

LiDAR User Data Needs Survey Results

June 2012

Introduction

The Minnesota Geospatial Information Office (MnGeo) is working with the Minnesota Department of Natural Resources (DNR) to develop a data distribution mechanism for statewide LiDAR-derived elevation data. The results of an online survey conducted from April 20 to May 14, 2012 are helping determine the functionality of the new data distribution mechanism that will complement the current DNR and MnGeo FTP sites. The following are results from the survey.

Analysis

The vast majority of the respondents to the survey are employed by the government (Figure 1- Total: 81%¹; Federal: 7%; State: 18%; Tribal: 2%; Local: 36%; Regional Entity: 18%). Within these broad categories, many respondents work in specialties such as water (22%) or other natural resources (17%) or information technology which includes GIS (19%) (Figure 2). Not surprisingly, very few respondents found LiDAR-derived elevation data not important to their work (1%) while 58% found it very important (40%) or essential (18%) (Figure 3).

For those who consider LiDAR-derived elevation data at least somewhat important, 1- and 2-foot contours (avg=3.94²), 1- and 3-meter Digital Elevation Models (avg=3.77) and hydro breaklines (avg=3.34) were the currently available products they found most useful. Point Cloud or Mass Points data was the least useful (avg=2.27) (Figure 4). These respondents also chose county-scale data as the type they needed the most (62%), followed by watershed (55%), then township (35%) and section (34%) (Figure 5).

Most respondents either currently acquire or plan to acquire their LiDAR-derived elevation data through the state (61%), local (31%) or federal (20%) governments (Figure 6). They (will) work with the data using software such as Esri's ArcGIS version 10.X (72%), version 9.X (34%) or AutoCAD (23%) (Figure 7). They also prefer the data be in the following formats: Esri Geodatabase (61%), Web Map Service (WMS - 37%), Esri GRID (36%) or GeoTIFF (24%). However, there is also a significant number (24%) who do not know what format they will need the data to be in (Figure 8). Finally, most respondents said they will need the data to be in the Universal Transverse Mercator (UTM) Zone 15 coordinate system (62%) while others said County Coordinate (48%) and Geographic NAD 83 Lon/Lat (34%) coordinate systems (Figure 9).

¹ Rounded to the nearest whole percent

² Based on a scale of usefulness: 0=Don't Know, 1=Not Useful, 2=Somewhat Useful, 3=Useful, 4=Very Useful, 5=Essential.

Conclusions

This survey essentially affirms the necessity for a flexible and broad-ranging delivery mechanism (website or web portal) for Minnesota's LiDAR-derived elevation data. All currently available data products appear to be somewhat useful and should be available at county and watershed scales at the least. A predominance of respondents use Esri software and thus desire the data to be in geodatabase, GRID or WMS formats. Still, as noted above in the Analysis section, a significant number of respondents who do not know what format their data should be in will need assistance, perhaps by good online documentation. Finally, most users need the data to be in UTM Zone 15, County Coordinate or Geographic (Lat/Lon -NAD83) coordinate systems.

More Information

For the results of a related survey on LiDAR education needs conducted in Spring 2011 by the LiDAR Research and Education Subcommittee, see: www.mngeo.state.mn.us/committee/elevation/research_education/lidar_education_survey.html

For more information about Minnesota's LiDAR data, see: www.mngeo.state.mn.us/chouse/elevation/lidar.html

