GBNRTC

Newsletter for the GREATER *BUFFALO-NIAGARA* REGIONAL TRANSPORTATION COUNCIL
Metropolitan Planning Organization For Erie and Niagara Counties

Simulation of regional traffic fascinates

A view of simulated traffic and light rail in downtown Buffalo

Nothing has ever riveted attention at GBNRTC's public meetings as has recent computer animations of regional traffic, showing the real-world movements of individual cars, trucks and transit along major roads and intersections.

It's generated by a TransModeler version of an advanced technology known as "three-dimensional, micro-simulation," as integrated with the regional TransCAD travel model. It has the potential for dynamic representation of complex traffic and congestion issues and alternative ways of dealing with them.

As described in a transportation memo, it allows even the layperson, as well as the professional, to visualize transportation patterns rather than to wrestle with them by studying mathematical tables or complicated theories.

"TransModeler has a built-in capacity to think on its own," says Stephen Szopinski, manager of the GBNRTC program. "It's the real thing. It's dynamic. It's not something made up. Those are actual traffic counts that you see on the screen.

"You don't have to make mistakes in the field anymore. Micro-simulation will tell you what the impacts are of adding a new ramp, for example, or a new interchange, or a new lane or road, or of a traffic incident or accident. Before you make a mistake in the field, you make the mistake on the screen.

"It has all the origin and des-

Fourth Quarter 2010

tination patterns, all the turning movements, down to the intersections level, built into it. So if you make a change you can see the impacts on traffic region-wide, something you could never do before. You could, for example, make a change in the timing of a traffic signal in the model and see what the impacts would be.

"Even if a road has to be closed, because of a major accident, or whatever, you could have the potential to change the traffic patterns quickly on parallel routes, change the timing of signals, through coordination with NITTEC (Niagara International Transportation Technology Coalition)."

However, Szopinski emphasized that the model's capability is dependent upon the quality of "what you put into it." He said, "It takes a ton of coding, a ton of labor to put into this model what it takes to make them work correctly.

"You have to get all the widths of your streets, all the signage at intersections, whether there's a traffic light, a yield sign or a stop sign, a no-turn-on-red sign. You got to get all your intersection timing and phasing.

"It takes an enormous amount of information. And once you get all that you have to calibrate it to those space conditions and to am, mid-day or p.m. hours, or traffic peaks, etc., so that the model shows what happens out in the field."

Michael Davis, who has a Master's Degree in geographic information systems from the University at Buffalo, is helping to develop a Regional Simulation Framework for the Buffalo-Niagara region.

"It is a work in progress," he said. "It is something that day by day is being perfected. There are so many different aspects to it, such a wide range of details within the software.

"It can be challenging, but also very interesting. Sometimes there are unexpected outputs of change that are imminent or can be expected in the future. I see it as a valuable resource for transportation planning."

The TransModeler system is being used to assess alternative ways for modifying the Scajaquada Expressway to harmonize with the surrounding Delaware Park context. Szopinski indicated it would also be used to assess alternatives for a new Outer Harbor Bridge over the Buffalo River, and alternatives for moving the Williamsville Toll Barrier and improving the Interstate 90-290 corridor.

Mother Nature knows best, Riverkeeper says

The executive director of the Buffalo-Niagara Riverkeeper has urged regional leaders to be more innovative in protecting the Erie-Niagara region's lakes, rivers and creeks from contamination by storm-water runoffs from area roadways.

Julie Barrett O'Neill has called for greater application of "green infrastructure" as an efficient and cost effective way to safeguard regional water systems. The idea is to use "natural systems," such as rain gardens or green roofs, to help in controlling contamination from runoffs. She suggested landscape improvements with roadway work as a practicable approach

"We live in one of the most water-rich regions in the world," she declared, in a report to the GBNRTC's Policy Committee, which comprises the region's political and transportation leadership.

"Ninety percent of North America's surface fresh water is in the Great Lakes and that is 20 percent of the globe's surface fresh water. That's extremely significant and that percentage is growing as we have polar ice caps melting into the ocean.

"Part of the trade-off made by the Great Lakes region in winning Congressional approval of the Great Lakes Compact, which prevents diversion of our own waters to other states, was that we implement our own water conservation program. We can't say to other communities that they can't have our water if we are throwing it away."

