



APTA Streetcar Subcommittee Meeting Minutes

The Westin Hotel

21 East 5th Street, Cincinnati, OH 45202

Wednesday March 29, 2017

8:30 am to 5:30 pm

Paul Grether, Chair

Timothy Borchers, Vice Chair

James Schantz, Secretary

1. Welcome and Introductions

Paul Grether

Chair Paul Grether called the mid-year meeting of the Streetcar Subcommittee to order at 8:33 am. Approximately 45 members were in attendance, a number that grew to over 50 as the day proceeded. Paul extended the Subcommittee's thanks to **CAF America** and **Hertzog Transit Services** for sponsoring the day's meals.

2. Presentations

Streetcar State-of-the-Art: What's happening outside the USA? Igan Estrobo- CAF

- Issue discussed was tradeoff between longer vehicles vs. multiple unit operation of shorter cars.
- Only four cities now have or are getting cars longer than three modules, and all are quite recent.
- For US urban circulator streetcar startups, many funded by limited TIGER grants, were budget limited to smaller cars.
- Portland was the pioneering modern circulator and used the three module/two truck configuration, so others simply copied this.
- Lowest capital cost rather than lifecycle cost resonates with politicians and boards, so lower up front cost trumps longer term overall cost
- Travel demand modeling is often underestimating ridership on these lines, so the systems may end up with smaller cars than might be ideal.
- KC used STOPS model which dictated shorter car, also project team wanted frequent headways. Now feel would have been better with longer cars, but harder to integrate in neighborhoods – couldn't have had longer cars blocking neighborhood streets but wouldn't have had project if didn't go for shorter cars. STOPS did OK for standard commuter passengers, but doesn't pick up event ridership or new riders. Now need larger cars but have question as to how to justify that to FTA. Need new metrics of success – want to work with FTA to redefine these
- New European systems use longer cars but have more even riding throughout the day whereas in US peaks are more pronounced, so less value to Europeans to uncouple (or remove from service) part of capacity during off peak.
- Minneapolis example: City wants smaller scale streetcar vehicle, not light rail. Metro Transit wants same car as used on LRT lines to ease maintenance. Discussion continuing.
- Atlanta Beltline planning 200 foot station platforms for maximum flexibility in train/vehicle length, but haven't yet gone to neighborhoods to discuss this size.
- CAF presented comparison of various combinations of shorter vs. longer, or single vs. coupled

vehicles, comparing passenger capacity, length, weight, capital cost, O&M cost. Refer to their presentation on subcommittee web site for these tables

- Length of cars more of an issue for side running track configuration than for center running. Longer cars on side running configuration have greater chance of blocking driveways, garage entrances, or small streets. With center running configuration it is easier to cut down on number of crossings.
- CAF, Alstom, and Brookville all said likely to be too expensive to lengthen three module streetcars to five module
- Making car wider is cheaper than making longer – cheapest way of getting extra capacity

Off Wire Technology, Standardization - recent advances in Europe

Barbara Schroeder, - Alstom

- Options and tradeoffs for partial or complete off-wire solutions presented based on Alstom offerings
- Current technologies involve batteries, supercapacitors, ground power supply (APS), and Flywheel, the tradeoffs of each were summarized in this useful table:

<p>Batteries</p> <ul style="list-style-type: none"> • High Energy Storage Capacity • Limited Rate of Energy Re-Charge • Average Acceleration, Longer Distance • Power Drain by Auxiliary Equipment • Total Power/Current Depends on #Cells • Limited Vertical Grade and Station Spacing • 5-8 Year Life Before Replacement • Requires Temperature Control • Next Gen Batteries in R&D 	<p>Supercapacitors</p> <ul style="list-style-type: none"> • Average Energy Storage Capacity • High Rate of Energy Recharge • Good Acceleration, Shorter Distance • Power Drain by Auxiliary Equipment • Limited Vertical Grade and Station Spacing • Adds Significant Weight to Vehicle • 10-12 Year Life Before Replacement • Regenerative Energy from Braking
<p>Ground Power Supply (APS)</p> <ul style="list-style-type: none"> • Continuous Power Supply (equivalent to OCS) • No power limitations: <ul style="list-style-type: none"> ○ Vertical Grades up to 8% ○ Unlimited Distance Between Stations ○ Continuous Power to Auxiliary Equipment ○ No Impact Due to Service Obstructions ○ No Compromise on Acceleration / Speed • 20-30 Year Life (if properly maintained) • Regenerative Energy from Braking 	<p>Fly Wheel</p> <ul style="list-style-type: none"> • Formula One Race Car Technology • Alternative for Energy Storage • Regenerative Energy from Braking • Ideal for Streetcars due to Stop-Start Operation and Weight • Composite Material for Rotor Safer (no metallic structure) • Still in R&D (Not Service Proven)