Results

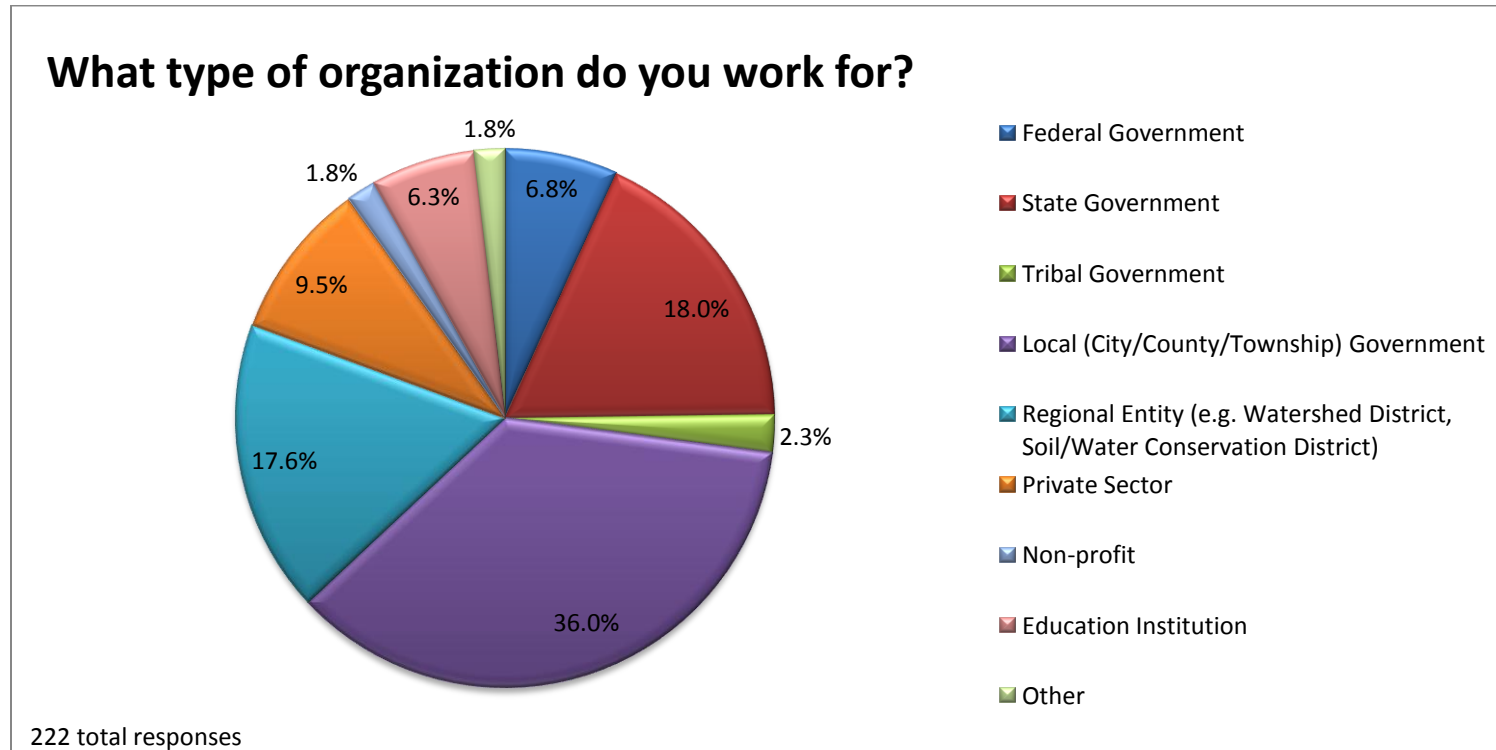
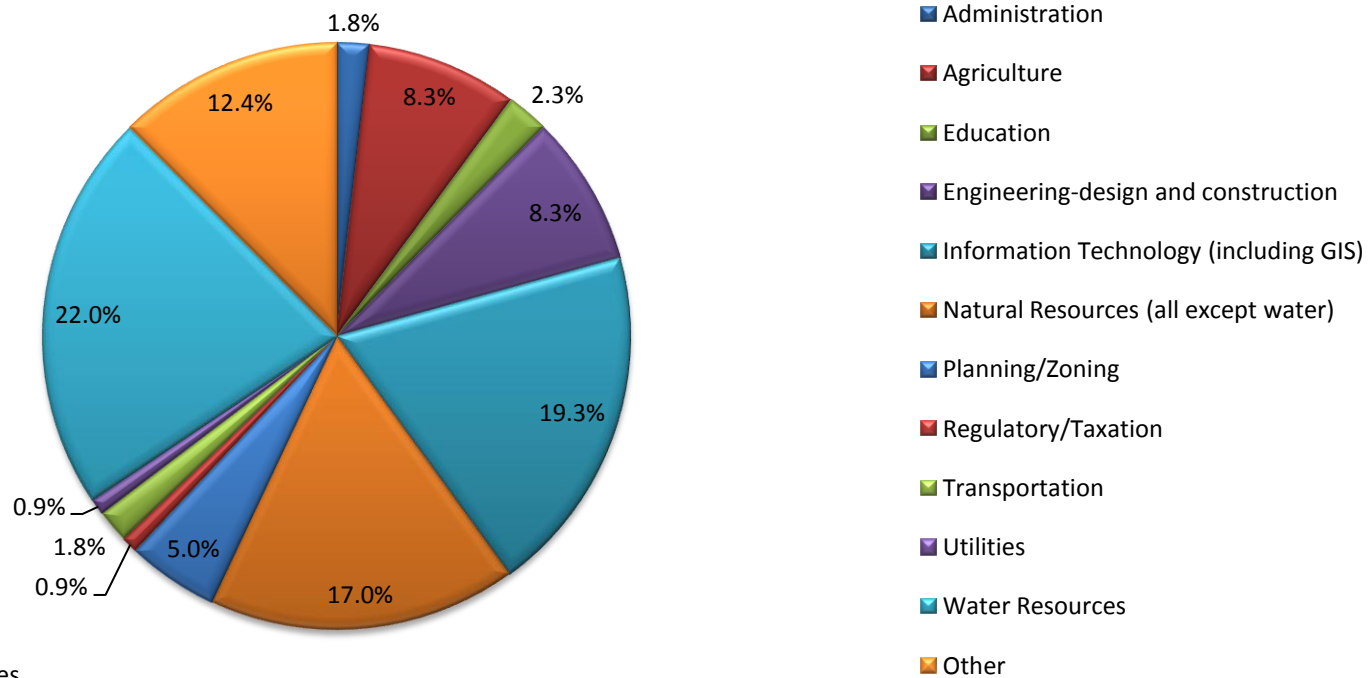


