

PUBLIC COMMENT ATTACHED TO
MEETING OF SEPTEMBER 29, 2020

Document sent by Jane Chittick on September 6 at 10:27
AM, captioned 8-20-20 SHORT VTA Presentation

**Induction Charging
VTA Church Street Meeting
8-20-20**

Background

Induction Charging is <ten years old.

- large geographic areas
- steady ridership
- wide city streets, induction charging *might* work well.

The Vineyard is the opposite of these cities.

In Use Now (8-20-20)

- Only place in Wenatchee WA and is running well.
- Two rural counties (100,000 people),
- Wenatchee, **urban** city of 40,000, with wide streets [photos sent this morning]
- Photos of Columbia Station: 3 large lanes wide - buses take up one lane and 2-way traffic lanes run next to the charging lane
- Visitor's Bureau: "a Wenatchee traffic jam is 4 cars at a traffic light" and "traffic is heavy if it takes you more than 5 minutes to get across town".
- **11 hydroelectric** dams making electricity **extremely cheap**.
- Two counties **4,800** square miles; Vineyard **87** square miles.

Wenatchee and the Vineyard have very little in common.

Buses

BYD main business is batteries; buses are new.

- **Complaints about BYD's claims of range (275-mile range promised was 207 miles).**
- **Luckily the contracts they signed with BYD stipulated if the batteries didn't have the advertised range, or couldn't withstand heat and cold, the cities would not pay for them.**
- Does VTA's contracts have the same wording? Has anyone read them?

I. Albuquerque: ART BYD buses (2017-2018)

- BYD supposed to supplement regular bus system by the fall of 2017 with a fleet of 20 buses. **Stopped the project in January 2018, barely a month after ART's debut**
- Besides **scrapping the buses, the city has sued their manufacturer.**

- Ordered 20 clean-diesel replacement buses from another company (wait time 18 months (sometime this year 2020))
- In 2019, Albuquerque increased city-owned EV charging stations from two to 40. The city hopes to have all stations up and running by early 2021.

II. Wenatchee (Jennie; Ed Archer)

- It is actually “better for the Momentum-fitted buses to slow charge overnight”.
- **“Better batteries are coming from BYD”**
- Returned (2) 200 kW buses for better batteries **at no cost** and Momentum **installing 3 new 300 KW charging stations at no cost** (although limiting to 200 kW).
- Buying 10 more 35’ 300 kW Buses and 3 new Momentum stations **at no cost**

III. Chattanooga CARTA (Philip Pugliese, Transportation Planner February 2020)

Chattanooga population 185,000 and 3 million riders/year (steady). Free Electric shuttle bus – stops in huge garage. Chattanooga’s route range is 100 miles (a compact city)

- 2018 (3) BYD K9 35’ 300 kW systems - in service 2019
- Each been installed with **\$400,000** Momentum inductive **200 kW** charger, **but not being used yet**
- **No need yet for chargers** – buses **return with 30-40% charge** still remaining
- Takes 2-3 hours 80 kW conventional nozzle to charge at Terminal for 2 hours; if inductive charged, it would take 10-15 minutes to add 20 miles of range.
- They are fully charged at 5:30 am and some return at 1:00 pm and leave again at 2:30 pm
- Fully charged buses can go 130-150 miles but their 8-hour route is 105-110 miles.
-
- **Pugliese asked these questions and 4 years ago started studying “practicality and efficacy of investing in current BYD generation buses and inductive chargers vs waiting until better batteries or solutions are found”**
- Are the **chargers** with all the other **capital** infrastructure **costs really worth it?**

- When will BYD buses **have better batteries?** He thinks soon.
- “Big data and artificial intelligence experts” from Vanderbilt and University of Houston studying the value of charging technology to power. **Results are not yet in.**

Update: Philip Pugliese and Lisa Maragnano (7-27; 7-28-20)

(Philip Pugliese, Transportation System Planner; Lisa Maragnano, CARTA Executive Director)

- Induction Chargers but **still not installed** en route as “no need to”.
- 1 induction charger at the terminal but it’s rarely used as it’s “inconvenient” to stop to allow a 20-minute charge (**1 mile = 1 minute.; 20 miles = 20-minute charge**).
- ‘**Maybe next year?? Maybe not.**’
- **They would like to buy bigger buses than the 200kWh, BUT not going to invest as “technology is changing”. “We will wait.”**
- **Right now, no need and VERY expensive.**
- He likened it to iPhone upgrades – **its appeal is “cool new technology”, but the cost is too high.**

7-28-20 Lisa Maragnano, CARTA Executive Director

- 2021-2022: **POSSIBLY (??)** buy more BYD K7 30’ buses that could be ordered **with or without chargers.** **Not yet decided.** No rush.

IV. Indianapolis IndyGo (IN), Lesley M. Gordon, Public Affairs

September 2019 - three (3) **300kW** BYD **60’** Buses: **falling short** of 275-mile range (from a low of 152 miles to a high of 275 miles, only 26% of the Buses made their range)

- BYD has agreed **to PAY for cost and installation** of Three (3) 300 kW **Momentum chargers (the largest in the world).**
- Right now, the (3) 60’ Electric buses get **an electric “boost” (nozzle)** on scheduled layovers
- The 60’ Buses **have not yet been retrofitted with the inductive chargers, nor have the chargers been installed in the ground.**

December 2019 order for five BYD electric buses, costing nearly \$6.5 million.

- According to the agreement BYD will also absorb the costs to retrofit the six K11 60' buses that have *already been* delivered to IndyGo

December, 2019 IndyGo “intends to get rid of all diesel buses by 2032 and hopefully, it will progress smoothly”.

February 13, 2020 (2 months later): The new IndyGo boss, **Inez Evans**, was testifying before the City-County Council:

- “The total acquisition for the 31 buses was approximately \$40 million,” said Evans. “A portion of that are federal dollars as well as our local commitment as well.
- **We have not paid BYD** for those buses. We have had them in our possession for over a year.
- They have requested payment but we have reminded them that **they signed a contract with IndyGo to produce a bus that could go 275 miles. That bus is not doing that at this time.**”
- **permanent charging stations at BYD’s expense have not yet been built**
- **“That \$4 million expenditure is on them,”** said Evans. “It is not on IndyGo to put that permanent solution in place. **We will wait until that permanent solution is in place to test to see that we can get 275 miles and not pull buses on and off the route. Once we have confirmed that we will and they have met all their other contractual things, then we can render payment but not until that time.**”
- Evans hoping to learn lessons from the Red Line project so that similar mistakes would not be repeated in the anticipated construction of the Purple Line, a companion route. Half of the **\$155 million Purple Line project** will be paid for with federal funds and a **lion’s share of that money will finance infrastructure improvements including paving, curbs, and sidewalks along the route.**
- **February 28, 2020 (2 weeks after Hearing):** 5 BYD buses were **canceled** and the savings were applied to **new Hybrids**. IndyGo then purchased **13 Hybrid (diesel/electric battery) Gillig buses**

Annette Darrow, IndyGo, Director of Service Planning (August 17, 2020: Second Conversation)

Permanent Chargers: not yet installed, but **BYD pays** everything:

- the *temporary* (1) garage charger charged by two nozzles and the future (3) are *permanent* Momentum Chargers.
- Acquiring property to place the 3 permanent chargers (3 @ 300 kW), at either end of the 13.1-mile Red Line and 1 when the new Purple Line is built.
- **The Red Line has wide streets and some stations in the middle of the wide road and some on the side of the wide roads – the BYD 60’ buses have no problem navigating these streets.**

Skepticism re Momentum:

- Momentum “salesperson” claims the chargers will boost **the range** to 275 miles (vs 200 miles that IndyGo Tech people claim).
- IndyGo **has asked to try for themselves** to test the charging time, which Momentum claims is 10 minutes, but so far, **they have not been allowed to test it themselves**. Momentum claims they can charge the buses from 0% to 100% in “3-4 hours”.
- **Darrow** says to take everything with **a grain of salt**.

