Geographic Information System is a collection of computer hardware, software, and geographic data for capturing, managing, analyzing, and displaying all forms of geographically referenced information.

Geographic or spatial features within a GIS are stored as points, lines, or polygons. Components of geographic features include geometry (xy coordinates), attributes (feature characteristics) and in some cases even behavior (rules or stored actions). Features can also be stored as raster images, made up of rows and columns of cells or pixels with values.

Polygons (city boundary), lines (roads) and points (hospitals).

Hennepin County has a number of departments that utilize GIS for map production, spatial analysis, data storage, and sharing. The county uses [Esri ArcGIS desktop](#) and [ArcGIS Online](#) products to produce numerous products including...

[Property interactive map](#)

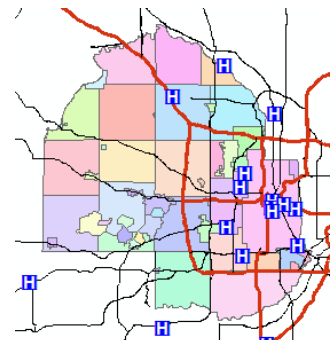
[Natural Resources Interactive Map](#)

[Environmental Partners Tour Map](#)

[Parks interactive map](#)

[Transportation Map](#)

[Public Health Birth Report 2012](#)



Helpful Terms - A few terms that may help understand important GIS topics. Also refer to the [GIS dictionary](#).

Attributes - Nonspatial information about a geographic feature in a GIS, usually stored in a table and linked to the feature by a unique identifier. This might include parcel owner, zoning description, road type, and city name.

Coordinates - The X,Y coordinates used to represent features are stored in a coordinate system. The most commonly known coordinate system uses longitude (X) and latitude (Y).

Geocoding - Is the process of transforming a description of a location such as a pair of coordinates, an address, or a name of a place to a location on the earth's surface.

Geodatabase - This is an Esri proprietary storage format for collections of feature classes. Esri has three types of [geodatabases](#) including file, personal, and enterprise/ArcSDE types.

GeoJSON - is a specification of JavaScript object notation (JSON) that allows geographic objects to be transferred between servers and clients. This specification can be consumed by a variety of clients that can use the [GeoJSON specification](#).

GeoServices - The GeoServices link allows clients to communicate with data through the [GeoServices REST specification](#). This specification of JSON is standard output by ArcGIS and can be used in a wide array of open applications built using Esri's SDKs and APIs.

Metadata - Information that describes the content, quality, condition, origin, and other characteristics of data or other pieces of information. [Metadata](#) for spatial data may describe and document its subject matter; how, when, where, and by whom the data was collected; availability and distribution information; its projection, scale, resolution, and accuracy; and its reliability with regard to some standard. Metadata is stored within a geodatabase or associated to a shapefile as an *.xml file.

Projection - A method by which the curved surface of the earth is portrayed on a flat surface. Hennepin County uses a NAD (North American Datum) 1983 UTM (Universal transverse Mercator) Zone 15 North projection and also a custom Hennepin County Projection. Web applications generally use a [Web Mercator projection](#).

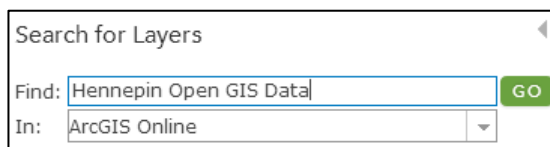
Shapefile - An [Esri vector data storage format](#) for storing the location, shape, and attributes of geographic features. A shapefile is stored in a set of related files (*.shp, *.shx, *.dbf plus additional) and contains one feature class.

Hennepin GIS Open Data

<http://gis.hennepin.opendata.arcgis.com/>

The Hennepin County GIS Office has released a new GIS Open Data site which provides users with the ability to view map data, tables, and charts. Tables can be further filtered, charts customized, and map data downloaded. Users can have quick access to this data by...

1. **Loading tables into Excel** – Export the data in a *.csv format using the Spreadsheet option as shown below right, and then just double click to open in Excel.
2. **Loading into GIS desktop software** – Use the Shapefile format option to save and add within ArcGIS desktop, AutoCAD, and other GIS open source desktop software that support the format.
3. **Adding to an ArcGIS Online web maps** – Licensed users of ArcGIS Online can add to web maps by copying the source URL, see upper right, and inserting it under the Add button, Add Layer from File option. Or even easier, use the Add button with the **Search for Layers** option within **ArcGIS Online** to find **Hennepin Open GIS Data** as shown below.



From the **ABOUT** section access **REST endpoints** under **Source** and **content information** under **Metadata** as shown below.

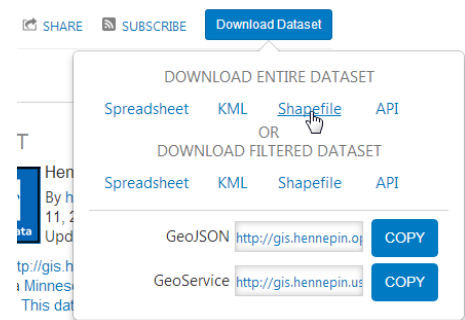
ABOUT



Hennepin County GIS Open Data
By hennepin.county.maps on February 11, 2015
Updated: 3 hours ago

Source [http://gis.hennepin.us/arcgis/rest/services/Hennepin Open Data Minnesota Hospitals](http://gis.hennepin.us/arcgis/rest/services/Hennepin%20Open%20Data/MapServer)
Licensing This data (i) is furnished "AS IS" with no repr

As illustrated below, from **Download Dataset** access the various formats including CSV, KML, and Esri Shapefile format.



Help page for users of ArcGIS Open Data site: <http://doc.arcgis.com/en/open-data/consumer/find-data.htm>

Other Open Sources

In addition to some great open data sources listed on the [Geo:Code website](http://www.geo.gov) check out these...

Also new, **Esri announces their GIS Open Data website** which allows users to explore 24,310 Open Datasets from 1,514 organizations worldwide. <http://opendata.arcgis.com/>

Another interesting website is **Open Street Map** <http://www.openstreetmap.org> which is a map of the world created by a community of mappers. It is free to use and gives users the ability to contribute geographic information.

GIS Resources (non-endorsed)

Web Mapping

ArcGIS Online – Free 30-day Subscription - <http://www.arcgis.com/features/free-trial.html>
MapServer – Open Source - <http://mapserver.org/> GeoServer – Open Source - <http://geoserver.org/>
Mapbox – evaluation <https://www.mapbox.com/> CartoDB – evaluation <http://cartodb.com/>

GIS Open Source Software

GRASS GIS (Geographic Resources Analysis Support System) - <http://grass.osgeo.org/>
MapWindow - <http://www.mapwindow.org/> OpenJump - <http://jump-pilot.sourceforge.net/>
SAGA GIS (System for Automated Geoscientific Analysis) <http://www.saga-gis.org/en/index.html>
QGIS (Quatum GIS)- <http://www2.qgis.org/en/site/>

Also available

Free Explorer for ArcGIS and ArcGIS Explorer Desktop. <http://www.esri.com/software/arcgis/explorer>