She noted that progress has been made by her organization, in collaboration with the state and federal governments, in cleaning up regional shorelines. But her focus was on the challenge of sewer overflows, which are largely driven by storm runoff from paved surfaces. Rain falling onto roadways picks up whatever pollutants are on those roads and carries them

into our lakes, rivers and creeks. In areas with combined sewers, the flow overwhelms the sewer system capacity and results in a mixture of sewage and storm water overflowing into waterways.

There are sewer overflow problems in a lot of suburban and urban communities, she said. "The biggest overflow sewer system in Western New York is the City of Buffalo's system. It historically dumps between 4 billion gallons of raw sewage into the river every year."

Under natural conditions, with a green ground cover, only 10 percent of rainfall or melting snow becomes runoff, she said. The rest is absorbed into the ground where it feeds Great Lakes groundwater sources, or evaporates into the air where it can generate rain and snow. In developed areas, in contrast, 55 percent becomes runoff, carrying pollutants into waterways, because of the impervious surfaces of pavement and buildings.

"It doesn't have to be a high-rise, it can be a parking lot," she declared.

The traditional way of dealing with overflow and runoff, she said, was the "gray" approach "building bigger pipes and sewage treatment plants, a bigger capacity to take all the rain water and all the sewage and treat it all."

"It's very expensive and on top of that it's uncertain because water patterns and weather changes are difficult to predict. So we're only ever going to get maybe 10 percent of those water flows. It's just hard to manage.

"So the other option is the green option, called 'green-infrastructure or low-impact impact development' and the premise there is really simple. Keep the rain out of the sewer system in the first place.

Julie Barrett O'Neill, Executive Director of the Buffalo-Niagara Riverkeeper

Send more of it into the ground instead of into the sewage treatment system."

She said that regular samplings of water from the Black Rock Canal frequently showed bacterial levels well beyond the safe swimming limit. Woodlawn Beach on Lake Erie is a recent example of an area that was closed because of unsafe levels of bacteria in the water.

She said that storm-water runoffs were also the "number one source of polycyclic aromatic hydrocarbons (PAHs)," a toxic chemical associated with tars and greases that turn up on road surfaces.

"Green infrastructure" is increasingly used by communities across the nation in complying with the Clean Water Act, the speaker noted. She cited Philadelphia, Toronto, Cleveland and Rochester among cities that have adopted innovative and cost-effective green techniques that not only improve the environment but create jobs and bolster the economy.

She defined "green infrastructure" not only in terms of green swales and "rain gardens" in and around streets and curbs and parking lots, but also such applications as "green roofs" and "permeable pavements" that reduce runoffs.

The speaker thanked Mayor Paul Dyster of Niagara Falls "for putting in rain gardens" that "line the side of walkways in Niagara Falls, providing native plants while soaking up rainfall that would otherwise overwhelm the sewer system." She also praised the green roofs at Niagara University.

In Buffalo, she took note of a rain garden, a porous parking lot and green roofs at Nichols School, as well as a rain garden at the HSBC downtown site and the Dulski Center in the Lovejoy neighborhood. She cited a parking lot on Lafayette with bio-retention cells that collect and purify runoff and took note of a green roof and other infrastructure at Fox Tire on William Street

"This year the City of Buffalo is in a very intensive negotiation with the federal Environmental Protection Agency (EPA) and the New York State Department of Environmental Conservation (DEC) on what their compliance is going to look like," she declared. "…We

have worked with them to see how much these (green-infrastructure) technologies can help solve their sewer-system challenge."

She said the city was being progressive in its approach. David Comerford, manager of the Buffalo Sewer Authority, declined to comment on the negotiations. He said that some $10 million in federal funding was involved.

Observers have speculated that the talks may be influenced by a federal court ruling in 2009 that allowed Onondaga County to scrap plans for three new sewage plants in favor of green infrastructure involving trees, vegetated roofs, rain gardens, permeable pavement and rain barrels.

DEC officials were quoted as saying that the ruling would set an example for other New York State communities on handling of runoff problems.

Karen Engel, DEC's manager on green infrastructure, has said that Buffalo with "a declining population and lots of vacant lots is ideally suited" for a green system, which could provide a basis for economic renewal. She did suggest that there has been a "lack of coordination."

A story in the Buffalo News cited Rochester as adopting a green strategy that would involve tearing down at least 3,000 vacant houses and "turning those large swaths of land into parks, greenways, gardens and farms."

