

Minutes
INTERCITY TRANSIT AUTHORITY
Regular Meeting
August 21, 2019

CALL TO ORDER

Chair Sullivan called the August 21, 2019, meeting of the Intercity Transit Authority to order at 5:30 p.m., at the administrative offices of Intercity Transit.

Members Present: Chair and City of Tumwater Councilmember Debbie Sullivan; Vice Chair and Citizen Representative Ryan Warner; City of Lacey Councilmember Carolyn Cox; Thurston County Commissioner John Hutchings; City of Yelm Councilmember Molly Carmody; Citizen Representative Karen Messmer; Citizen Representative Don Melnick; and Labor Representative David Claus-Sharwark.

Members Excused: Thurston County Commissioner Tye Menser; City of Olympia Councilmember Clark Gilman.

Staff Present: Ann Freeman-Manzanares; Mike Burnham; Jessica Gould; Paul Koleber; Steve Krueger; Rob LaFontaine; Pat Messmer; Brian Nagel; Eric Phillips; Nicky Upson; Jonathon Yee.

Others Present: Community Advisory Committee Member, David Bonauto; Community Advisory Committee member, Sue Pierce.

APPROVAL OF AGENDA

It was M/S/A by Vice Chair and Citizen Representative Warner and Councilmember Carmody to approve the agenda as presented.

INTRODUCTIONS

- A. Daniel Van Horn, IS Help Desk Technician (Jason Aguero)
- B. Zion Randall, Vehicle Detailer (Jonathon Yee)
- C. Victor Ellison, Operations Supervisor (Cameron Crass)
- D. Operators - Class 19-04 (Cameron Crass)
Marcos Carranza; Jordan Williams; Sean Rothwell; Bill Moody; Ben Morrison; Ruben Heredia; Jimmy Hollingsworth; Meredith; Summer Mercier; Mark Kaylor; Somer Christensen; Kimberly Wiseman; Robert Jarvis; Jason Bryant; Eugene Blake; Gavin Kramer; Cristy Ely; Steve Batten

PUBLIC COMMENT

Chris Chapman, Olympia, WA - Ms. Chapman asked the Authority to include on a future Board meeting agenda a proposal to consider including the Olympia Friends Meeting House in the Dial-A-Lift service area. This house is located at 3201 Boston Harbor Road NE in Olympia. This location is approximately 300 feet outside of the Dial-A-Lift service area. Ms. Chapman said the Quakers use this house as a place to

Intercity Transit Authority Regular Meeting

August 21, 2019

Page 2 of 10

worship. Currently, they have three members who would qualify for DAL service. One individual has MS; one with ALS; and the other with an advanced case of Parkinson disease. In addition, the meeting house is used by people in the community on a frequent basis, including the Olympia Mountaineers and other churches and community organizations, as well as individuals for weddings, birthday parties and memorials. The building is in the PTBA, but is 300 feet shy of being within the ¾ mile (3,960 ft.) shadow of the Route 21 when measured from the corner of 26th Ave NE and Bethel St NE. The issue is getting to the building. There are no sidewalks in front of the building and the parking lot is gravel; however, the building is ADA compliant.

NEW BUSINESS

A. Stantec Master Plan & Emerging Technologies Presentation. Procurement Manager, Steve Krueger, introduced Merlin Maley from Stantec, who provided an overview of the Pattison Base Maintenance, Operations and Administration (MOA) master planning effort that also included a discussion on emerging technologies.

Maley noted the community asked IT to increase services significantly, and the new facility will allow the agency to provide that service and future-proof the site for at least the next 25 years. Keys to the Plan include:

1. Construct new fuel, wash, facilities and bike shop building
2. Construct a new admin and operations building
3. Remodel the existing maintenance building
4. Implement off-site improvements to Martin Way and Pattison Street
5. Reserve space for future ZEB infrastructure

Findings and recommendations include the Martin Way Frontage Concept which avoids a new application for CUP and thus potentially two-year delay; maintains close proximity between Operations and Maintenance to the fleet; and avoids south parcel work. There will be a new public face for transit in the community, and integrates public use programs like vanpool and the bike shop. There will be minimal impact to existing operations during construction; and uses buildings to shield bus storage and service cycle from public view.