V. TransIT, Frederick, MD, Roman Steichen, Transportation Services Director (8/14/20)

FY19 system ridership totaled 593,853 one-way passenger trips. Fleet: 49 vehicles: (including 2 hybrids and 5 CCW fully refurbished 2016 electric buses and 4 new BYD buses --- only 1 of which is on the road now)

- They had **been considering** Momentum’s induction chargers but the **basic infrastructure** (simply digging up street, installing charger plates) **cost were upwards of \$500,000 to \$700,000**
- In addition, it would have been in their **Historic District** and that would have **proved “difficult” if not “impossible”** to get approved by the HDC*. Frederick has a very strong HDC protecting their district.
- Because of the costs for induction chargers, they never even got to the HDC stage which they thought they’d lose anyway. In fact, he said, **the townspeople never even heard of the induction charging possibility, as TransIT knew there’d be widespread opposition.**
- To do a **change order on previously ordered BYD buses would have been too expensive** (it would have included more \$\$\$ and even the hardware on the bus swapped out - **including the entire bus frame** itself!).

- It was not only **the money, but retrofitting** their buses as a change-order created too many problems, so they declined to use Momentum.
- **“Supposedly”**, per Karl Wheeler (BYD Mid-Atlantic Regional sales Manager), *today, it would have been possible to retrofit the induction plates onto any new bus frame - but Roman says to be wary as Carl is a “salesman”*.
- The remaining four are BYD 30’ K7M electric Iron Phosphate batteries. The BYD buses are used for a full shift ...no range issues “yet”, Steichen said, emphasizing the word “yet”.
- Their 2019 new BYD bus has only been on the road for 1 week now (August 7, 2020) due to multiple problems with the bus.
- He commented BYD is a **battery company**, not a bus company, and they are **at the “teething” stage** right now in developing their buses.
- However, he knows BYD is working hard on developing better batteries with sustainable long range, and it’s only a matter of time - 'a couple of years' he thinks.
- He said the induction chargers are only “a crutch for now” and it was not prudent to buy them now.
- They are in the process right now of getting their other 3 BYD buses on the road that they’ve had since 2019.

VI. Pinellas Sunshine Transit Authority (PSTA)

Joe Cheney, Deputy Director, Fleet Operations jcheney@psta.net

St. Petersburg and Tampa:

Ridership: 12.5 million annually

Bus Routes: 40 with 4,602 stops (Route 100X and 300X St Pete to Tampa)

Service area: --- **St. Pete/Clearwater/Tampa** (vs. Vineyard’s 87 square miles).

PSTA serves 22 of the 25 municipalities in Pinellas County as well as unincorporated areas. PSTA’s network can be generally categorized as a hub-and-spoke system with four major hubs—downtown St. Petersburg, Grand Central Station in St. Petersburg, the Pinellas Park Transit Center, and the Park Street

Terminal in downtown Clearwater. 24 Incorporated communities and other unincorporated. Map 3-1 provides an overview of PSTA's service area.

Transit Roads: "Most main roads we travel on are 2-4 travel lanes on one side only (4-8 lanes for the entire road). Some routes to travel on single lane (2-lanes for the entire road) but there are only a few areas that we have narrow conditions that make servicing them challenging".

Fleet: Currently, 89 Hybrid 0-emission buses; 2 BYD K97 Electric (arrived February 2020) and 4 more coming late 2021 (6 in all).

- Electric: BYD K97 35' width, 102" wide buses: "The mirrors add about 6"-8" on both sides depending on what type they are. The total width mirror to mirror on a 35' or 40' transit bus is usually around 9-1/2 feet. If they have 30' buses they may be a little narrower than that".
- A new order was put for nine (9) 40' Gillig Hybrid buses. They are not sure until they test both Hybrid and Induction to see which type is best and will not commit to further purchases until the studies are done.
- If they bought more Electric, they would have to install additional induction chargers along the BRT (Bus Rapid Transit Route) and they didn't want to commit to that \$\$\$ and that installation until the studies were complete.

Charger Terminal location: 8 routes go through the Terminal. It has 6 berths there. Induction placed there in February 2020 as it was the most centrally located place: tested the end of May. Officially started using them in June. Prior to the WAVE chargers these two Electric Buses were running a free e-loop route in downtown St Petersburg. This route was a circulator that ran a short route around the downtown area.

"When we commissioned the WAVE 250 kW charger (June 2020) we began using the bus on several other routes, all of which already service the terminal where the charger is located. The chargers are also there as Maintenance department is too."

Induction Charging: 1 WAVE 250 kW plate installed at large Terminal (island with 6 berths; 8 routes go through the Terminal) The charger is being used about 1 x hour and takes about 10 minutes to charge. They get 1 kWh from 1 minute of charging (1:1), "which isn't a lot", he said but it 'helps'.

PSTA's electric buses average 180 miles or 15 hours before having to recharge.
"Once the BRT is completed and we get the hybrid electric buses running, we will

be collecting data to see how we can integrate all-electric BRT buses on the route.”
(6/10/20)

- in other words, they are not committing to all-electric now and are proceeding with new Hybrid

Nozzle charging: It takes +/- 5 hours to charge at Terminal’s 80 kW nozzle charger. **We plug these 2 buses in regardless each night.**

- Preferred WAVE as thought company to be more financially sound than Momentum
- They decided on 1 induction unit for financial and logistical reasons. He said “**eventually we will not need induction batter technology. It will be obsolete so financial issues must be addressed now – is it worth the cost to invest now in induction for the future?**”
- Some software problems with charger but doing okay now, in service.
- Their problem is excessive heat (can hit 100 F during a 6-month period)
- The **total cost of the charger equipment and installation is expected to be \$589,000.** Funding is derived from Pinellas County's BP oil spill

Hybrid-Electric Buses: purchasing 40 Gillig.

??? each route is 40 miles and takes 1.5 hours

Cheney used to work for the MBTA: he has been here several times before he moved to FL five years ago. He has worked on our bus engines at the VTA headquarters. He commented that BYD *should* be able to add extra battery packs on our buses, if needed. He was “surprised” the VTA was getting induction chargers – he said” There’s less of a need here on the Vineyard for induction than elsewhere.” (route length; speed, etc.)

[He asked why OB or VH wasn’t selected: “Route #1” bus could go from: Edg to VH and continue to OB and Edgartown, making a complete round trip. Same with “Route #13” bus: it could go from Edgartown to OB to VH to Edgartown, making

a complete round trip in the opposite direction. Induction charger could be located in OB].

He spoke of “Range Testing” the electric buses here under different controlled environment scenarios: length of routes, amount of battery left during a controlled environment test. Example: 1 electric bus 100% slow charged, “passenger-weighted” (by sand bags); same # of stops and times at stop; all verified by a data wireless system to get real bus data (he prefers VeriCiti, not Hams), under temperatures at 0F and at 100F ... it will show the accurate amount of energy used on each route and determine if opportunity chargers are *really* needed. He said until these test are done, people are only guessing. He assumed the VTA had done these tests, as other transit authorities have done, so it’s just a matter of looking at the data.