The Tonawanda News reported that "scores of elderberry, witch hazel, bayberry, elm trees, dogwood and other specialized foliage" in North Tonawanda were being planted in "huge sand-filled troughs" in a public parking lot "to filter contaminated runoff and rainwater the natural way before it slips and slides ominously into pipes leading to the Niagara River." The $300,000 project was approved for funding through the federal stimulus program.

"Maybe that's the new design on how to build a city street," said North Tonawanda's city engineer, Dale Marshall.

Ms. O'Neill noted that in a time of fiscal constraint a water-quality improvement that is also a road project has broad appeal. "This could mean more road work funded by sewer dollars," she suggested.

CarShare is moving toward self-sufficiency

Buffalo's CarShare program, one of about a dozen in the nation, provides affordable and greener transportation for its members, who typically "need a car but don't need it every day."

That was the message conveyed by CarShare's executive director, Creighton Randall, in a presentation last spring to the GBNRTC's Planning and Coordinating Committee.

"Most of the CarShare members take the car out for two or three hours -- to a grocery store, a doctor's appointment, those sorts of things," Randall reported in a presentation that marked the program's first anniversary. "You pay by the hour and the insurance and the gas is all included in that."

"In the last six months we've gone from 120 to nearly 200 members and that represents probably 210 to 215 drivers," Randall reported. Some memberships are for households or businesses with more than one driver.

Those statistics were for a fleet of seven cars and one truck (for

Randall presides at opening of a CarShare lot in the Elmwood Village

trips involving bulky items). "That's about 25 to 30 members per vehicle, a much more efficient system than each one having his own car," Randall noted..

CarShare has since expanded to at least ten cars to accommodate its growing membership, which by this fall was nearing 300. A six-passenger Mazda 5 and a Hybrid Toyota Prius have been added to the initial Toyota Yaris fleet.

New parking hubs have been established at Lafayette Presbyterian Church, Elmwood and Lafayette, at Quaker Bonnet Bakery, Chenango near Rhode Island, as well as at the Canisius Parking Garage, Jefferson near the Delavan NFTA station. Earlier lots had been established at six sites in the Allentown-Elmwood Village area, and another near the NFTA's University station.

Randall indicated that CarShare was "in pretty good shape -- about two-thirds of the way through" a grant from the New York State Energy Research and Development Authority (NYSERDA) and "two thirds of the way toward becoming self-sufficient." He noted that a grant from the Community Foundation for Greater Buffalo had financed the truck.

Adam Blair, a research associate with CarShare, reported that a membership survey indicated that cumulatively members were driving 332 fewer miles per week than before they became members.

He acknowledged that membership "does provide a new option for drivers who never owned a car or went a long time without driving because they couldn't afford it and they do drive more."

But overall, the increase for those who drove more was only about 20 miles a week whereas the decrease for those who drove less was about 50 miles a week.

A summary of the survey reported:

"Five respondents were able to give up a car after joining and 30 others either decided not to purchase a car or postponed purchasing a car once becoming members. These responses show we were able to help take 11 private cars off the road for every CarShare in our fleet. These shared cars are often far more fuel efficient than the cars they replace.

"Based on membership growth, we can estimate that we've helped our members drive about 42,000 fewer miles than they would have without our service during the first year of our operation. This means members pumped 1,900 fewer gallons of gas and avoided emitting 36,700 pounds of carbon dioxide."

Randall said that members typically used public transit to get to the parking hubs, or walked or biked. He said that CarShare offered "a quick trip there and a quick trip back that would not be appropriate for transit."

He said the survey indicated that the Buffalo membership showed a higher percentage of low-income participants than was typical of other regions.

Marketing of hydrogen fuel-celled car analyzed at UB

Hydrogen fuel-celled cars are a "great possibility" for New York State, in part "because they are the best vehicles for this climate," according to a University at Buffalo professor who has researched their marketing potential.

Northern winters are "very punishing" on the fuel efficiency of hybrids, according to Arun Jain, Ph.D, professor of marketing research at the UB School of Management. He noted that the mileage per gallon of conventional internal-combustion engines also declines in cold weather.

"So for New York State, with our colder climate, hydrogen fuel-celled cars are the best solution. Also, of course, hydrogen would be easily available potentially for drivers in New York State because Praxair is here and it produces hydrogen."

