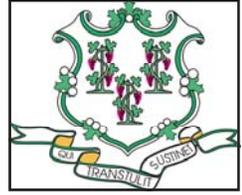


CONNECTICUT Geo-Focus



From the GeoDESK

Winter Edition 2009

Volume 2, Issue 4

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Upcoming Conferences
Association of American Geographers
Annual Meeting
Washington D.C., April 14-18, 2010

Newsletter Contacts

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These articles are published for the education and enjoyment of the GIS community, and may be edited to fit space available. The CT Geospatial Council does not endorse or recommend any software programs.

Connecticut's GIS Day Results

Reporting from the Education And Outreach Working Group

by Thad Dymkowski

Connecticut GIS Day 2009 was celebrated with an event held at the Legislative Office Building in Hartford, on November 18. The day's activities included a record breaking map gallery of more than 50 GIS posters and maps, 10 display tables, and presentations by GIS practitioners from various professional fields from around the State.

The day started with opening remarks of welcome by State Council Chairperson Diane Wallace. Chairperson Wallace read a gubernatorial resolution from Governor M. Jodi Rell officially declaring it GIS Day in the State of Connecticut. Jane Cullinane from the Connecticut State Library gave an illustrated presentation on The History of Connecticut's Aerial Photography. Dr. Peter Kyem from Central Connecticut State University spoke about Public Participatory GIS Applications. Megan McGaffin presented on the use of GIS for the Milford Sewer System. Carl Nysten from ESRI discussed and demonstrated some GIS web applications to show the State of The State. Steve Anderson from Applied Geographics discussed the Connecticut G.E.M.S. project. Jesse Wanzer and the team from Trinity College gave us a demonstration and presentation on their web GIS application for the public school choice program. Jason Parent from C.L.E.A.R. presented his project on storm water management in the Eagleville Brook Watershed.

The day concluded with the meeting of the Connecticut State GIS Council, presided over by Chairperson Wallace that included the recognition of Robert Chu, a student from the Hopkins School, for his achievement in winning the Connecticut State Geography Bee and representing the State at the National level. Votes were cast by attendees for a people's choice poster from the map gallery, and the winner will receive a prize package generously donated by ESRI. Additionally, members of the Education and Outreach Working Group gathered and chose select maps for Honorable Mention recognition. GIS Day was planned and organized by Peter Sandgren, Beth Stewart-Kelly, Bernard Asimonye, Emily Wilson, Scott Roberts, Arroll Borden, Peter Petrella and Thad Dymkowski. See page 3.

Connecticut GIS Day 2010 is scheduled for November 17. The Education and Outreach Working Group has already started preliminary discussions for plans and ideas. Mark your calendar and don't be left out! GIS Day is a success due to the participation of GIS practitioners like you! If you have ideas or suggestions for next year's GIS Day event, feel free to contact a member of the Education and Outreach Working Group.



Winner of GIS Day People's Choice Poster

"Finding Fantastic Foster Families"

Connecticut Department of Children and Families, Office for Research and Evaluation
Office of Foster Care and Adoption Services by Joan E Twiggs, Ph. D.

What's The Problem? In CT, approximately 250 children enter the care of the Department of Children and Families (DCF) for abuse or neglect reasons every month. Children often spend most of their time in care residing in family foster homes. It is a constant struggle to maintain an adequate supply of qualified foster homes that are available for our children both when and where they are needed. With dwindling budgets for outreach during lean economic times, it is more important than ever for DCF to use recruitment methods to reach families that are most likely to answer the call to become foster parents. The use of market segmentation data is one of the methods DCF is using to improve our recruitment of foster families.

Why Market Segmentation? The goal of segmentation is to identify portions of the population most likely to respond to one's marketing campaign. The method was developed from business management as a result of the realization that trying to reach every possible "consumer" with the same message is not feasible. A core observation is that 'birds of a feather tend to flock together', meaning people who live near each other tend to have common characteristics to which a marketing campaign might appeal, for example: behavioral, lifestyle, consumer and demographic characteristics.