He also talked of “regenerative braking – recouping energy each time the driver breaks <15 mph. This automatically regenerates new energy.

<https://www.psta.net/media/4727/fy2021-2030-tdp.pdf>

BASIC UNANSWERED QUESTIONS:

1. If VTA Electric buses **are running without the need to charge en route**, **WHY** are we adding on induction chargers to the 1) cost of the BYD buses and 2) the cost of the pad (\$500-\$700,000) and infrastructure (\$???)

- **What is the purpose** of chargers if the buses don’t need to be charged during the shifts?
- **How much** is the whole project and what are the components?
- **Who’s paying** for what? (why are we paying when Wenatchee, IndyGo, CARTA, Frederick get theirs free?)
- Digging up the historic district at **enormous expense**, just to install the pad, etc., and not counting moving the sewer, water, electrical hookups nor the widening of one-way Church Street, the cutting of trees, the hardscaping and the huge electrical storage units?

2. **If BYD batteries are being improved** (as we speak), even other communities who need more range than we do, **eventually won’t see the need to be inductively charged**. The improved batteries will have a bigger range and better weather

controls. Unlike some communities who have very long-distance routes –here, we only travel about 25 minutes and over 6-8 miles from Edgartown to OB or VH.

3. Other

- What is **long-term durability** of that **pad** (no one knows)? Would a second one cost the same \$500,000-\$750,000 to install?) *Electrek (2018)*
- Momentum claims “the system is *more energy efficient than plug-in* chargers of the same power rating” **but unfortunately, didn’t release any specifics data:** they say it takes “4.5 minutes to charge 200 kW = 10 miles and 4.5 minutes to charge 300 kW = 13.4 miles
- “Not what operators say” (*Magnetics Magazine 1/15/19*):
- Wenatchee: takes 6-7 minutes @200 kW (not “4.5 minutes”)
- Chattanooga: says it takes 10 minutes to add 20 miles of range

OTHER CRITICAL QUESTIONS

1. What do our **VTA contracts** specify re returning BYD buses or Momentum Dynamics if they don’t live up to their claims? What guarantees are in these contracts?

- Albuquerque sued BYD
- BYD has avoided lawsuits from Chattanooga, Indianapolis and Frederick by agreeing to buy Momentum’s induction chargers and installing them free of charge for these cities.
- IndyGo is holding out and not paying them for the buses yet

2. Two transit city Administrators raised their eyes skeptically at what the BYD Regional Sales Managers promise. “Seeing is believing”.

3. 0-emission Diesel Hybrids – IndyGo has abandoned electric

4. Adding Induction Chargers is now creating a new system where every element must work well together. For example, if the charging time is double what Momentum says, how does that affect the route schedule?

MISCELLANEOUS

- **Electric Fleet:** K7 is 96” but the K9 is 102” (not 96” as had been agreed upon)

Charging Locations/VEIC Tech Memos]

- Build Your Dream (BYD): The K7 model is 31' long, 95.7" wide. BYD includes a charging unit with the vehicle purchase that can charge the bus's battery in two to three hours. Charger located at **VTA's facility on 11 A Street**.
- Additional charging equipment: **recommends** installing a **second vehicle charger at the Tisbury Park and Ride lot**. **Although not technically required**, the additional charging station will provide some redundancy in the system and reduce the chance a bus driver runs out of power.
- **Art Smadbeck said Angie** has already designated **Oak Bluffs** as the backup for inductive charging if in November. Edgartown again votes against this on Church Street.
- **West Tisbury** was also mentioned as was **Aquinnah**.
- 3/27/17 En-route charger at "West Tisbury Town Hall" [Tech Memo]
- **"Menemsha"** would require an en-route charger (225 miles/day) [Tech Memo]

Email sent by Jane Chittick on September 6 at 10:27 AM,
captioned FTA Grant



From: jane Chittick jane.chittick@icloud.com
Subject: To added to the Minutes of August 20-25 per Jane's presentation Fwd: FTA Grants
Date: September 6, 2020 at 10:27 AM
To: Strahler, Alan alan@bu.edu, Julia Livingston deutz@comcast.net, Jane Chittick jane.chittick@icloud.com

Please also add this email that refers to my stating that low-emission hybrid electric buses ARE funded by the FTA (these on 6/30/20), directly contradicting what Angie said about no funding since 2017 for these buses.

Begin forwarded message:

From: jane Chittick <jane.chittick@icloud.com>
Subject: FTA Grants
Date: August 26, 2020 at 4:14:46 PM EDT
To: Angie Gompert <angie@vineyardtransit.com>, Mark Snider <msnider@stanmar-inc.com>, Bill Veno <veno@mvcommission.org>, Doris Ward <myvdoris@gmail.com>, Sara Piazza <sarapiazza@sarapiazza.com>, "Strahler, Alan" <alan@bu.edu>, Keith Chatinover <kchatinover@gmail.com>
Cc: Jane Chittick <jane.chittick@icloud.com>

Yesterday, I reported that government is giving grants to "Low-No" bus projects. You had said the government was not giving funds to low-emission. I had referenced the following "Eight of these grants will be utilized to purchase GILLIG zero-emission battery electric buses and associated charging infrastructure, while the ninth will be utilized to deploy advanced low-emission diesel-electric hybrid buses." I then said that the VTA had received \$1.1 million in June for the inductive charging project and you said it hadn't.

Complete list of awards can be found here: <https://www.transit.dot.gov/funding/grants/fiscal-year-2020-low-or-no-emission-low-no-bus-program-projects>

Angie: you had said that the FTA no longer supports **low emission grants**, what is this?

MS	City of Jackson	The City of Jackson, MS will receive funds to purchase new diesel electric hybrid buses to replace aging diesel buses that have reached their useful life expectancy.	\$5,500,000
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NH	The City of Nashua	The City of Nashua will receive funds to purchase new hybrid electric vans to replace aging vehicles and related charging infrastructure.	
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There are NEW technologies the FTA is supporting. Technology changes on a daily basis as we have seen with BYD's electric batteries.

NV	Regional Transportation Commission of Southern Nevada	The Regional Transportation Commission of Southern Nevada will receive funds to purchase new hydrogen fuel cell electric buses, and related support infrastructure.	\$3,853,20
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[The Regional Transportation Commission of Southern Nevada \(RTC\)](#) has received a \$3.8 million grant from the [U.S. Department of Transportation \(DOT\)](#). The funds from the [Low or No Emission Grant Program](#) will allow the agency to deploy two hydrogen fuel cell buses and install accompanying hydrogen-fueling infrastructure.

I then asked if when you were talking of the total amount the project would cost, if you had included the June 11, 2020 FTA grants, specifically the \$1.1 million for the induction charging and you said "No". Could you please explain this \$1.1 million grant?

MA	Massachusetts Department of Transportation	The Massachusetts Department of Transportation and the Martha's Vineyard Transit Authority will receive funds to purchase new electric buses and support charging infrastructure.	\$1,100,000
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Document sent by Jane Chittick on September 7 at 8:33 PM, captioned 8-25-20
VTA Talk

8-25-20 VTA Church Street Committee Meeting
Jane Chittick

I have changed my presentation from last week and will speak from an overview. One thing is clear to me: the Vineyard's VTA is not anything like any of the other transit authorities using, considering or rejecting induction charging, whether in Europe or in the United States. And, for some reason, here we are debating whether or not we should be investing in hugely expensive, unproven, costly, intrusive and soon obsolete technology on this tiny speck of sand in the Atlantic Ocean. I am even more convinced than ever before due to my extensive internet searches and lengthy and multiple conversations with other Transit Authorities over the past 7 months, including some this past week.