Praxair, Inc., with world headquarters in Tonawanda, provided the hydrogen used for a fuel-celled version of the Chevy Equinox developed at the General Motors Fuel Cell Activities Center at Honeoye Falls in Monroe County, near the Livingston County line. The hydrogen was produced through electrolysis as a byproduct of chlorine production at Niagara Falls.

Praxair also delivered the "cutting-edge technology" that facilitated California's initiative in providing retail-designed hydrogen fueling stations, the first of which opened at Los Angeles International Airport in 2004.

California's "relatively wider availability of hydro-

gen fueling stations" was cited by a group of Dr. Jain's students as a major reason for favoring that state as the initial site for GM marketing of its fuel-celled vehicle.

The group's presentation on the marketing of the GM fuel-cell vehicle, one of many submitted by students in the professor's marketing-management course, won first place from a panel of judges that included GM representatives.

Dr. Jain noted that little has been done toward realizing New York State's "Hydrogen Energy Roadmap" that envisioned Western New York as a possible hub for a future hydrogen economy. A representative of Praxair was on the Steering Committee that produced the "roadmap" in 2005.

The professor said that his conversations with GM officials has convinced him that "if tomorrow New York State announced it was going to build a hydrogen highway I am sure the company would go with it." He added that Peter Finch, manager of GM's Tonawanda plant, had suggested that marketing studies on GM's fuel-cell plans "might be a good project for us to do."

Dr. Jain said that fuel-cell cars were 80 percent energy efficient compared with 16 percent, at best, for internal combustion engines. "I don't understand why we are not moving toward a fuel-celled car," he said. "There's absolutely no logic to it in my mind."

Professor Jain noted, "The price we pay for gas at the gas station does not begin to reflect the true cost of oil that we as taxpayers pay. I hope that someday somebody will come up with the real cost of it.

"I would bet it's going to be about eleven dollars a gallon, based upon our reliance on Mid East oil, a region of the world that is untrustworthy, unreliable and increasingly holds our foreign policy hostage to its oil. I think it is high time that we called their bluff. We have spent trillions of dollars in Iraq, Iran and Afghanistan plus a lot of young men and women who have died or have come back suffering the impact of having been in a war zone."

There is general agreement that marketing and cost-effectiveness, along with the need for a fueling infrastructure, are major challenges before hydrogen fuel-celled cars become widely popular

A hydrogen highway would be "a good starting point," for New York State, but "we do not really need that many hydrogen fueling stations," Dr. Jain said. "In my opinion, we have too many gas stations. In Europe you don't see that many. Here they are all over the place. Two or three hydrogen stations would do the job in a city like Buffalo."

He also noted that new technology was under development in the U.S., and even in nations such as India, that would allow drivers to produce hydrogen in their homes for their fuel-celled cars.

Hydrogen fuel-celled cars produce only water vapor as an emission. Carbon-dioxide emissions from conventional vehicles are cited as a major factor in a trend toward global climate change. Dr. Jain said that the use of hydropower has the potential to greatly reduce or eliminate carbon-dioxide output involved in hydrogen production.

The award winning marketing plan submitted by Dr. Jain's students noted that several auto manufacturers have produced or are developing cars powered by alternative fuels, including ethanol, electricity, biodiesel, and natural gas … "however, hydrogen is unique in that it can be obtained without the use of any fossil fuels and produces no toxic emissions."

A Chevrolet Equinox equipped with fuel-celled technology *Source: General Motors*

GBNRTC backs replacing of aged Letchworth rail bridge

In a letter to U.S. Secretary of Transportation Raymond LaHood, GBNRTC Executive Director Hal Morse has pointed out the critical importance of replacing the 135-year-old Portageville railroad bridge, a "vital yet weak" link in the state's rail network.

The letter expresses a "wholehearted endorsement" of the state application for a TIGER II grant to cover a significant part of the estimated $39 million cost of replacing the 819-foot long, single-track viaduct that looms 245 feet above the Genesee River Gorge at Letchworth State Park

The bridge is on the Southern Tier Route, operated by Norfolk Southern Corporation (NS), as "one of only two east-west rail corridors within New York State connecting Buffalo and points west, like Chicago, with Binghamton, the New York metropolitan region, Albany and New England."

Morse noted that it serves "an incredibly important role for more than a dozen shortline railroads," as well as for major routes. "Benefiting daily are hundreds of New York businesses which rely upon efficient and economical freight rail service to remain globally competitive."