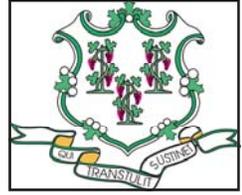
How Do WE Use Market Segmentation Data To Find Potential Foster Parents? The process of market segmentation begins by identifying a current customer base and then using market research data to understand their characteristics and habits. Thus, to apply market segmentation to recruiting foster families, DCF began by identifying its current successful foster families.

How Do We Do This? Geo-code addresses of "successful" foster homes, defined as homes active and licensed continuously for two years or more. Also combine results with market segmentation data and analyze to determine those market segments most likely to become successful foster homes (Index over 100). Then determine thresholds for prioritizing specific market segments for recruiting.

Result — The most likely foster parents represent over 149,000 (11%) households in CT, and are almost 2 1/2 times as likely as the average household in CT to become successful foster parents.

Right: A picture of the winning poster from GIS Day.





GIS Day 2009 Honorable Mention Awards

The GIS Council's Education and Outreach Working Group met to recognize more of the great posters and maps submitted for GIS Day, and we voted on several categories of Honorable Mention. An hour and a half of animated discussion resulted in the following 8 awards:

Honorable Mention for GIS and Natural Resources:
"Relocation of Endangered Species" (South Windsor)

Honorable Mention for State Use of GIS:
"CT Recovery: ARRA Tracking the Dollars" (OPM)

Honorable Mention for Municipal Use of GIS:
"Using GIS in the town of Avon" (Avon)

Honorable Mention for Regional Use of GIS:
"Walking to School: Paths Most Traveled in Terryville" (CCRPA)

Honorable Mention for Non-Profit Use of GIS:
"Native American Settlements: Central CT Shoreline" (Ward-Heitmann House Museum)

Honorable Mention for Graphic Design in GIS:
"Biotech Cluster: California to Northeast Corridor" (CT Economic Resource Center)

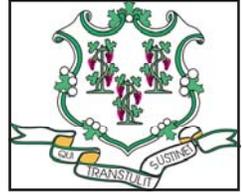
Honorable Mention for Most Unique Use of GIS:
"Salt Management for the Town of Manchester" (Manchester)

Honorable Mention for GIS by an Educational Institution:
"Visualizing Toxic Trace Metal Contamination in the Park River watershed" (Trinity College)

You can view these posters at:

<http://picasaweb.google.com/CTGISDAY/GisDayPosters?authkey=Gv1sRgCKqI9fD4uPGLEg#>





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Geo Technology News



Compass Trivia

What does Captain Jack Sparrow's compass point to in Pirates of the Caribbean?

- The Black Pearl
- Davie Jones
- What Ever You Want
- North

ANSWER: What ever you want!
The compass points to the thing that the person holding it most desires.



What avian is able to see both ultraviolet and polarized light and even seems to have it's own magnetic compass?

- Pigeon
- Falcon
- Owl
- Robin

ANSWER: It's the Pigeon!

AAG Honors Human Rights Day With Release Of New Geography & Human Rights Website

The AAG has launched a new website on Geography and Human Rights known as the "Geography & Human Rights Clearinghouse and Forum," available at: http://aag.org/geography_and_human_rights/index.htm. The website includes a bibliography on Geography and Human Rights research, as well as links to numerous NGOs, research centers, and scientific associations that focus on human rights issues, often while drawing upon geographic methods or technologies.

UConn Spring 2010 Course Schedule:

March 11 - Creating and Using Geospatial Models: Introduction to Model-Builder

March 24-25 - Developing Custom Geoprocessing Tools: Introduction to Python Scripting

March 30-April 1 - Geospatial Technologies at Work: An Introduction to GIS

April 28-29 - Pictures, Points and Places: An Introduction to GPS

Course dates and complete description for each course is available on our training website: <http://clear.uconn.edu/geospatial/training.htm>

Do You Ski?
Are you waiting for the snow to come?