Other cities' Inductive Charging experiences

1. First of all, all other sites are municipal cities with transportation centers, garages, multiple lanes and central services spanning large territories. The chargers are located in these massive structures similar to South Station, Boston. They are not located on a narrow, one-way, one-block street named for Edgartown's quintessential icon, The Old Whaling Church.
2. Second, we have the smallest ridership of any: looking at the 5-year Chart, if you removed July and August tourist ridership, you'd see us with about 20,000/month local riders or 120,000 steady riders per year. This is a fraction of the other cities you'll hear about.
3. Third, all cities are now involved in active studies by experts to determine – over time – not all at once, overnight - what fleet mix they should have: some will retain some diesel, but the trend is either zero-battery Hybrids or all Electric. But even though every city has set their goal at “100% Electric” by 2030 or 2040, they know it's just a figure of speech. NOT ONE city is really going all-Electric now ... it's premature with the technology. You'll hear of cities adding new Hybrids to their electric fleets, rather than put all their money in only Electric at this time. Just like the mythical lemmings, we Vineyarders are on a rush to jump off the Aquinnah cliffs.
4. Induction bus technology is less than 10 years old. Cities are now abandoning it - or not even using it after installation. Over and over I heard people say this is most-likely a short-term fix while companies like BYD rush to improve their bus batteries' range. Ed Archer last week said Wenatchee was already on “Gen 2” BYD batteries – and that was just within a year's time. Being a short-term “fix”, however with enormous finance costs, are keeping cities from jumping right to Induction Charging. Wisely, these cities are taking a good, hard data-driven look at the entire fleet makeup before they commit.
5. Since Alan mentioned Europe last week, I did a short internet search to add to my earlier presentation. Again: keep in mind the size of the city, the population and compare it to us here on this island. Only eleven thousand of us live on 87 square miles in 6 miniscule towns here – entirely surrounded by water. We are not in the transit big leagues nor have the transit engineering expertise that these other cities do. We're trying to make decisions that even world- and state-capitals are having a hard time making, despite their access to the best minds that are in the field.

- **Berlin Germany** (population 4 million): after four years testing, December 2019 abandoned their entire induction fleet (4 buses). Buying Hybrid.
- **Madrid:** (population: 7 million) they have one 7-mile-long line with chargers at each end, the only induction in their fleet. “**The large-scale installation of direct current distribution and charging infrastructure for opportunity charging in Madrid’s urban landscape is not considered as a viable option in economic terms.** (Madrid buying 150 electric buses to be procured this year and 100 next year, with more to follow. **None will be induction charged.** By 2027, one-third of their bus fleet will consist of electric buses and two-thirds of gas-powered buses. (March 2020)
- **Italy:** Among charging station type, **overnight chargers** held the largest share in the market: the public and private **agencies prefer overnight charging buses over opportunity charging** buses. IPT Technology is the same company that supplied the induction charging system for the electric *minibuses* in operation in Genoa and Turin, Italy (“**with mixed fortunes, but 15 years have passed on and technology is moving fast**”). The systems installed in Italy provide 60 kW, but the most recent projects launched in the UK and the Netherlands reach a maximum of 120 kW, thus allowing a faster ‘transfer’ of energy.
- Bombardier and Alstom have also developed inductive charging systems, but so far authorities and transport companies **are mostly focused on fast-charging stations via pantograph on the roof and the classic plug-in charger in depot.** Inductive charging systems offer an **invisible solution** that don’t have impact on the *urban* environment. **On the other hand, maintenance operations are not that easy. (October 2019)**

6. The other cities I looked at are in the United States: multiple conversations with each city. They have no similarity to the Vineyard in terms of population, urban environment, roads, and ridership: the closest to us in profile are Frederick Maryland and Wenatchee Washington. However, even these two cities are a far cry from the Vineyard. Note I said “city”. These are all in cities.

Vineyard: (population: 11,000; 6 towns covering 87 square miles; narrow 1-lane or 2-lane roads; 17th c. villages). 2020 FTA Low or No-Emission grants: purchase new electric buses and support charging infrastructure \$1,100,000.

1) **Frederick MD:** (population 75,000; 667 square miles; National Historic District downtown; 2- to 4-lane roads; Ridership 600,000 one-way; 49 Vehicles (2 Hybrids; 5 refurbished; 4 new BYD buses).

- They considered buying Momentum’s induction chargers, but the **basic infrastructure (simply digging up street, installing charger plates) cost were upwards of \$500,000 to \$700,000 and that was without any sewer/water/electrical/cable being moved, nor the street widened, nor trees cut down, nor visitors’ center changed as it would be in Edgartown.**
- 2. It would have been in their **Historic District** and that would have proved “difficult” if not “impossible” to get approved by the HDC*. Because of the costs for induction chargers, they never even got to the HDC stage which they thought they’d lose anyway.

- In fact, the townspeople **never even heard of this Induction possibility in their HDC** as they knew there'd be widespread opposition and "it wasn't worth it".
- The **1 new BYD 30' K7M** electric Iron Phosphate batteries buses is used for a full shift (5:30 am-1:00 pm; 1:00 pm-9:00 pm), range in miles from 85-105 miles. There are no range issues "yet", Steichen said, emphasizing the word "yet".
- The bus has only been on the road for 1 week now (August 7); the **other 3 BYD buses they've had since 2019 will be on the road "sometime this year"**.
- The buses are charged **by nozzle at the base**. The 4 BYD buses take 4-6 hours to charge.

Note: "Howard County (Columbia Mall) had a very bad experience with their new 40' BYD bus, induction charged, and BYD took it back. There were multiple issues with the bus." I was given the name of the person to call but have not done so.

2.) Wenatchee WA: (two counties of 100,000 people covering 4,845 square miles; 1 million riders; 11 hydroelectric dams making electricity extremely cheap; only the 40,000 population of city of Wenatchee has induction-charged buses; wide city roads; modern transportation center with 3-lanes and a circular road; plenty of space). **Visitor's Bureau:** "a Wenatchee traffic jam is 4 cars at a traffic light" and "traffic is heavy if it takes you more than 5 minutes to get across town". Electric and Hybrid Gilligs.

- BYD gave three 300 kW Momentum chargers and installed them **free of charge** and retrofitted their 5 old buses in an effort to keep Wenatchee from returning the buses (lower range; cold and hot temps a problem). They agreed to buy 10 new buses. Their purchase contracts saved them.
- In addition, they now have 10 buses plus the new Momentum Chargers (**7 minutes charging – not 4-5 minutes as says VTA**).
- All buses charge **overnight by nozzle** at their Columbia Center

*Note: Ed Archer is visiting other transit authorities **on behalf of Momentum**. I'm not sure if he's paid, but he and Wenatchee are the poster child for Momentum (re Doris Ward's "invitation").*

3.) Chattanooga, TN: (population 180,000; Ridership 3 million)

- **Three (3) new BYD K9 35' buses – 35.8' Long – 102" wide;** advertised drive range of 130-155 miles on one single charge "under urban road conditions", **already retrofitted** with Momentum Dynamics chargers (200 kW) **but chargers not being used.** (arrived in March 2019).
- The **\$400,000 Momentum 200 kW Induction Charger** is technically operable, but **it is not necessary now and has not yet been used**
- Embedded in the pavement at the Chattanooga Area **Regional Transportation Authority's downtown bus station** along Market Street – garage, trains buses, trolleys, etc. (8/14/20)
- Philip Pugliese, Transportation System Planner (2/04/20): **multi-year study by computer scientists and engineers at universities: studying all modes of transit (including the inductive chargers vs improved batteries):**
- "How we move into more electric vehicles means we'll have to get better in understanding **charge dynamics,**"
- "Do we need more remote charging stations like this one?"