Conceptual design for new Letchworth crossing *Source: Norfolk Southern*

The Southern Tier Route is used also by Canadian Pacific Railway (CP) as "direct service" for traffic between Canadian markets and Binghamton, while Canadian National Railroad (CN) traffic "moves via interchange over the bridge," according to an NS report.

NS has agreed to match 50 percent of the projected cost while "CP will be responsible for a share of the private cost based on usage," according to NS. The New York Department of Transportation (NYSDOT) has "co-leveraged" an earlier $3 million for the project.

In his letter to LaHood, Morse notes: "As you know, projections for future freight demands indicate a steady increase over the next 20 years. In order to divert some of the anticipated long distance freight traffic off of our already congested highways, it is vital to maintain this critical rail corridor to current speed and weight standards."

The Portageville Bridge, also known as the "High Bridge" or "Bridge to the Past," is the only span on the Southern Tier Route incapable of carrying the current industry standard of up to 286,000 pounds gross weight, including a capacity for double stacked containers.

Also NS is "compelled to reduce speed" over the bridge to 10 miles per hour to help insure the safety of patrons of Letchworth Park, who sometimes trespass on the bridge to get a better view of the nearby falls and surrounding gorge, according to the NS scoping document.

"This is mostly due to the limited sight distance caused by the sharp curves approaching the bridge from both directions. Park patrons trespassing on the bridge cannot see an approaching train and the engineer cannot see the trespassing park patrols until the train is almost on the bridge. Minimizing the interaction of the railroad and the park patrons is in the best interest of both parties."

The bridge replacement project includes development of "an alliance with New York State Parks." The proposed new structure would be on a new alignment about 50 feet south of the existing structure. "A portion of the existing structure on the eastern side of the Genesee River, which the bridge spans, could be preserved and utilized as a lookout point for patrons of Letchworth State Park, with a kiosk detailing the bridge's history …"

NS has reporting spending about $1 million on repairs of the span since it acquired the Southern Tier Route from Conrail in 1999. In the fall of 2009, it closed the Southern Tier for an emergency inspection and repair of the Portageville Bridge after a crack was discovered, according to an NS report.

In his letter to LaHood, Morse declares, "As the existing bridge draws closer to its permanent closure, a newly constructed bridge must be in place to avoid significant freight rail disruptions. Markedly more circuitous routing, longer transit times, and costlier movements resulting from such disruptions will only place greater strain on other transportation assets and will put New York businesses at a competitive disadvantage.

"The Portageville Bridge is identified as a system bottleneck in both the New York State Rail Plan and the Niagara Frontier Area Freight Transportation Study. It is also consistent with the GBNRTC's 2035 Long Range Transportation Plan's vision, goals and objectives."

The existing iron-steel bridge was constructed in 1875 after an original timber trestle, built in 1851, was destroyed by fire. Originally, the bridge was owned by the Erie Railroad, which merged with the Delaware, Lackawanna Railroad in 1960 and ultimately became part of the Conrail system.

GREATER BUFFALO-NIAGARA
REGIONAL TRANSPORTATION COUNCIL
438 Main Street, Suite 503
Buffalo, New York 14202-3207

PRESORTED STANDARD
US POSTAGE PAID
BUFFALO, NY
PERMIT NO. 3803

Comments and requests to be added or deleted from the mailing list are welcome and should be sent to:

GBNRTC Editor
438 Main Street, Suite 503
Buffalo, NY 14202

Meeting Calendar

Planning and Coordinating Committee (PCC)
meetings begin at 9:30 AM

November 3rd	**Erie County DPW** 95 Franklin Street Buffalo, New York
December 1st	**NYSDOT** 100 Seneca Street Buffalo, New York
January 5th	**NFTA Board Room** 181 Ellicott Street Buffalo, New York

Policy Meeting

December 10th, 9 AM
Niagara Falls
Specific location TBD

Please check online
or call GBNRTC office
for more information

Meeting dates and times are subject to change: please call (716) 856-2026 for confirmation.

Greater Buffalo-Niagara
Regional Transportation Council

Phone: 716-856-2026 Fax: 716-856-3203 www.gbnrtc.org

This newsletter was prepared with the financial assistance of the U.S. Department of Transportation. However, the contents represent only the view of the authors and do not necessarily reflect the review or approval of the U.S. Department of Transportation.