Get your interactive snow maps at NOHRSC

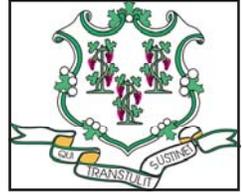
<http://www.nohrsc.noaa.gov/interactive/html/map.html>
National Operational Hydrologic Remote Sensing Center



GIS Bird Count Data
Can be found on www.stateofthebirds.audubon.org

Join the "Connecticut GIS User to User Network" on the UConn website for GIS discussion and announcements. The CT Geo-Focus Newsletter is sent out quarterly through this Listserv. Go to ct.uconn.edu

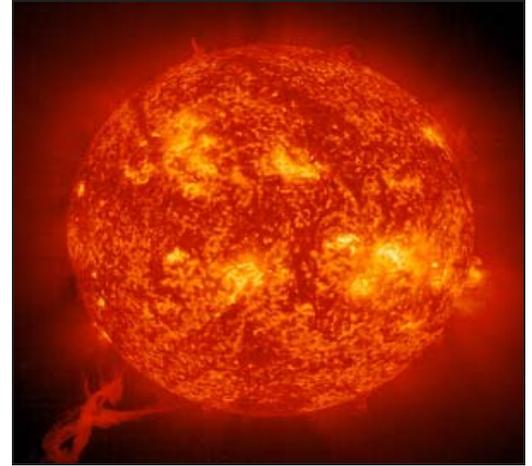
**State Of Connecticut Geospatial Information Systems Council
Annual Report—December 2009**
Submitted in Accordance with Conn. Gen. Stat. 11-4 (a)
www.ct.gov/gis/lib/gis/2009_GIS_Council_Annual_Report_-_Final.ppt



2012 & GPS Reception?

By Steve Miller, Penn State University Magazine

When you plan a picnic or a hike, you want an accurate weather forecast to warn you of possible storms. If you plan to use your global positioning system (GPS) to chart your course, you may want a solar weather forecast, as well. Recent news articles have reported that solar storms can interfere with GPS satellite transmissions. This could be a bit of a problem if you are relying on your car's onboard navigation system to tell you where to turn right. "A solar storm is a stream of charged particles—electrons and protons—that flows from the sun's surface at close to the speed of light," says Chris Palma, outreach fellow in the Penn State astronomy department. "There is a constant flow of charged particles from the sun, but during a solar storm, the intensity can increase immensely. The energy released during such a storm is equivalent to millions of times more than is released during a volcanic eruption on Earth. These particles affect the operation of satellites orbiting Earth, generating radio waves that interfere with the signals that transmit location information from those satellites to your GPS receiver. A solar flare is a mass of charged particles that is ejected toward Earth and we are bombarded with them." It is this bombardment that can momentarily shut down your GPS reception, your cell phone, even your television reception.

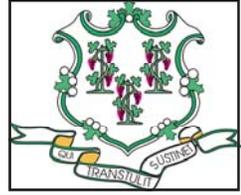


Earth's own magnetic field protects us from most solar storms. "The incoming particles are funneled toward the poles by the magnetic field," Palma explains. "When they interact with atoms in the upper atmosphere, they form an aurora—a bright glow in the night sky. In a truly extreme case, a coronal mass ejection (CME) can even affect electrical systems on Earth's surface." That brings us to weather forecasting. Although it is not yet possible to tell ahead of time when a CME will occur, we do know they are more common during the periodic reversals of the sun's overall magnetic field, which occur on an eleven year cycle, Palma says. "During these periods, the number of sunspots increases, causing more solar flares. At maximum activity, CMEs are possible as often as a few times a day. If these storms could be predicted, it might be possible to prepare for them and even take actions to reduce their effects." "The last maximum activity phase occurred in 2001 and **the next is predicted in 2012**," Palma notes.



A Storm Is Coming: NASA by Dr. Tony Phillips (Science@NASA)