- “Will **battery technology** get so good that buses won’t need to be charged while on their routes?”
- “We’re **figuring that** out right now”
- **The transit agency is studying how to incorporate the charging technology into scheduling routes to gain the most efficiency in its electric vehicles.**
- **Undertaking** a comprehensive review of its **bus routes** that will lead to the **first significant schedule and route changes in 40 years.**
- **Moving forward but “cautiously” re future orders of BYD buses and Momentum inductive chargers”**
 - **The cost to install the inductive chargers, with all the capital infrastructure (electric company, etc.) needed has proven very expensive (\$600,000+). They question now if it is it worth the overall price.**
 - The BYD buses **come back to the** Facility with about 30% remaining in the charge. **This is why they do not yet use the inductive chargers.**
 - Buses leave at 5:00 AM and return about 1:00 pm to the facility. They are conventionally nozzle-charged (80kW) there, and leave again at 2:00 pm for the evening run. They return to the facility for **overnight charging.**
 - **IF the inductive chargers were used** at their Shuttle Terminal, they calculate it might take about **10 minutes to add 20 miles of range** (others have said it’s a 1:1 charge). [Whatever the actual number, it is NOT what Momentum claims (4.5 minutes @200 kW to get “10 miles or 4.5 minutes @ 300 kW to get 13.4 miles)].

Update (Pugliese, 7/27/20)

- They were given Induction Chargers but still **not installed en route as “no need to”**
- They do have 1 induction charger at the terminal but it’s rarely used as it’s “inconvenient” to stop to allow a **20-minute charge (1 mile = 1 minute.; 20 miles = 20-minute charge)**. ‘Maybe next year??’
- **They now charge with 80kW nozzles for their 200kWh buses– they could buy bigger buses than the 200kWh but not going to invest as “technology is changing” and they will wait.**
- They would only use induction in the future **if** “they have a need for it”.
- Right now, they don’t, Plus it’s VERY expensive.
- He likened it to iPhone upgrades – its appeal is **“cool new technology”**, but the cost is too high.

Lisa Maragnano, Executive Director, CARTA (7/28/20)

As of March 2019, they have three 35’ BYD & Momentum Electric Induction buses and 51 non-Induction buses. Momentum **did install** the plate on the bus, **and they hooked up the induction pad, that they could use, but the induction chargers are not needed. So, they continue to charge by nozzle.**

They also have three **22’ Battery-Pack Buses** (22 seated and 8-10 standees) and eleven **31’ Battery-Pack Buses** (25 seated and 5-7 standees) with battery packs that are also nozzle/plug in. These are smaller **shuttle buses**. 16-hour day and they stop for 5-minute intervals. (Sara Piazza)

2021-2022: POSSIBLY buy more BYD K7 30' buses that could be ordered with or without chargers. "Not yet decided".

The MOST INTERESTING story:

4.) IndyGo (metro population: 1,781,000; 368 square miles; ridership 10 million; 4,000 stops)

2019: Launched 13.1-mile Red Line service with purchase of BYD buses. Plans to start construction of the companion 15.2 mile, 90% dedicated lanes, Purple Line starting 2020-21(?)

December, 2019:

The Red Line project was jeopardized: 6 BYD K11 buses not reach 275 miles per charge under real live service

- As a stop-gap measure, so the buses wouldn't be returned, BYD installing wireless charging system at **no cost** to the city so buses will be able to charge at bus stops and meet the requirements.

~~[The retrofit on the bus undercarriage includes the installation of charging pads and a battery management system that controls the charging process. An electronic guidance system that integrates with the standard BYD graphical screen will also be installed in the driver's cockpit to monitor battery status and charging levels].~~

February 13, 2020 (FOX 59)

- 31 BYD buses @ \$40 million
- Have not paid BYD for those buses. Even though in their possession for over a year.
- "We have reminded them that they signed a contract with IndyGo to produce a bus that could go 275 miles. That bus is not doing that at this time."
- Also, \$4 million expenditure **permanent charging stations at BYD's expense have not yet been built.**
- "Once we have confirmed that we will and they have met all their other contractual things, then we can render payment but not until that time".

February 28, 2020 [TWO WEEKS LATER]

- **Canceled 5 BYD buses and purchasing 13 Gillig 40' Hybrid (diesel/electric battery)**
- BYD responsible for paying for three chargers: 1 is temporary @ garage and nozzle
- 3 Momentum induction (300 kW) are there (2 at either end of the Red Line and 1 reserved for the Purple Line.) but **not being used.**
- Momentum "salesperson" claims the chargers will boost the range to 275 miles (vs 200 miles that IndyGo Tech people claim). IndyGo has asked to try for themselves to test the charging time, which Momentum claims is 10 minutes, but so far, **IndyGo has not been allowed to test it themselves.** Momentum claims they can charge the buses from 0% to 100% in "3-4 hours". **Darrow says to take everything Momentum says with a grain of salt.**

5.) Pinellas Sunshine Transit Authority (PSTA): Joseph Cheney, Deputy Director of Fleet Operations*

St. Petersburg/Clearwater/Tampa: Ridership: 12.5 million annually; Bus Routes: 40 with 4,602 stops (Route 100X and 300X St Pete to Tampa); Service area: 600 square miles; Network: a hub-and-spoke system with four major hubs — downtown St. Petersburg, Grand Central Station in St. Petersburg, the Pinellas Park Transit Center, and the Park Street Terminal in downtown Clearwater.

Transit Roads: “Most main roads we travel on are 2-4 travel lanes on one side only (4-8 lanes for the entire road). Some routes to travel on single lane (2-lanes for the entire road) but there are only a few areas that we have narrow conditions that make servicing them challenging.”

Fleet: Currently, 89 Hybrid Zero-emission buses; 2 BYD K 97 Electric (arrived February 2020) and 4 more coming late 2021 (6 BYD in all).

- Electric: 2 BYD K97 35’ width, 102” wide buses: “The mirrors add about 6”-8” on both sides depending on what type they are. The total width mirror to mirror on a 35’ or 40’ transit bus is usually around 9-1/2 feet (114 inches). If they have 30’ buses they may be a little narrower than that”.
 - PSTA’s electric buses average 180 miles or 15 hours before having to recharge.
- Hybrid: (9) new 40’ Gillig Hybrid buses just ordered
 - There are two types of hybrid systems available and they both have diesel engines so there is tailpipe emissions.
 - FTA will fund hybrid technology. *Mass Transit (6/30/20) GILLIG, LLC, has announced that nine of its transit agency partners have been awarded grants under the Federal Transit Administration (FTA) Low or No Emission Program (Low-No).*
 - *Eight of these grants will be utilized to purchase GILLIG zero-emission battery electric buses and associated charging infrastructure, while the ninth will be utilized to deploy advanced low-emission diesel-electric hybrid buses.* (Battery Electric technology is zero tail-pipe emission and the industry has accepted that terminology).