Figure 1

What type of department or office do you work in?



218 total responses

Figure 2

How important is (or would be) LiDAR-derived elevation data in meeting your primary business function(s)?

Answers	Response Percent
Very Important	39.9%
Important	27.1%
Essential	18.3%
Somewhat Important	11.9%
Don't Know	1.8%
Not Important	0.9%

Figure 3

218 total responses

How useful do you (or would you) find the following currently available LiDAR-derived elevation data products?

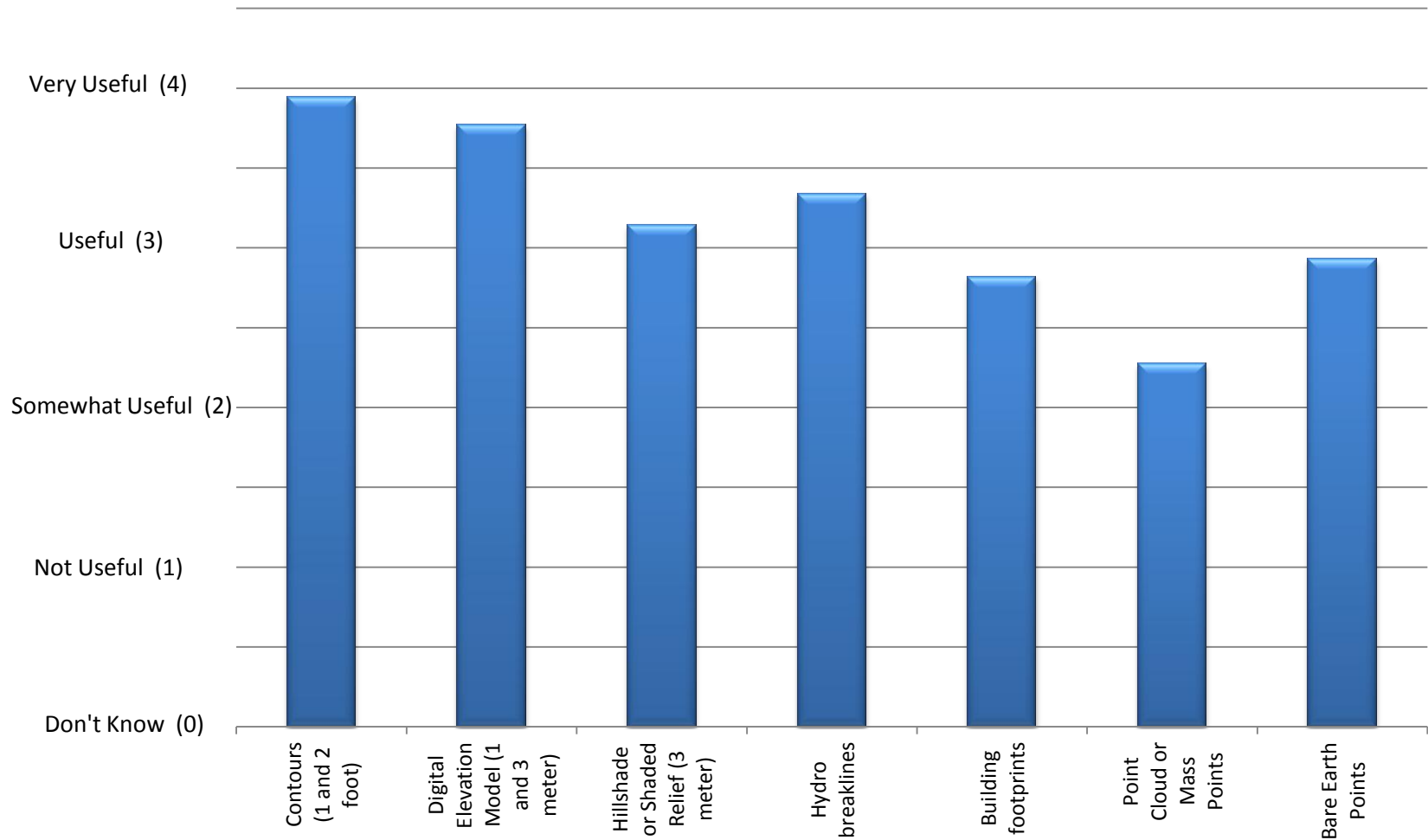
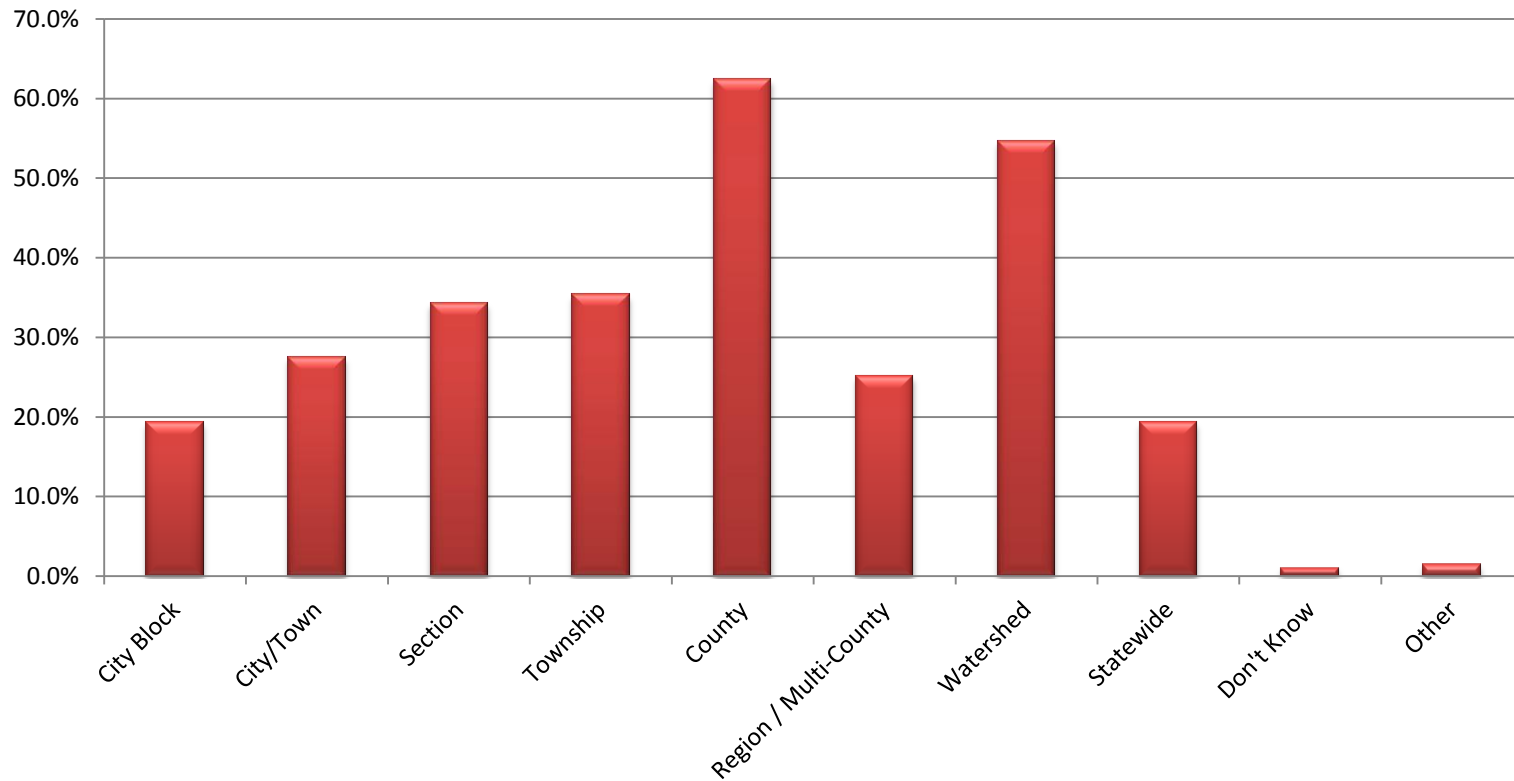