Maley reviewed Zero Emission Buses (ZEB):

1. Battery Electric Bus – Propulsion occurs from electricity directly stored in batteries and fueling occurs by recharging batteries.
2. Hydrogen-Electric Bus – Propulsion occurs from hydrogen stored in fuel cells that is converted into electricity for propulsion and fueling occurs by refilling hydrogen.

Maley said there are no experts in ZEB facility planning, currently as alternatively fueled technology is evolving. It's all brand new and evolving technology.

Challenges include infrastructure and on-site spatial requirements. Conversations need to begin early on regarding the amount of electrical grids, and thinking of two substation transmission feeds is a seven figure discussion. Can the utility provider implement in a short amount of time or will it take five or more years. Also providing grid resiliency; getting on-street infrastructure set up to enable operations; finding available land for large substations; respecting land-use planning; retrofitting existing garages not programmed for ZEBs; and lack of power supply drives up operation costs. Another challenge is transition of the fleet, and may need to increase your spare ratio for alternatively fueled vehicles. It's not a one-for-one replacement with alternatively fueled vehicles as it is for existing technology. It may be a requirement to align the route requirements with propulsion technology, and you need to have plans in place should buses run out of power on the road or there is an emergency and electrical power is not available. In addition, charging mechanisms are currently not the same but manufacturer specific and those might change in the future.

Maley said it's not just about the bus or the battery. It's about power storage, and facility upgrades. How do you charge the bus on site? If using hydrogen, it comes from a truck and you'd have hydrogen delivered on a daily basis. That technology is also growing.

Service Planning and Operations includes:

- New service plans
- On-street charging vs. base charging?
- Increased labor costs
- Operator training
- On time performance issues - more recovery time to keep schedule
- Work rules & collective bargaining agreements - can we align them with new operating needs?

Capital Improvements and Training includes:

- Start-up investment costs
- Life cycle cost analysis
- Maintenance and Repair Requirements
- Life cycle, preventative maintenance and repair estimates
- Retraining maintenance and operations staff
- Retooling garages
- Maintain operations while under construction

Where does the funding come from?

Establish the financial model and business case

- Potentially increased operational costs

Intercity Transit Authority Regular Meeting

August 21, 2019

Page 4 of 10

- Full life cycle cost of each vehicle
- Planning and Capital Improvement costs
- Include training in the planning costs (ops and maint)

Evaluate potential funding sources

- Local government
- Current or potential for carbon taxes?
- Potential utility agreements
- State government
- Federal government

Maley said plan to succeed by taking the wait and see approach for now, observing and learning from other agencies who are using this new technology. There are still a lot of unknowns about this technology; and peer lessons-learned will inform our approach. Plan now and plan for the unknown, and be patient because technology is constantly changing.

Maley said the Pattison facility needs to meet the 15% impervious surface requirement and in the future he doesn't recommend subdividing the lot anymore, but make it one big parcel allowing for more green space. He said space can be made on site for charging cabinets or hydrogen fueling. There is no room however, for a substation - that would have to go offsite. Plan on owning all equipment from the substation in. He suggests planning to feed overhead. It's going to take additional phases of construction and affect bus storage to construction. And south parcel storm water improvements will be required.

B. Adoption of 2018 Annual Report/Transit Development Plan. Planning Manager, Rob LaFontaine, presented the Plan for adoption. He noted that except for a few minor grammatical errors, there were no other significant changes.

It was M/S/A by Councilmember Carmody and Citizen Representative Melnick to adopt the 2018 Annual Report and 2019-2024 Transit Development plan as presented.

C. Intercity Transit's Role in Emergency Management. Operations Director, Emily Bergkamp, provided an overview of the agency's role in Emergency Management, specifically with the recent activities in the integrated emergency management course, which focused on recovery.

Bergkamp said staff spends a lot of time considering mitigation and preparedness efforts. In other words, the Emergency Management Cycle (Mitigate, Prepare, Respond, Recover). Knowing what the risks are for this community and how to respond. Being prepared is also important, and making sure that everyone has an understanding of their personal preparedness. As employees of IT, in order to

Intercity Transit Authority Regular Meeting

August 21, 2019

Page 5 of 10

continue to deliver service during emergencies everyone has to be prepared on a personal level and in their own homes.