They will **not commit to further purchases** until the studies test both Hybrid and Induction to see which type is best are done. “Goal is to be able to use Hybrid and Electric on any route, we are still testing and collecting data to make these types of decisions, using them on multiple routes of different profiles”.

WAVE induction-charging on route.

Their 2 electric BYD buses typically run 26 miles round trip (8 hours). 180 miles on a single charge is a good working number.

- Prior to the WAVE 250 kW chargers, these 2 Electric Buses were running a free *elooper* route in downtown St Petersburg. This route was a circulator that ran a short route around the downtown area (similar to a trolley).
- June 2020, WAVE started: began using the 2 buses on several other routes, all of which already service the terminal where there are 6 berths and where the charger is located. The chargers are also there as the Maintenance department is too.” [Big complex].

- The charger is being used about 1 x hour and takes about **10 minutes to charge**. They get 1 kWh from 1 minute of charging (1:1), “which isn’t a lot”, he said but it ‘helps’.
- Not yet determined where the 4 new electric buses will run. (**Hybrid** is used on the 100X and 300X routes to Tampa).
- As they receive additional funding, they will determine where to put the 4 new electric buses (short or long routes?). **If they bought more Electric**, they would have to install additional induction chargers along the BRT (Bus Rapid Transit Route) and they didn’t want to commit to that \$\$\$ and that installation **until** the studies were complete.
- **Wave vs. Momentum Induction Charging: Nozzle charging:** Preferred WAVE as thought company to be **more financially sound than Momentum**
- They decided on 1 induction unit for financial and logistical reasons. He said “**eventually we will not need induction batter technology. It will be obsolete so financial issues must be addressed now** – is it worth the cost to invest now in induction for the future?”
- Some software problems with their charger but doing okay now, in service.
- Their problem is excessive heat (can hit 100 F during a 6-month period)
- The **total cost of the charger equipment and installation is expected to be \$589,000**. (Funding is derived from Pinellas County's BP oil spill)

Terminal Nozzle Charging

- **We plug these buses in regardless each night**
- **Nozzle charging:** It takes +/- 5 hours to charge at Terminal’s 80 kW nozzle charger

Future of Hybrid or Electric? “**Once** the BRT is completed and we get the hybrid electric buses running, we will be **collecting data** to see how we can integrate all-electric BRT buses on the route.” (6/10/20)

- in other words, they are not committing to all-electric now and are proceeding with testing new Hybrids and comparing the all-electric to the hybrids. Empirical data.

“Range Testing” the electric buses here under different controlled environment scenarios: length of routes, amount of battery left during a controlled environment test. Example: 1 electric bus 100% slow charged, “passenger-weighted” (by sand bags); same # of stops and times at stop; all verified by a data wireless system to get real bus data (he prefers VeriCiti, not Hams), under temperatures at 0F and at 100F ... it will show the accurate amount of energy used on each route and determine if opportunity chargers are *really* needed. He said **until these test are done, people are only guessing**. He assumed the VTA had done these tests, as other transit authorities have done, so it’s just a matter of looking at the data.

- “regenerative braking – recouping energy each time the driver breaks <15 mph. This automatically regenerates new energy.

- Cheney used to work for the MBTA: he has been here several times before he moved to FL five years ago. He has worked on our bus engines at the VTA headquarters. He commented that BYD *should* be able to add extra battery packs on our buses, if needed. He was “surprised” the VTA was getting induction chargers – he said “There’s less of a need here on the Vineyard for induction than elsewhere.” (route length; speed, etc.)
- He asked why OB or VH wasn’t selected: “Route #1” bus could go from: Edg to VH and continue to OB and Edgartown, making a complete round trip. Same with “Route #13” bus: it could go from Edgartown to OB to VH to Edgartown, making a complete round trip in the opposite direction. Induction charger could be located in OB.

SUMMARY:

- The VTA is a miniscule transit authority and yet wants to immediately invest in Induction Charging. Yet all other cities are only *considering* this method of charging as they wait for the results of ongoing data-driven engineering studies conducted by University and Government experts. The verdict is still out as not all the evidence has been gathered.
- Why are we – without the aid of these experts – insisting that Momentum Dynamics is the only way to go to avoid “diesel” buses. This is a purely false statement by the VTA to “scare” people (who don’t know the first thing about the technology) into voting for what will be a debacle on Church Street and on the entire transit system here.
- Apart from the enormity of the costs (financial, historic and temporary stop-gaps), our 4,000 person town with its 17th c. narrow one-way roads is the farthest imaginable from any of the other cities (note I say city) in this review. People couldn’t believe what I was saying about Church Street: all of them – whether they use them or not – have the induction charger at their Transit Terminal (3-story garages, bus, trains, taxi terminals with wide streets) ... not on the side of a tiny street in a congested downtown historic area. Two if the individuals grew up in Massachusetts and know the Vineyard and were incredulous that the VTA was pushing this. Remember Ed Archer last week when he responded to a question by “I don’t know your climate”? He was referring to the hot and cold extremes that make current electric bus batteries highly unreliable, depending on where you live.
- Electric buses fully realize they need to improve their battery range. And they are doing so. In order to keep Wenatchee, Indianapolis and Chattanooga using their buses, BYD has paid for all of the costs of installing Momentum chargers and retrofitting their buses. They lost Albuquerque as a customer, and now even Indianapolis despite the installation of the chargers. For the rest of BYD’s customers, like ourselves, they have to find the funding themselves. Yes, the government helps out, but for the part of the project that is not covered by federal-state funds, that’s why virtually everyone said ‘the expense of installing an induction charging infrastructure is not worth it for a stop-gap, short-term measure’. And, until EXPERTS finish their real-time engineering studies, these cities are not making major purchases – period.

- All the CITIES cited here have no less than 45,000 people and as many as 7 million. They have wide, multi-laned streets; large public transit buildings and are the transit centers for up to thousands of square miles. We are NOTHING at all like them and yet without the benefit of their expertise, the VTA has told us this is the only technology that will allow more electric buses and the only place on this entire island that this soon-to-be obsolete technology can be placed.
- I hope you will see that the VTA of 20 years ago has not kept up with what the rest of the transit world has and is experiencing. They are not rushing into this but are cautiously studying the entire technology and will make long-term decisions when they feel safe about the cost and the efficacy of any “new” technologies.

Document sent by Jane Chittick on September 5 at 3:39 PM,
captioned 9-08-20 "Historic" (sic) Preservation

Edgartown Village (1646)
aka
The “Hub” of the 21st century VTA

Plimoth Plantation/Plimoth Patuxet: “17th century” (in quotes)

N.b., as of July 2020, “plantation” is no longer considered “PC”. Henry Hornblower private money. The two houses on the Colonial Education site were built by Plimoth Plantation for the PBS show [Colonial House](#) filmed in [Maine](#). Following the filming, the museum disassembled the houses and reconstructed them at Plimoth Plantation. The “park” includes a [Mayflower II](#) replica (1957), the English Village (1959), the Wampanoag Homesite (1973), the Hornblower Visitor Center (1987), the Craft Center (1992), the Maxwell and Nye Barns (1994), and the Plimoth Grist Mill (2013).

Colonial Williamsburg: “18th century” (in quotes)

Rockefeller money quietly bought the land, piece by piece starting in the 1930s; opened 1950s. During the restoration, the project demolished 720 buildings that postdated 1790, many of which dated from the 19th century. The [Governor's Palace](#) and the Capitol building were reconstructed on their sites with the aid of period illustrations, written descriptions, early photographs, and informed guesswork. The grounds and gardens were almost all done in the authentic [Colonial Revival](#) style. Many restaurants and gift shoppes.