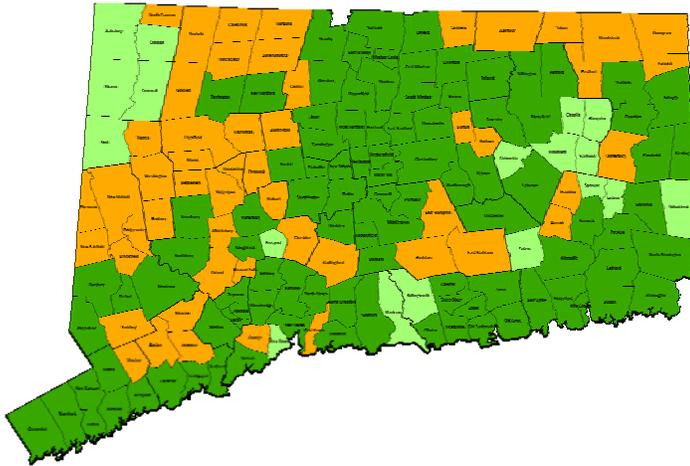
Researchers announced that a storm is coming — the most intense solar maximum in fifty years. The prediction comes from a team led by Mausumi Dikpati of the National Center of Atmospheric Research (NCAR). "The next sunspot cycle will be 30% to 50% stronger than the previous one," she says. If correct, the years ahead could produce a burst of solar activity second to the historic Solar Max of 1958. At that time, you could not look at the bars on your cell phone to see that a solar storm was occurring. Even so, people knew something big was happening when the Northern Lights could be seen in Mexico. A similar maximum now could be noticed by its effect on cell phones, GPS and weather satellites.



Municipal Update: Does My Town Use GIS?

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Dark Green = YES
Orange = NO
Light Green = GIS
by Consultants only

IN THE FALL of 2008, the GIS Council's *Education and Outreach Working Group* surveyed Connecticut cities and towns to determine the extent of GIS used across the state. The online survey was created with SurveyMonkey* and was emailed to municipalities and Regional Planning Organizations. The emails were followed up with direct phone calls. The map illustrates our findings. *www.surveymonkey.com.

WHAT WE LEARNED FROM THE SURVEY:

Generally, the more densely populated towns (those along the I-95 corridor, and up the Connecticut river through the Hartford area) all use GIS on a town-wide basis.

In the more rural areas such as the northwest and northeast corners, GIS has not yet been adopted as a full-time tool. Some towns (light green), make use of GIS through outside contractors, and some deliver online maps via a map service.

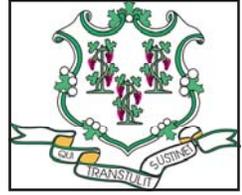
YOU MIGHT WONDER . . .

"Why is my town "orange"? I know somebody uses GIS there."

The map shows the responses of the person who answered the survey questions. Towns that did not respond to the survey were contacted by phone. The person answering may have been from the office of the First Selectman, the assessor's office, the engineering department, public works, or planning.

Towns may be "orange" on the map for a variety of reasons. First, there may be GIS software on one person's computer that other departments did not know about. Should that town show as green? Since GIS is an important tool for planners, assessors, town engineers, and public works officials, our survey aimed to determine what towns were actively using GIS as a system across multiple departments. Second, in some cases, a local Regional Planning Organization was aware of GIS developments in a given town, while departments in that town were not. We have received a number of emails telling us that, for example, a town shown as "orange" now has GIS. Our aim is to show the state of Connecticut GIS at the time of the survey, and accept updates as "accurate" when they are reported by an official of that town. In the future, we expect that new information from individual cities and towns will significantly change the look of our map!

UPDATE THE STATE MAP— If your town has since changed it's status for GIS, please contact one of the following people to update our database. Peter.Sandgren@ct.gov, TDymkowski@NewingtonCT.gov or Beth.Kelly2@us.army.mil