On an agency level, staff created a foul-weather plan, an active threat response plan, an all-hazards emergency plan, emergency response plan, evacuation plan, fire prevention and response plan, spill prevention and emergency clean-up plan as well as a newly purchased mass notification system to help get the word out through text messages and pop-ups on computer screens through Operations Supervisors' sending notifications over MDT's.

The Thurston Regional Planning Council identified these Thurston County Natural Hazards: Earthquakes; storms; flooding; landslides; wildland fires; and volcanic events. Bergkamp provided a link to a Hazards Assessment Map located on the TRPC website that shows what actual hazards are in a given area:

<http://www.trpc.org/790/hazards-assessment-map>.

IT is connected with others in the area who focus on preparing for national disasters, such as the Thurston Emergency Management Council; the Disaster Assistance Council; Local Emergency Planning Council; Thurston Area PIO Emergency Network; Thurston/Mason Local Emergency; Communications Committee and the school districts and other municipalities.

The agency also helps with large and small emergencies now, such as assisting in transporting a large groups of public safety personnel; or evacuating individuals in case of fire or toxic emissions. The agency helps to coordinate whenever and wherever possible. Intercity Transit is actually named within the Thurston County Comprehensive Emergency Management Plan as the lead emergency transportation provider.

Under Emergency Support Function #1 - Transportation:

"Coordinate with Thurston County Public Works and Emergency Coordination Center in providing initial "windshield" damage assessments of road networks; coordinate the use of available equipment and personnel resources to assist with evacuations as appropriate; and provide appropriate transportation as needed for doctor and medical appointments."

IT is out in the community daily so we know where the potholes and construction projects are; we know where the latest automobile accidents are and the conditions of the roads after a major earthquake or other natural disaster. And our primary responsibility/goal is to serve the community as best as we can.

Under Emergency Support Function #6 - Mass Care, Emergency Assistance, Housing and Human Services, Intercity Transit:

Intercity Transit Authority Regular Meeting

August 21, 2019

Page 6 of 10

- A. *“Provide transportation resources to transport special needs or isolated populations to shelters as needed.”*
- B. *“Provide buses for use as temporary shelters as coordinated with the ECC.”*

Bergkamp touched on the topic of Recovery and provided this sample exercise scenario from the Emergency Management Course, involving a magnitude 9.0 earthquake that lasts for five minutes and 30 seconds, with 12 to 30 aftershocks ranging from 4.0 to 7.2 for the first thirty days; there's substantial damage to dwellings to require shelter for 40,000 people. Electrical facilities would likely be out for 6 to 9 months and after that a 90% restoration. There were 160,000 people without water, only 5% fueling stations have generator power and 7% of underground fuel tanks have leaks. Substantial sewer damage; LOTT and Yelm are down; significant damage to St. Peter's Hospital functioning at 40% capacity; Capital Medical is at 86% capacity; 50% of fatalities will come from schools and no school will be fully functional after the earthquake. Bergkamp said what came out of this exercise was substantial hope because Paul Brewster from TRPC created the Thurston Region Disaster Recovery Framework, and the intent of this exercise was the ability to “kick the tires” of this framework. Intercity Transit is in the “Ongoing Planning & Preparedness” phase. It's really important work and it's necessary to get things in line now. Brewster said Intercity Transit will “have a seat at the table” on the Regional Recovery Taskforce.

There are different levels of support: Federal, State, NGO, Tribes and Local Governments; and there's the Local Disaster Recovery Manager (LDRM). The LDRM is appointed by the Regional Recovery Task Force to start leading the effort of recovery. The Task Forces functions on a policy and decision-making level. There are many subcommittees like healthcare, jobs and economy, infrastructure and utilities, natural and cultural resources, housing, schools, and planning and capacity building. Intercity Transit may have a seat at one of these tables on an operational level.

The Regional Recovery Task Force (RRTF) ... is a multi-jurisdictional committee composed of representatives from each of the incorporated communities in Thurston County including the tribes, county, cities, towns, Intercity Transit, LOTT, Port of Olympia, TCOMM 9-1-1. Representatives will be appointed by each jurisdiction's governing body.