- Solution should be chosen based on environment, alignment and traffic, capital and operating expenses. Each customer’s situation is different so pick and choose from solutions accordingly
- Load shedding if on-board power is running down is controlled remotely by central operations, in successive steps (e.g., reduce air conditioning before cutting off completely)
- Avoid APS if alignment has sharp turns of intersections where construction would be more dangerous
- Alstom does not quote cost difference between APS and simple OCS because there are too many local variables in each installation

Safety:

- The small percentage of worldwide streetcar production represented by the U.S. argues for adopting European standards wherever possible, rather than developing new ones
- In France, standards setting organization STRMTG is reviewing tramway front end design based on what happens to objects the tram contacts
- EN (Euro Norm) 15227 tests collisions at different angles, and areas of impact
- STRMTG is adding analysis of derailment potential of accidents
- Tests also focus on what parts of a pedestrian’s body are most likely to be injured in accidents
- Alstom is reviewing front end designs to meet these new areas of concern. For instance, a

- sloping front end means head injuries are less likely
- Advances in software for simulating outcomes means testing is now easier and more comprehensive, including 3D simulations and virtual reality
- STRMTG front end standard will be posted on subcommittee website
- Simulations also evaluating tradeoff between injuring pedestrians vs. effect of emergency braking on passengers in car. Different levels of emergency braking designed into cars to help minimize passenger injury
- Alstom crashworthiness testing based on Citadis design simulates 15 mph rear-end collisions showing benefit of crash energy management vs. heavy ridged box frame
- For fire safety EN 45545 in Europe is replacing country codes. Goal is to allow passengers to be evacuated in event of fire, so requires material to burn slowly enough to allow passengers out. Different categories of requirements for surface vs. tunnel or other operating alignment
- Detailed analysis of NFPA 130 vs. EN 45545 is in presentation on subcommittee website

3. Multiple Perspectives on Safety Certification – Panel Discussion

Panelists: Paul Grether of SORTA, Jason Waldron of City of Kansas City, Brian Kummerer of ODOT, and Kevin Chandler of Vital Assurance

Brian Kummerer – ODot – System Safety Oversight program manager, for Cincinnati Streetcar

- Project team should involve SSO as early as possible as they are advocates for system success
- Keep them posted with updates, meetings, and politics
- If State is safety certified then FTA won't be able to take over – avoiding WMATA situation
- FTA is setting up lighter version of NTSB investigations, but not yet funded

Kevin Chandler – Vital Assurance

- Uncertain how new administration will affect FTA's role. In interim word is to "keep going"
- ODot is in process of getting certified on new program standard. SORTA has named chief safety officer to work with them
- New standard means SSO staff will be more visible in field. FTA wants greater SSO involvement but hasn't defined what that means. Agency needs to get staff members TSSP certified, but classes at Transit Safety Institute are hard to get into.
- Switch over to SMS means more emphasis on safety assurance with in depth analysis of incidents, and evaluation of whether changes will work in preventing recurrence

Jason Waldron – City of Kansas City

- Recommends building relations with SSO and FTA. In KC are very friendly with all. Kept nothing from them.
- KC asked for one process with both SSO and FTA. Built a single matrix with requirements of both to keep track all issues
- FTA currently has same asset management requirements for KC and for WMATA. KC is advocating for size appropriate requirements
- Recommends spending plenty of time making certain that the test plan is accurate and effective. Enlist consultant help if experience lacking in house
- KC had excellent support from police and fire departments helping with off-hour testing

Discussion Comments

- Safety certification cost range is \$2 to \$2.5 million, but includes startup tasks needed in any case
- Entire process is beneficial to agency in making sure all essential tasks get done, and can insulate project from political deadlines (by showing deadlines for safety tasks)