Figure 4

207 total responses

What primary geographic area(s) do you need the LiDAR-derived elevation data to cover?



207 total responses

Figure 5

Where do you currently acquire (or plan to acquire) your LiDAR-derived elevation data?

Answers	Response Percent
State Government	60.7%
Local (City/County/Township) Government	30.8%
Federal Government	19.9%
Regional Entity (e.g. Twin Cities Metropolitan Council)	10.0%
Don't Know	9.0%
Private Sector	8.5%
Education Institution	4.0%
Tribal Government	3.5%
Non-profit	3.0%
Other	2.0%

Figure 6

201 total responses

What software do you (or would you) use to work with LiDAR-derived elevation data?

Answers	Response Percent
ArcGIS 10.X	71.6%
ArcGIS 9.X	34.3%
AutoCAD	22.5%
LasTools	8.3%
ERDAS IMAGINE	5.4%
Other	5.4%
LP360	4.4%
Don't Know	3.9%
Fusion (US Forest Service)	2.5%
MicroStation	2.5%

Figure 7

204 total responses

How do you need LiDAR-derived elevation data made available?

Answers	Response Percent
Esri Geodatabase	60.5%
Web Map Service (WMS)	36.6%
Esri GRID	35.6%
GeoTIFF	23.9%
Don't Know	23.9%
LAS	21.0%
Web Feature Service (WFS)	12.2%
Web Coverage Service (WCS)	10.2%
KML (Keyhole Markup Language)	9.8%
ERDAS IMAGINE	6.3%
Other	4.4%

Figure 8

205 total responses

What coordinate systems and map projections do you (or would you) use with LiDAR-derived elevation data?

Answers	Response Percent
Universal Transverse Mercator (UTM - Zone 15)	62.6%
County Coordinate	47.8%
Geographic (Lat/Lon - NAD83)	34.0%
State Plane	13.8%
Universal Transverse Mercator (UTM - Zone 14)	10.8%
Don't Know	10.8%
Geographic (Lat/Lon - NAD27)	7.4%
Universal Transverse Mercator (UTM - Zone 16)	3.9%
Other	3.0%

Figure 9

203 total responses