[Ada Louise Huxtable](#), an architecture critic, wrote in 1965: *“Williamsburg is an extraordinary, conscientious and expensive exercise in historical playacting in which real and imitation treasures and modern copies are carelessly confused in everyone's mind. Partly because it is so well done, the end effect has been to devalue authenticity and denigrate the genuine heritage of less picturesque periods to which an era and a people gave life.* In March 2016, the foundation's new president and chief executive officer, Mitchell Reiss, told the Richmond Times-Dispatch that Colonial Williamsburg aimed to be *“accurate-ish”*.

Sturbridge Village: “19th century” (in quotes)

Industrialist Albert B. Wells of Southbridge, Massachusetts funded the beginnings. It depicts a rural New England town of the 1830s. More than 40 buildings (homes, meetinghouses, a district school, country store, bank, working farm, three water-powered mills, and trade shops) – all recreated or reconstructed from all over New England and situated on more than 200 scenic acres. Period costumes, gift shoppes, and rest roomies. +/- 1955 (65 years old)

“Main Street, USA”: “late 19th century” (in quotes)

Notice the uncanny resemblance of Old Town Fort Collins and Disneyland's Main Street U.S.A. Two men created the idea of Main Street U.S.A. (Walt Disney and Harper Goff, who happened to be from the lovely town of Fort Collins). Goff sketched up plans for Disneyland's Main Street U.S.A.: the Firehouse Book Store, the Old Linden Hotel, the bank building and the city hall building, among others. The other inspiration for Main Street was Disney's hometown of Marceline, Mo. Although he only lived in Marceline for the first five years of his childhood, his memories were fond enough of the area that he used it as his inspiration.

Disney actually never saw Fort Collins in person, but he became fascinated with the look of the town thanks to Goff’s photos and rich descriptions. Disneyland opened July 17, 1955 and Main Street U.S.A. is the second-most popular theme park in the entire world today.

Edgartown Village: 1642 (not in quotes)

With land grants given to Thomas Mayhew Elder and Junior, and five friends in 1642, great Harbour (later, Edgartown) was founded. The men arrived in 1646 and immediately built their church. Wisely, in 1987 two young (then) women (Victoria DeStefano and Jane Chittick), led the Townspeople to overwhelmingly approve the creation of the Historic District and created the Commission to oversee this authentic village area so as to preserve it for all time. The VTA Administrator said on August 25, 2020 that the VTA was proud to be “progressive” in its quest for instant 100% electrification, however, the townspeople voted 33 years earlier to be “regressive”. Needless to say, the townspeople hoped then they would make a *lasting* impact on their authentically historic village, despite what others call “progress”.



April 14, 1987 Annual Town Meeting: Waiting to present the Historic District Commission Jane Chittick (left – brunette) and Victoria DeStefano (blonde, seated)

But, as happens with many good things that tend to go by the wayside, developers, builders, landscapers, architects, retail owners, ice cream shops, pop-up bars and restaurants, and “modern transportation” advocates began to whittle away, and still continue to do so, at the heart of this little village’s historic authenticity, now approaching its 400th year.

What makes Edgartown village so glaringly different from the above “historic” villages?

1. We do not charge admission to the town
2. We do not dress in period clothing and we say ‘you’, not ‘thee’
3. We prefer macadamed roads to dirt paths, but we keep the winding whimsical byways our forefathers (or their cows) once carved out
4. We provide running water instead of going to the old Village Wishing Well
5. We drive vehicles and bring them to auto repair shops like Al Noyes, instead of to the village blacksmith
6. We spell ‘shop’ as ‘shop’, not as ‘shoppe’
7. Our Vincent House *was* built in 1672 and is considered to be the oldest extant house in America with original glass, hardware, brick and wattle-and-daub clay infill
8. We don’t have any 3- or 4-lane roads leading into the quaint village as the others do
9. But, we *do* have 30’ to 40’ long buses that go right into the historic village, instead of dropping off visitors at the gates
10. However, so far, we don’t have those huge grey-green-metal 300 kW-electric storage-cabinets plunked across from the 1843 Old Whaling Church, after which little one-way, one-block street (“too narrow for buses, alas!”) is named
11. And, like the “historic” villages named above, after a wonderful day in our Mr. Rogers-like neighborhood-village, day trippers head back home on one of the many empty VTA buses driven by knowledgeable off-island Union members, vowing to come back again next year
12. Oh. Lest I forget. We are *authentic*. That’s the biggest difference.