APTA Streetcar Subcommittee Business Meeting

- **Previous Meeting Minutes Los Angeles, September 11, 2016** **Jim Schantz**
Charles Joseph had in advance of the meeting circulated the minutes. No one present requested any changes so the minutes were considered to be approved.
- **Website updates** **Jim Schantz**
The subcommittee's site at www.heritagetrolley.org and www.streetcarcommitte.org continues to be updated regularly with news and other resources that could be of use to groups planning or implementing modern or heritage streetcar systems. The latest draft of the off-wire status paper and the level boarding white paper are among recent postings in the Technical section.
- **APTA updates** **Charles Joseph**
APTA continues its search for a new CEO, a process which could take up to one year. APTA is also hiring a new risk manager.
- **Light Rail Technical Forum** **Tom Furmaniak**
The most recent work product of the forum was the light rail/streetcar comparison document. The meeting at 8:00 on Sunday morning during the Rail Conference in Baltimore will have speakers covering the Maryland Purple Line, CAF on the cars to be supplied for the line, and Siemens on their new streetcar/LRV. The National Light Rail and Streetcar Conference will next be held in Jersey City October 21-23, 2018, with a theme of "Resurgence and Renewal".
- **Community Streetcar Coalition** **Jeff Boothe**
The Community Streetcar Coalition Summit was held just before this subcommittee. Day 1 covered marketing and measuring streetcar performance. There were good suggestions for topics for next year's Summit, and a Doodle poll will be conducted to rank ideas. Letters are being drafted for Senators and Representatives urging that transit money be preserved in the coming budget. The level of funding to be included in the FY 18 budget may become clear by late April or early May, and cuts are likely. FY 17 funding will likely continue at the Fast Act level. The TIGER program is supported by Maine Senator Susan Collins (R). The Capital Investment program will likely include some level of funding for all projects currently underway. FY 18 could see earmarks return so FTA cannot change allocations desired by Congress.
- **Work Program Update** **John Smatlak**
The **Vintage Trolley Vehicle Standard** has gone through its first review and update since being published a decade ago. Revision work and many levels of review have been completed and the standard is scheduled to be published April 1
Crashworthiness Standards – Europe and the U.S. are coming closer together. The RT1 standard was conceived with an S-70 type car in mind. To be resolved is whether revision is necessary with longer cars coming in some cities. Studies underway of how to integrate fleets comprised of older cars conforming to earlier standards with cars conforming to newer standards. Also issue of how low floor trucks are attached to bodies and whether they conform with standards based on a traditional king-pin truck attachment.

New Business

- **Succession Planning – Subcommittee Officer Election** **Charles Joseph**
Committee Chair Paul Grether announced that he is planning to step down at the Rail Conference in June. Per normal procedure, Vice Chair Tim Borchers will then succeed him. Secretary Jim Schantz has offered either to move into the Vice Chair position, or to remain as Secretary depending on what will fit best with candidates that emerge. If anyone would like to step into one the vacancies they are asked to contact Charles or one of the existing officers.
- **FY18 Work Plan** **Paul Grether**
Ideas for new projects are welcome, recognizing that working them all the way through the standard process requires a great deal of effort. Discussion turned to adding operational and safety data for streetcars to the transit database, coordinating with CSC efforts.

- **2017 APTA Rail Conference June 11 to 14 in Baltimore**

Two streetcar sessions are planned; one led by Jim Graebner. The second is a panel discussion about lessons learned by new systems, and still needs one more panelist. The area of winter operations for new streetcar lines was suggested as a topic for a future panel.

System Updates (planned, construction, existing)

- **Oklahoma City**

A 1 cent sales tax is driving funding of the MAPS3 program supporting a wide range of projects, including the \$131 million streetcar. The Mayor is a major supporter, pushing for a non-autocentric downtown. The project team has been asked to study the possibility of an automated streetcar. Herzog will operate the system and startup is planned for March 2018 for the Bricktown loop then November 2018 for the remaining north-south loop. Seven cars are on order with Brookville, with the first to be delivered in June. Track length is 5.4 miles. Downtown will feature an off wire section. The O&M center is scheduled to be complete in October 2017 and the track a year later.

- **Atlanta Streetcar**

The State presented the streetcar management with a lengthy list of concerns to be addressed. So far 66 of them have been handled. The remaining items should be done by later in 2017. The accident rate has been considerably reduced. The management structure has been filled with people with the needed skills. Overall there's a feeling that the project is moving ahead well.

- **Charlotte**

Production has begun of the Siemens modern streetcars to replace the Gomaco replica cars. Construction of the extensions to the exiting streetcar line is now underway with utility relocation the focus.

Next Meeting

Will be held at the APTA Rail Conference Sunday June 11, 2017, 11:30 am to 1:00 pm, Hilton Hotel, Holiday Ballroom 1-2 on 2nd floor, 401 W Pratt Street, Baltimore, MD

Adjournment

Chair Paul Grether adjourned the meeting at 4:03 pm.

Paul Grether

- Minutes prepared by Jim Schantz

*A special thank you to our event sponsors
for breakfast, lunch, room rental and AV equipment*