Next steps:

- Appoint Intercity Transit General Manager or designee for future service on the Regional Recovery Task Force
- Anticipate a role for Intercity Transit on a Recovery Support Function Subcommittee
- Continued staff attendance at monthly Emergency Management Council meetings

Intercity Transit Authority Regular Meeting

August 21, 2019

Page 7 of 10

- Continued participation in regional exercises such as the Integrated Emergency Management Course

It was M/S/A by Councilmembers Cox and Carmody to appoint the General Manager or designee to serve on the Regional Recovery Task Force as detailed in the Thurston Region Disaster Recovery Framework.

D. APTA Sustainability Multimodal Planning Workshop. Don Melnick provided a debrief of his experience from the APTA Sustainability & Multimodal Planning Workshop. He said although his main focus at the conference centered on electric bus technology, he also attended several tours: MBTA Sustainability & Transit Oriented Development Tour in which they visited three sites: Green Line Rail Transit tunnel portal; Boston Landing Station; and the under construction New Commuter Rail Line and Station.

His overall impression was that other attendees felt good about their decision to get into the BEB business, and they felt obligated to do their part in response to global warming.

Melnick was pleased to learn more about BRT and the other measures agencies were taking to improve access to outlying areas and to speed up bus transit in congested city settings. It made him feel more comfortable about IT's steps to improve service.

Commissioner Hutchings left the meeting.

E. Status of Alternative Vehicle Power Technology. Director of Fleet and Facilities, Jonathon Yee, provided an update on the experience of other systems implementing electric and other alternatively fueled buses.

Yee recapped from those discussions:

- Not much has changed since the last update in April
- Manufacturer challenges
 - Parts and technical support, Delayed delivery, Utility challenges
- Range experience
 - KCM: short range / fast charge currently under 30
 - Pierce Transit: Slow charge (6-hours) currently ~100
 - Valley Transit: Not yet in service
 - Effects of hot and cold weather
 - Range is dependent on driver habits and finesse
- Costs
 - Utility rates and capacity
 - Vehicles (acquisition, battery replacement/disposal)

Yee said peer recommendations include:

- Wait - or - Do your research and proceed cautiously

Intercity Transit Authority Regular Meeting

August 21, 2019

Page 8 of 10

- Start with small scale
- Published range from manufacturers is optimistic.
- Partner with the utilities early.
- Emergency Planning and Response
 - Consider transit's role in local and regional emergency response and ensure the mission can be carried out
 - Plan for appropriate backup power for charging during emergencies.

Intercity Transit's Strategy:

- Continue to explore and track evolution of new low/zero emission technologies
 - Continue to learn from peer agencies
 - Get involved in industry groups to stay current with technology and trends
- Keep our goals in mind (planning service based on the needs of the community rather than based on what the technology can support, providing a good level of service which encourages ridership and being good stewards of public funds) as we consider integration of new technologies.

Messmer said we need to begin participating in the solution sooner than later, and hopes technology moves more quickly.

Carmody said IT needs to start moving on this new technology – and not just observe our peers. We should begin investing in electric vans for vanpool, and look at infrastructure for the parking garage (i.e. roof garage you can plug buses into). These things could be built now while we wait for technology to catch up. She said this is the opportune time with the construction of a new building.

Melnick said he hasn't heard any of the agencies who are using this new technology say they ~~resent~~ regret their decision.

PH
REGRET

Yee said IT isn't going to take a wait a see approach for another five or ten years and not do anything until it's all been proven. However, IT isn't ready today or in the next six to twelve months to initiate a major purchase. The technology is evolving and the agency is trying to enter into this smartly and responsibly with the goal of using the public funds wisely. In the meantime, IT will continue to learn from its peers, and get involved in the community. Yee said he's received offers to get involved with hydrogen and battery communities while learning the process.

Messmer recommended including in the 2020 budget funding to hire an outside consultant to research this new technology and bring calculations to the Authority.

Intercity Transit Authority Regular Meeting

August 21, 2019

Page 9 of 10

Sullivan said this requires further discussion to determine the scope the Authority is looking for, and it will require being put out for bid, etc. Sullivan said this could be discussed at a future meeting.