Town of Manchester Salt Management Project

By Liz DeNardis

Winter Edition 2009

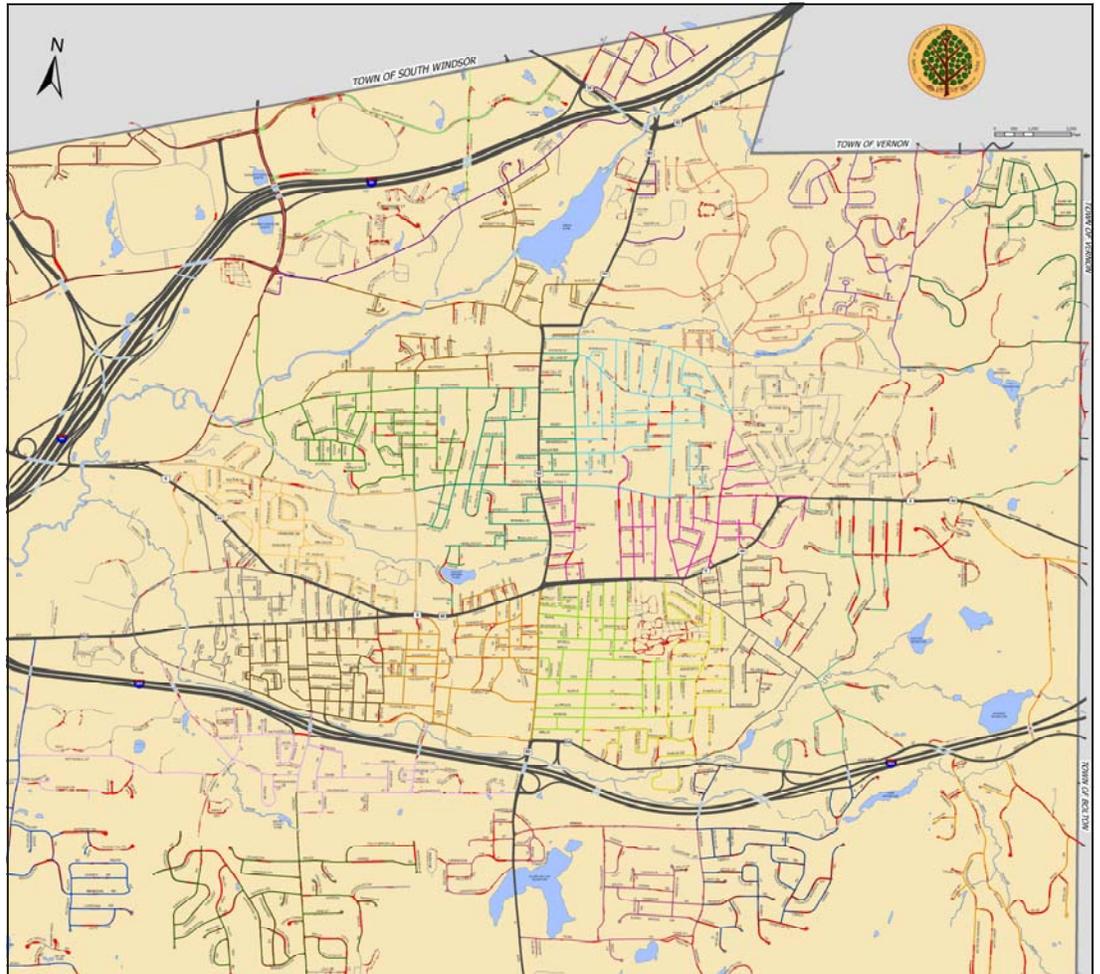
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Given that the price of road salt has gone up drastically in the past few years, Manchester's Highway Division asked their GIS unit to analyze roads and salt usage in the town. The GIS unit decided the best way to manage salt application would be to identify road slopes in town that were greater than or equal to 8%. This would determine where the salt was needed most. A digital elevation model of the town was created using contours lines and ESRI's 3D Analyst extension. Then they used 3D analyst - Surface Analysis - to get the slope. Finally, the results were reclassified with 3D Analyst - to get the less than and greater than 8%. After the slope map was created, the GIS unit clipped out the roads so it would only show the slope on the roads. Lastly, the slopes greater than or equal to 8% were selected out, which are shown on the map in red. Using this information will help the highway division identify which areas need more salt applied and see how much salt they should be using for each route.

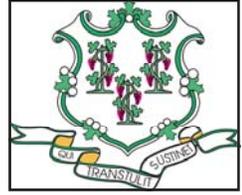
Slope of Road \geq 8%

Snow Plow Routes

	Total Length	Length of Slope \geq 8%
1	10.4 mi	.8 mi
2	5.5 mi	.6 mi
2A	3.8 mi	.7 mi
3	7.5 mi	.8 mi
4	8.7 mi	.2 mi
5	7.0 mi	1.2 mi
5A	5.7 mi	.6 mi
6	11.2 mi	1.2 mi
7	9.5 mi	1.1 mi
8	9.2 mi	.9 mi
9	9.2 mi	.8 mi
10	10.3 mi	.8 mi
10A	6.0 mi	.3 mi
11	8.3 mi	.9 mi
12	6.5 mi	2.1 mi
13	7.1 mi	1.2 mi
13A	5.7 mi	.6 mi
14	9.4 mi	.3 mi
15	9.3 mi	1.0 mi
16	7.6 mi	.4 mi
16A	8.7 mi	1.2 mi
17	9.4 mi	1.5 mi
18	11.5 mi	2.7 mi
19	11.5 mi	2.4 mi
20	8.6 mi	3.0 mi
21	6.6 mi	1.8 mi
Total:	214.2 mi	29.1 mi



