Exploring Innovative Transportation & Smart Technology

November 30, 2015
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Setting the Stage: Automated Transportation & Green Villages Development

Peter Strub, Fred Payne
Transport in Urban Corridors
Creating GreenVillages Development at Mobility Hubs

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Mission: Through rail line ownership and/or rail corridor preservation, to facilitate intermodal, business commuter, shipping, and leisure traveler access to Greater Greenville and its gateways.

Priorities: Safety, citizenship, responsibility, and cost effectiveness

Goals: Improved Access and Economic Development
19th Century Options for a 21st Century Problem

- **Expansion of current modes is limited by**
  - High costs
  - Land availability
  - Impact and public acceptance

- **Highways**
  - Expensive in urban areas
  - Limited land availability

- **Metro/Commuter Rail**
  - Expensive in urban areas

- **Light Rail**
  - High service factor but limited by surface traffic unless separated at higher cost

- **Bus**
  - Low cost but limited by surface traffic and slower trip times

**Additional capacity is needed**

- ATN can optimize use of current infrastructure
- Congestion pricing can manage demand
- **New infrastructure that offers high service and capacity at a reasonable cost and impact is also needed to meet growing demand**
ATN at a Glance

• **ATN has the potential to offer:**
  • High level of service that can potentially attract drivers from their cars and help relieve congestion
  • Lower capital and operating costs than other fixed rail options
  • Lower right-of-way requirements and opportunity to integrate and expand existing transportation systems with potentially reduced urban disruption
  • Reduced energy use and environmental impact
  • Increased safety and security

• **To advance beyond limited scale implementations, the industry needs:**
  • Proven performance in public applications
  • Safe and reliable service
  • Standardized and scalable technology
  • Mass production and economies of scale
  • A business model that:
    • Reduces government capital and operating investments through private development and value capture
    • Allows market competition and innovation to address urban needs
GCEDC owns a former Railroad corridor that represents huge potential for development.

- Former RR ROW parallel to Laurens Road
- 2010 study analyzed the feasibility of multimodal transport options
- 2010 map identifies sites for connectivity and development
Imagine Revitalizing Laurens Road and Creating New Developments Along the GCEDC Transport Corridor between Greenville and Mauldin.
GreenVillages develop around the Laurens Road Corridor’s Mobility Hubs as ideal places to live, work, shop, dine, learn and play.
Potential Greenville ATN Routes
Economic Development

• Create an environment to develop a nucleus of associated experienced ATN system experts

• Attract designers, engineers, financiers, builders, operators, & maintenance techs
  • Supply chain and ancillary services that would support an ATN industry cluster, which could potentially emerge in South Carolina

• Promote GreenVillages development
“Imagining Our Future” Concept
Greenville County Master Land Use Plan

• **Centers** Focus Mixed Use development

• **Corridors** Connect Centers via Multi-Modal Transport

• **Communities** and Neighborhoods Prosper

• **Connected** Centers, Corridors, and Communities as Planning Principles
GreenVillages Are Connected

- Core area: ¼ mile radius
  - Walking/ biking/ aTaxi shuttle
- Influence area: ½ mile radius
- Mobility Hubs ~ 1 mile apart
- Buildings oriented to street
- Parking locations encourage pedestrian activity
- Attractor locations connect via streets and parks
- Roads and ATN Systems connect GreenVillages

*Greenville 2009 Master Plan: Centers, Corridors, and Communities*
Clemson Masters in Real Estate Development students presented four unique proposals for a mixed use development at the junction of Laurens Road and Washington Street. In April, 2014, UBJ featured one proposal. Such a development could “anchor” re-vitalization along the GCEDC corridor.
Multi-Modal Location and Access

- Multi-modal transport improves a site’s location accessibility
- Directly parallel to highway interchange improvements
- Real estate development potentials affected by:
  - Transport Modes
  - Level of service
  - Regional access
GreenVillages Economic Development

• Green, Attractive, Livable, Sustainable – and Connected (multimodal)
• Intentional – based on Planning Principles
• Innovative Public & Private Partnerships
• Community wide leadership
Plans for Verdae, 2006
Greenville Examples: Mixed Use Attractors

• Downtown Attractors
  • Special Attractor centers
    • Hotels, Restaurants, & Conference Center
    • Wellness Arena & Fluor Field
    • Office & Retail Centers
    • Hospitals: GHS & BSSFHS
    • City Hall & County Square
    • Heritage Green & Peace Center

• Urban neighborhoods
  • Nicholtown and Arcadia
  • Washington & Laurens – Spinks & CRH
  • Midtown: Pleasantburg & Laurens
  • Verdae communities

• Special complexes & campuses
  • GSP
  • GMU Airport
  • CU-ICAR/ BJU/ UC-Gv University Ctr

• Higher density
  • More mixed use

• Lower density
  • More housing
Innovative Public Private Partnerships

• New Mindset Needed – Weak Federal and State; Strong Counties and Cities have to be leaders

• Greenville needs Innovative Public & Private Partnerships
  1. Public right of way and Infrastructure (sewer & transport)
  2. Public Planning regulations support and accommodate
     • Increased Density awards for mixed income options
     • Lower Parking requirements for non-auto transport options
  3. Private investments Design, Build, & Operate
     • Automated transport network (ATN) systems w/ Podcars
     • Automated shuttles w/in GreenVillages
  4. Public TIF-like Repayment of Capital Infrastructure
  5. User Fees Support Operations & Maintenance
Connected LSEVs on Smart Corridors
Background
Mike Cotter:

- 25 years global automotive & light transportation vehicle industry experience
- Director, Global Strategic Marketing - Club Car, LLC.
- VP & Board Member - International Light Transportation Vehicle Association
- mike_cotter@clubcar.com

Club Car (Ingersoll Rand):

- 57 years
- 3 million vehicles
- 85 different models – transportation solutions
- “World’s largest producer of electric vehicles”
- 160 countries
- A to Z: 20,000 airports...34,000 golf courses...1,000 master-planned housing developments...12,000 resorts...5,000 universities...10,000 zoos.
- Interactions with communities like yours throughout the U.S.
The 1912 GM Electric Taxicab
Disruptive Electric Vehicles

“There are two categories of disruptive EVs: **low-speed electric vehicles (LSEVs)** and electric utility vehicles (EUVs). Low-speed EVs are consumer vehicles built on platforms mostly derived from golf carts and all-terrain vehicles.”
Vehicle Types

Passenger Car

49 U.S.C. § 30102(a)(6)
Speed governed by state limits
See LSV – plus: additional occupancy protection & crash worthiness or avoidance (airbags, ABS, 5 mph bumpers, etc.)

Low-Speed Vehicle (LSV)

FMVSS 500
Min. = 20 mph
Max = 25 mph
Headlights
Tail lights
Brake lights
Reflectors
Turn signals
Horn
Parking brake
Mirrors (rear +1)
SAE windshield
VIN
Seat belts

Personal Transport Vehicle (PTV)

ANSI Z135
Max < 20 mph
Headlights
Tail lights
Reflectors
Horn
Parking brake
Mirror (rear)

Golf Car

ANSI Z130
Max < 15 mph
Parking brake
The Villages, FL

• Largest master-planned, age-restricted community in the world.
• Ranked #1 fastest-growing small city in the U.S. by Forbes in 2014.
• Over 80,000 residents driving 60,000 golf cars.
Peachtree City, GA

- More than 90 miles of golf car paths
- Over 13,000 households own a golf car, more than any city in the world. Over 11,000 registered golf cars within the city itself.
- Students at McIntosh High School are encouraged to drive their golf cars to school because of limited parking.
- Bloomberg Business Week ranked Peachtree City number one for “Best Places to Raise Kids” in 2012.

“This paper will discuss how, in a small American city, Peachtree City, the flexibility and relative affordability of electric golf carts, as a viable alternative to the automobile, means that the level at which families and individuals are disadvantaged through their lack of access to public/private transport is effectively lowered.”

- Dr. Ruth Conroy Dalton
Professor, Northumbria University, UK
Myrtle Beach, SC

- Ocean Lakes - RV park and beach community (900 cars)
- Surfside Golf Car Rentals (700 cars)
Winston-Salem, NC
What Is Joyride?

We are a shuttle service providing quick transportation in Nashville. We also provide tours for visitors who want to experience our city in a unique way.

Point to Point

Our shuttle carts are approved for the road servicing ALL of downtown and surrounding neighborhoods.

Tours

Want to explore Nashville like never before? Sign up and let one of our tour guides show you all the hotspots around our great city.

Events

Available for Concerts, Outdoor Events, Festivals, Bachelor/Bachelorette weekends or any occasion where private or public transportation is needed.

- Sightseeing Tour
- Brewery Tasting Tour
- Nashville Bar Golf Party
- Purchase Gift
Austin, TX
Swedish Postal Services

Club Car, through its local distributor, has sold over 1,200 Postal vehicles to the Swedish Post. This collaboration dates back to 1994

The Swedish Post now is running one of the largest electric vehicle fleet among Postal services in Europe
Casa de Campo - DR

- 7,000 acre 4-Diamond resort in the Dominican Republic
- 170 fully-connected and controlled cars
Visage

https://vcc.visagenet.com/
Coachella Valley, CA

Welcome to the CV Link, a revolutionary new concept in transportation. Led by the Coachella Valley Association of Governments, the CV Link is the first of its kind to incorporate pedestrians, bicyclists, and low speed-electric vehicles in one project. CV Link will connect eight Coachella Valley cities and the lands of two federally recognized tribes with an alternate transportation route to the busiest corridor in the Coachella Valley.

http://www.coachellavalleylink.com/

CVLink-SD.mp4

CVAG NEV Network Concept

Recommended NEV Network Facilities
- Class II NEV Route
- Class I NEV Lane
- Class I NEV Path
- Proposed CV Link Trail

Activity Clusters
Primary Network Service Area
Golf Courses
Coachella Valley Region
Greenville County

Designated LSEV-friendly communities connected to the highway via bridges or tunnels

Incorporate new technology when ready

Separate lanes for LSEVs, bicycles & walking.

Exit ramps at each of the 5 hubs – easy access to commercial development

Visage™-enabled LSEV ride-sharing station at each hub
Greenville County can become the center for disruptive vehicle innovation along the east coast by embracing technology that already exists while preparing for technology that is on the way.

The proposed concept is...

1. **Fast to implement** – moderate infrastructure investments with existing solutions *(CVAG NEV Plan & Peachtree City Path Standards)*

2. **Affordable** – LSEVs are a fraction of the cost of other alternatives & leverages private investment & entrepreneurship *(SC Tax Bill 3108SA15)*

3. **Green** – all electric *(https://cleancities.energy.gov/coalitions/palmetto-state)*

4. **An enabler to easily accessible public transportation** *(Social Exclusion and Transportation in Peachtree City, GA & Impacts of Low-Speed Vehicles on Transportation Infrastructure and Safety)*

5. **Cool and Fun** – it provides a differentiated living experience *(“The Neighborhood Electric Vehicle Revolution”)*