GENERAL MANAGER'S REPORT

The Washington State Transportation Conference and Roadeo was held August 18 – 20 in Seattle. It was an amazing conference with over 50 sessions. Intercity Transit celebrated their Excellence in Transit recipients (*Finance Team: Suzanne Coit, Angie Shamburger, Lori Vani and Kiera Maryott; Mike Reinhardt in Maintenance and Randy Laffey in Operations*). And for the fifth year in a row, we brought home the Grand Champion Award. Dan Savage took 1st Place Body on Chassis and 1st Place Mobility Device Securement; David Randall took 2nd Place 35'; and Rob Wood took 1st Place 40' with a record setting perfect score on the course; Maintenance Team came in 1st Place - Joe Bell, Grant Swidecki and James Bush.

Former Intercity Transit General Manager, Mike Harbor, is retiring from Sound Transit effective December 5, 2019, and at the WSTA 3rd quarter Board meeting, as the WSTA President, Freeman-Manzanares had the honor of recognizing him for his many years of leadership.

Lewis County is focused on Economic Development and currently does not have a vanpool program, so staff is exploring the possibility of providing vanpool opportunities in Lewis County. Currently, we are addressing some legal questions.

Staff will provide an update on the 2019 budget at either the October 16 or November 6 Authority meeting. We started the year with 327 employees, and as of August 25 payroll, we have 393 employees. We've hired 90 employees in the past seven months. Staff is working on the proposed budget based on the Long Range Plan and the Strategic Plan.

AUTHORITY ISSUES

Messmer asked there be a future discussion based on this meeting's public comment regarding the Dial-A-Lift service area. She'd like to discuss how these types of things are decided, and is it possible for the public to appeal to the Authority on the PTBA boundaries. She recommends discussing what an appeal process would require.

Messmer appreciates that Kerri Wilson from the Walk N Roll program is participating on the Thurston Thrives Community Design Action Team and talked about the combination of the programs she's involved in and the interaction with school walking routes and infrastructure that is needed for the kids to walk safely to school.

ADJOURNMENT

Intercity Transit Authority Regular Meeting

August 21, 2019

Page 10 of 10

With no further business to come before the Authority, Chair Sullivan adjourned the meeting at 8:25 p.m.

INTERCITY TRANSIT AUTHORITY



Debbie Sullivan, Chair

ATTEST



Pat Messmer

Clerk to the Authority

Date Approved: September 18, 2019.

Prepared by Pat Messmer, Recording Secretary/
Executive Assistant, Intercity Transit

MEMO

August 20, 2019

To: IT Authority Members & Staff

From: Don Melnick, Authority Citizen Member

DM 8/21/19

Subject: 2019 APTA Sustainability & Multimodal Planning Workshop Notes

Introduction: What follows are my notes and observations from attending this workshop summarized for each seminar and tour I took with an overall summary of what I learned at the end. In total I participated in 11 of the 32 or so seminars and tours available; that many overlapped precluded participating in all of them. Whenever possible I attended those dealing with battery electric buses.

MBTA Sustainability & Transit-Oriented Development Tour: We visited 3 sites

- Flood Resiliency Improvement: We visited a Green Line rail transit tunnel portal that had been plagued by incessant flooding and were briefed on remedial measures being implemented including a flood gate structure that could be installed when needed,
- New Commuter Rail Station: We visited the new Boston Landing Station installed to enable access to a relatively isolated site being collaboratively redeveloped by New Balance footwear, the Boston Celtics, the Boston Bruins and the MTA as a new working, living and recreational environment.
- New Commuter Rail Line, Station and Commercial/Residential Development: We visited the under construction site and were briefed on addition of a massive long planned and now under development site that will contain massive commercial and residential facilities enabled by the commuter rail line extension that is part of the development.