Left: Index for length of road (miles) by color and the length of slope \geq 8% (miles).
Above: Map of Manchester Roads color coded according to the index.



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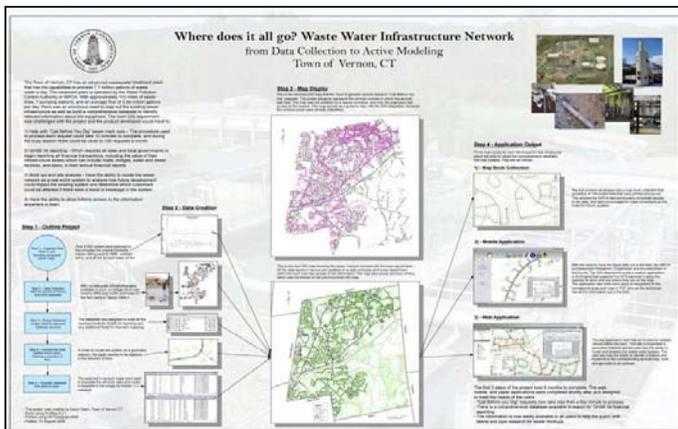
2009 NEARC Poster Winner Town of Vernon Waste Water Infrastructure Network

Aaron Nash and Mike Cipriano won second place for CT in the People's Choice Poster judging at the 2009 NEARC conference. The intent of their project was to identify the existing waste water infrastructure network and build a comprehensive database to help with research and analysis. The output of the project needed to satisfy four main issues:

- 1) Help with "Call before you dig" sewer mark outs. The previous procedure took 10 minutes per request and in their busy period they could receive 100 requests per month.
- 2) GASB 34 financial reporting. Requires state and local governments to report all financial transactions, which includes the value of their infrastructure assets. Before the project, there was no database of information available for the sewer network.
- 3) Build out and site analysis. The Water Pollution Control Authority needed to have the ability to analyze the sewer network to determine how future development could impact the existing system and if a block or breakage was to take place, which customers would be affected.
- 4) Have the ability to allow fulltime access to the information anywhere in town.

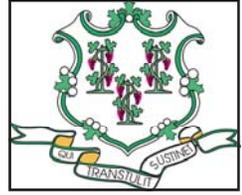
The first part of the project was to scan in and inventory over 4,000 as-built Mylar maps some dating back to 1896. After that was completed Mike walked the streets of Vernon with a Topcon GMS-2 and used GPS over 3,000 sewer manholes. In order to model the sewer network as a geometric network, the pipes were digitized in the direction of flow. The database was populated and a hyperlink was created to the corresponding scanned in as-built map. This part of the project took 6 months to complete. After all the data was collected and verified, the output of the project was three different applications:

- 1) Map book collection - Consisting of 105 scaled maps that were printed and bound. This allowed WPCA field technicians immediate access to the information.
- 2) Mobile application - The Vernon GIS department wrote a custom ArcEngine application that was installed on two Panasonic toughbooks and mounted in two trucks. The application supports live GPS panning to allow the operator to drive and have the map auto pan, and it also links each piece of equipment to the corresponding as-built map so the technician has all the information in the field.
- 3) Web application - The last application built was an ArcServer website that can be utilized anywhere within the town internal network. The site incorporates a geometric network which allows the user to trace out and analyze the waste water system. The user also has the ability to view the hyperlinked as-built maps, geocode an address, and print to a scaled layout.



The benefits of the project are that "Call Before you Dig" requests now take less than a minute to process, there is a comprehensive database available for GASB 34 financial reporting, and all the information is easily available to all the users within the town to help the public with water and pipe research.