MBTA & Partners Host Forum: This forum was a presentation by MBTA and City of Boston representatives to describe how they are setting out to accommodate global warming including:

- Projected sea level rise (40 inches by 2070): Measures planned include an environmental sustainability bond issue intended to cover anticipate remedial expenses

- Addressing transportation emissions (said to be the worst polluter):
Measures planned include:
 - ✓ More convenient and efficient public transportation to discourage the use of personal autos
 - ✓ A multi state coalition planning a “cap and invest” measure (similar to cap and trade) to limit petroleum fuel costs by selling rights to pollute and invest proceeds in pollution reduction measures
 - ✓ Other fuel sales regulation measures intended to reduce petroleum use
 - ✓ AMTRAK in concert with the Wharton School have formed a Resilience Task Group to determine the most effective remedial measures

EV and Vehicle to Grid Technologies: What’s Ahead for Our Vehicles and Infrastructure? Presenters summarized key issues, measures underway and remaining steps needed to address greater use of electric energy to reduce fossil fuel use for public transportation:

- Public agencies who use electricity for water & wastewater AND public transportation need to better understand each other and find ways to collaborate. The Clean Cities Program (there is a branch in the Northwest) is a means of doing this.
- Both EV and associated charging technologies are evolving rapidly and the need to accommodate improvements should be born in mind.
- Better understanding of the electric utility industry as a “business”, both public and private, is paramount and urgent. Cyber security is a related issue here.
 - ✓ Developing relationships with electric utilities is paramount.
 - ✓ Understanding “time of day charging” issues is critical
 - ✓ In many states preferential electric rates (“EV Rates”) are being implemented via regulatory and/or legislative means

Climate Action Planning: Government agencies need to undertake long term planning to accommodate climatic changes resulting from global warming. Three agencies described their approaches:

- Southeastern Pennsylvania Transportation Authority (SEPTA): Diesel – Hybrid – Battery Electric progression planning efforts were described

- including public input, electricity sourcing (purchase and solar) and charging infrastructure
- Pinellas Suncoast Transit Authority (Tampa): Sustainability plan developed considering environmental, social and energy factors. Collaborated with community groups including business, community and education; public promotion followed
 - King County Metro in collaboration with the U of Wa Evans School of Governance & Policy developed a long term sustainability plan called “The Path to Carbon Neutral”:
 - ✓ projected 430,000 riders per day
 - ✓ 80% carbon reduction by 2050
 - ✓ massive regional population growth
 - ✓ sea level rise
 - ✓ climatic change including precipitation and temperature change
 - ✓ need for supportive public policy assessed
 - ✓ local pollution
 - ✓ 5-year action plan cycle consistent with state policy
 - ✓ extremely aggressive approach to result in “transformative change” desired
 - BART is developing a “Climate Resiliency Plan”
 - ✓ 60” sea level rise by 2050
 - ✓ extensive collaboration with all local agencies
 - ✓ “Universal Design” approach adopted

Battery Electric Bus Subcommittee: I attended the formative meeting of this new group intended to share challenges and solutions agencies have learned through their use of BEB’s; feel it would be a very good group for IT to participate in as a learning experience.

Transit and Emerging Mobility: Emergence of “shared mobility” resources (Ex: Uber, Lyft, battery scooters and bicycles, HOV’s and BRT, etc.) that can expedite greater mobility (Ex: for the “last mile”) has made it imperative for traditional transit agencies to find ways to utilize such resources. Three agencies described their approaches:

- Denver Regional Transportation District has undertaken a robust approach to make regional transit more accessible for all populations, accommodate

rapid changes in technology expected, utilize extensive public outreach and tailored approaches for differing community settings utilizing:

- ✓ HOV lanes
- ✓ extensive “way finding” signage (proven extremely effective)
- ✓ mobility hubs (preferential access for Uber, Lyft and etc.)
- ✓ microtransit to accommodate rural areas and later hours
- King County Metro has undertaken the “NE Side Mobility Plan” as a 4-year demonstration project to improve access to less served areas utilizing partnerships with:
 - ✓ cities served
 - ✓ other community based partners
 - ✓ service vendors
 - ✓ technology partners

Adopted a “not afraid to fail” attitude; has encountered some reluctance to change. Metro sees itself as become a “mobility agency”

- Mobility as a Service is being tried by the San Joaquin Regional Transportation District utilizing an online commercial trip planning & booking service (Ecolane USA) for shared rides. Acceptance has been slow; has taken 10 months to begin to get growth.

Consistently Getting There Faster: With congestion continuing to slow bus transit ways are being found to improving service and four agencies describe how they are accomplishing this:

- San Francisco MTA is finding ways to increase ridership by incorporating transit priority signalization and improved street design and makes service more timely and convenient
 - ✓ BRT principles
 - ✓ bus bulbs
 - ✓ turn restrictions
 - ✓ traffic calming
 - ✓ trying things (pilot projects)
 - ✓ public involvement

Has resulted in 29% ridership improvement in 2 years! Small changes have resulted in improvements

- NYC Transit has experienced improvements as well
- Maryland Transit Administration has achieved improvements thru:

- ✓ enhanced bus stop spacing driven by established documented standards
- ✓ rational practical approach
- ✓ bus stop rightsizing
- ✓ know that driver training will be critical

Roundtable Idea Exchanges: Was a forum for exchange of ideas in facilitated forums; I of course selected BEB technology and there was a constructive exchange of experiences among those attending who included bus manufacturers (Proterra and BYD) and various agencies who were trying BEB's. Most notable conclusions I heard were"

- Anticipate that trying electric buses will be a learning experience
- Expect that technologies will be evolving and plan accordingly
- Become aware that electricity purchased from utilities will be an unexpected learning experience

Life Without Diesel: Planning for Emerging Vehicle Technologies: Lessons being learned by transit agencies from their beginning transitions to zero emissions bus technologies particularly BEB's

- Regional Transportation Commission of Washoe County (Reno) Nevada is a smaller agency that is learning by doing and offers the following observations:
 - ✓ try buses on real routes
 - ✓ precondition buses to accommodate cold weather
 - ✓ train drivers!!!
 - ✓ plan charging infrastructure carefully; it was a surprising expense for them
 - ✓ consider demand charges when planning charging times
 - ✓ seek preferential electricity rates
 - ✓ ensure there will be adequate vendor support when purchasing buses
- Denver Regional Transit District experiences in a colder climate. Started with a short route similar to our Dash and purchased only a few BEB's to learn. Experiences were:
 - ✓ Initially used "overnight depot charging"
 - ✓ charging infrastructure cost was a surprise
 - ✓ electric bill was also a surprise

Their future plans include:

- ✓ Forming a state electric vehicle coalition
 - ✓ Participating in a Public Utility Commission work group and planning to “intervene” in PUC proceedings
 - ✓ Moving to “off peak” charging
 - ✓ Working closely with their utility
 - ✓ Forming a fleet electrification work group to share experiences for all departments in RTD organization
- Portland TriMet has begun transition to BEB’s but is proceeding cautiously. Goal is to be “all electric” by 2040. This year commissioned an independent study (by Navigant*) to compare projected present worth costs and emissions reductions of:
- ✓ biodiesel
 - ✓ renewable diesel
 - ✓ renewable natural gas
 - ✓ battery electric
 - ✓ hydrogen fuel cell

technologies and BEB came out on top and was conditionally recommended as preferable. Note: A copy of the NAVIGANT report has been obtained and passed on to IT staff.

Technical Tours: Being a train enthusiast I opted to tour the Wellington Car House that is one of the MBTA’s main maintenance facilities. I got to tour the facility and also to see the newest train set in final testing before being put into service to replace older equipment purchased in the 80’s. Surprisingly the new train set was built in China and MBTA staff were extremely pleased noting that the factory there was definitely “state of the art” in every way.

MY OVERALL IMPRESSIONS: I felt attending this workshop was very beneficial particularly regarding my desire to learn more about BEB’s. Though I presume agencies who did not feel good about their experiences with BEB’s may have not chosen to attend, everything I observed and heard was that attendees felt good about their decisions to get into the BEB business and were pleased with what they had learned. There was also the impression that attendees felt obligated to do their part in response to global warming and so were pleased to be part of the move to BEB’s. I was also surprised with the impressions of those

who had purchased and were purchasing BYD (Chinese) buses and the MBTA's purchase of the electric train set.

I was also pleased to learn more about BRT and the other measures agencies were taking to improve access to outlying areas and to speed up bus transit in congested city settings; made me feel more comfortable about our steps to improve service.

Overall I was very pleased with the opportunity to attend this conference.