If anyone would like more information on this project, you can contact Aaron Nash at anash@vernon-ct.gov.



Traffic Congestion Management

CT South Western Region Travel Time Monitoring Program: Congestion Management Process by SWRPA <http://www.swrpa.org>



The South Western Region Metropolitan Planning Organization (SWRMPO) was designated as a Transportation Management Area as a result of population growth. SWRPA's Travel Time Monitoring Program is an important component of the Congestion Management Process (CMP). The objective of the travel time monitoring program is to obtain quantitative data measuring travel time and delay along the highway network in South Western Connecticut. Detailed data sets of time, distance and speed are obtained using a global positioning system placed in a probe vehicle logging their location every 2 seconds. Each log point recorded by the GPS includes three key pieces of data: latitude, longitude, and time. The track file is loaded into a GIS and plotted on a map based on the recorded latitude & longitude. The track data is then "spatially joined" to the control points, thereby associating each point with the attribute data of the nearest track point. The control points and associated track data are then saved to a Geodatabase and labeled with the date, direction, and time of day (i.e. I-95 southbound AM run on May 12th 2009 is labeled as 090512_95_SA). The data supports SWRPA's transportation planning program and CMP by helping SWRPA locate 'hot spots' and recommend improvements that mitigate congestion and improve the reliability of the transportation system. The travel time monitoring program covers I-95 and CT 15 (Merritt Parkway) between Stratford and Greenwich, and US 7 between Danbury and Norwalk.

The Congestion Mitigation Systems "Vision 2020" Plan products include technical memoranda summarizing existing conditions and predicted future travel demand, preliminary analysis of possible "visions" for mitigating traffic congestion over time, and detailed market research reports that identify the types of options supported by commuters and shippers. A final report outlining a twenty-year plan for implementation of transportation improvements and the likely benefits of implementing such a plan also was prepared.

The *Vision 2020* planning process is the foundation for SWRPA's Congestion Management Process (CMP), which was previously called Congestion Management System or CMS.

Traffic Volume and Volume-to-Capacity Ratio by Route Segment, 2006

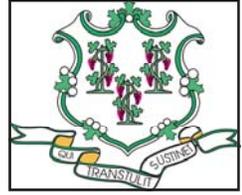
South Western Region Travel Time Monitoring Program - Spring 2009
Congestion Management Process

Figure 1

- Volume-to-Capacity Ratio
- Severe Congestion (v/c > 1.0)
- Moderate Congestion (v/c = 0.8-1.0)
- Marginal Congestion (v/c = 0.5-0.8)
- No Congestion (v/c < 0.5)
- Local Street
- Metro-North Railroad
- State Boundary
- Municipal Boundary

Volume-to-Capacity Ratio is a measure of traffic demand on a facility expressed as volume compared to its traffic carrying capacity. A v/c ratio of 0.7, for example, indicates that a traffic facility is operating at 70 percent of its capacity.





We Need A Survey Monkey!

The Connecticut GIS Day event was a great success this year, and the Education and Outreach Working Group would like to thank all those who attended. GIS Day is only a success because of you - members of the Connecticut GIS community who contribute through maps, posters, and presentations! We are eagerly looking forward to next year, and are seeking feedback to help us continue to improve GIS Day! Whether you attended this year or not, please take a moment to fill out this 9 question on-line survey so that we can make next year's GIS Day even better!

<http://www.surveymonkey.com/s/3QH762X>

*To the CT GIS Community,
Happy New Year from the Education and Outreach Working Group of the CT Geospatial Council. We are looking forward to another great year, keeping the momentum going and bringing you the news from all over CT and beyond about the who, what, where, why, and when of GIS.*

Thanks for your support and feedback! Educators: you are welcome to have students submit their projects to us for publication in the CT Geospatial newsletter.

Scott Roberts—South Windsor

Peter Sandgren—Department of Emergency Management & Homeland Security

Beth Stewart-Kelly—State of CT Military Department

Thad Dymkowski—Town of Newington

Emily Wilson—UCONN

Bernard Asimonye—Department of Information Technology

Pete Petrella—Department of Social Services

Arroll Borden—United Way