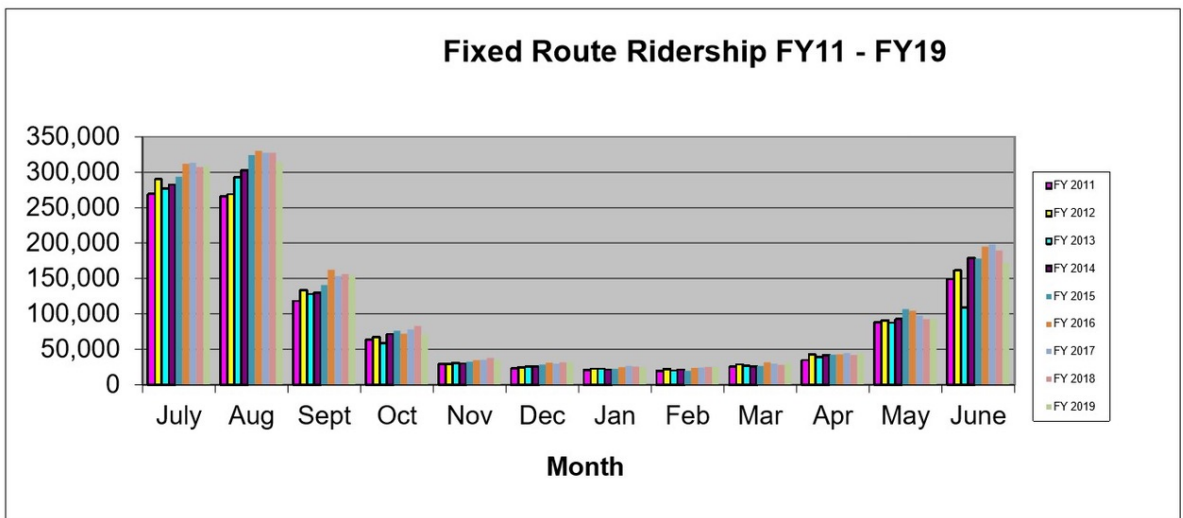


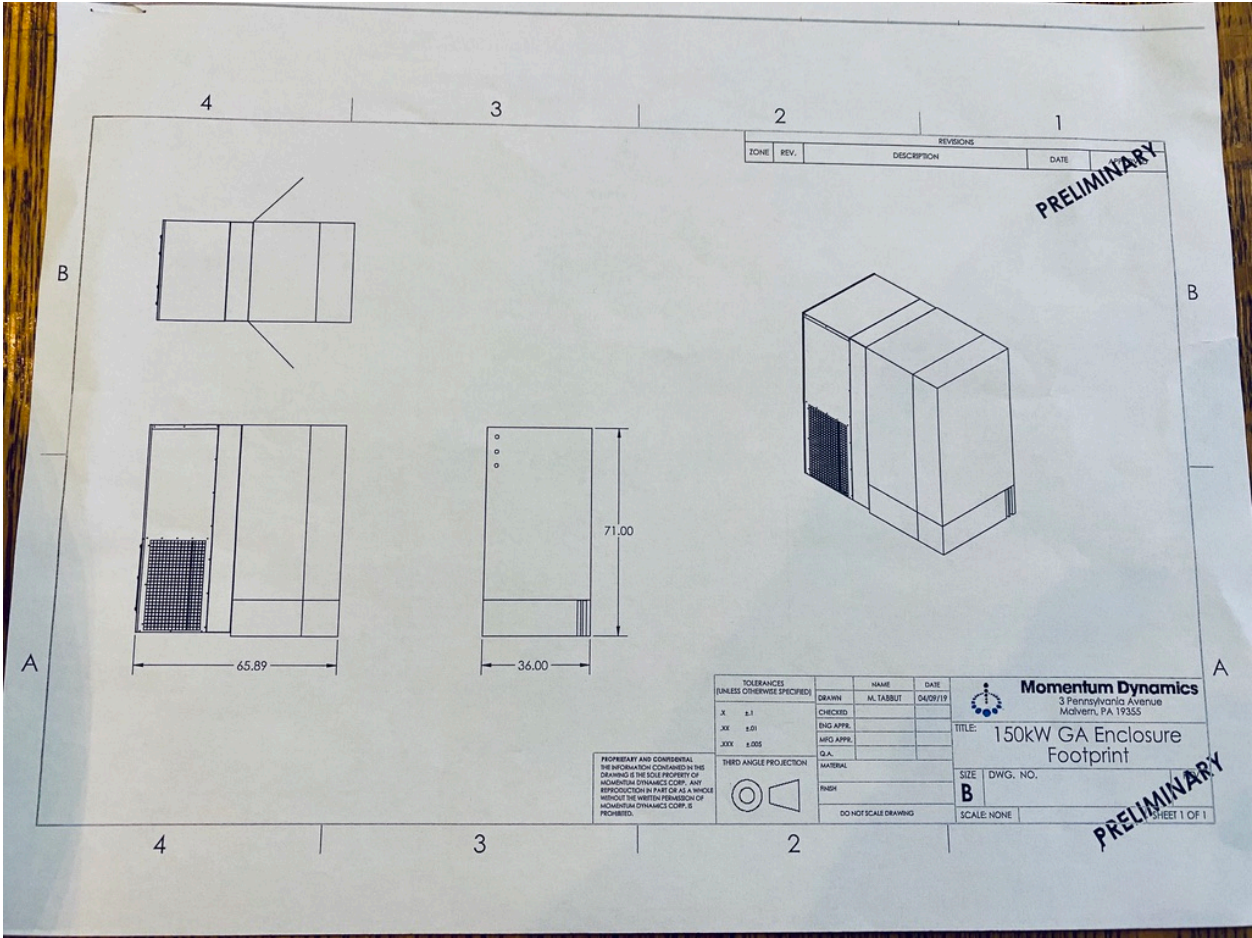
Ye Olde Dying Tree





The beginning of the Historic District





REVISIONS			
ZONE	REV.	DESCRIPTION	DATE

PRELIMINARY

TOLERANCES (UNLESS OTHERWISE SPECIFIED)		NAME	DATE
X	±.1	DRAWN	M. TABBIT
XX	±.01	CHECKED	DAOR/19
XXX	±.005	END APPR.	
		MFG APPR.	
		D.A.	
		MATERIAL	
		FINISH	
		DO NOT SCALE DRAWING	

Momentum Dynamics
 3 Pennsylvania Avenue
 McVey, PA 19355

TITLE: **150kW GA Enclosure Footprint**

SIZE: **B** DWG. NO.

SCALE: NONE

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PRELIMINARY
 SHEET 1 OF 1

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- ✓ **EtherCAT interface (Ethernet-based real time field bus)** prepared for active exchange of selected control and status values (configura very fast control applications (millisecond-range).
- ✓ **Touch Display** for monitoring of selected status and configuration data, error messages review and on/off machine operation for maint work.
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12.5.19
WSTAP
TO BE APPL
BY H
My



B

A



B

A





Notice the ease of turning buses on the historic streets



Whoops! Another bus didn't make it: corner of Pease's Point Way N. and Upper Main Street

Document sent by Jane Chittick on September 5 at 3:39 PM, captioned 9-08-20
HDC and VTA Project

**Church Street/VTA Meeting
September 8, 2020
Jane Chittick**

I. “Aesthetics” vs. “Historic Preservation”

A. **Aesthetics:** a branch of philosophy dealing with the nature of beauty, art, and taste and with the creation and appreciation of beauty; a particular theory or conception of beauty or art; a particular taste for or approach to what is pleasing to the senses and especially sight; a pleasing appearance or effect. Different people have different views on what is ‘aesthetically pleasing’. IKEA may be aesthetic to some, but not to antique dealers; Picasso to some, but Michelangelo to others.

B. **Historic Preservation:** Historic preservation, heritage preservation or heritage conservation, is an endeavor that seeks to preserve, conserve and protect buildings, objects, streetscapes, landscapes, bridges, monuments, burial grounds, neighborhoods or other artifacts (an object made by a human being, typically an item of cultural or historical interest) of authentic historical significance to a local, national or international community.

II. Department of the Interior/National Park Service:

A. The **National Park Service (NPS)** Congress created the agency on August 25, 1916. The NPS is an operating unit of the United States Department of the Interior. The agency is charged with a **dual role of preserving the ecological and historical integrity** of the places entrusted to its management while also making them available and accessible for public use and enjoyment. “If the preservation movement is to be successful, it must go beyond saving occasional historic houses and opening museums. It must be more than a cult of antiquarians and “aestheticians”. It must do more than revere a few precious national shrines. It must attempt to give sense of orientation to our society, using structures and objects of the past to establish values of time and place. The new preservation must look beyond the individual building and Individual landmark and concern itself with the historic and architecturally valued areas and districts which contain a special meaning for the community.... In sum, if we wish to have a future with greater meaning, we must concern ourselves not only with the historic highlights, but we must be concerned with the total heritage of the nation and all that is worth preserving from our past as a living part of the present.”

III. Massachusetts Historic District Commission (MHC)

A. All state Historical Commissions fall under the National Park Service guidelines.

B. A Historical District is just that: **the entire area**, *not* just buildings and structures. Historic preservation is an endeavor that seeks to preserve, conserve and protect buildings, objects, landscapes, or other artifacts of historical significance. The MHC has developed standard inventory forms for **ten** categories of cultural resources: buildings, structures, objects, bridges, areas, parks and landscape features, burial grounds, public streetscapes, bridges, town commons, historic archaeological sites, and prehistoric archaeological sites.

IV. Edgartown Historical District Commission

A. All towns and cities fall under the Massachusetts Historic District Commission and must be approved by the MHC.

B. April 14, 1987 Annual Town Meeting overwhelmingly voted for HDC (14 voted against) HDC has expanded twice since 1987 (April 9, 2013; April 12, 2018).

C. The purpose of this bylaw is to promote the educational, cultural, economic and general welfare of the inhabitants and property owners of the Town of Edgartown through the preservation and protection of the distinctive characteristics of buildings **and places** of historical significance to the Town or the architecture of such buildings **and places**, and through the **maintenance of settings for such buildings and places** and the encouragement of **design compatible** therewith.

- Preserve and protect ... buildings **and places** ... maintain ... encourage compatible design.
- It is for the **general welfare** of the inhabitants and property owners (not just property owners or abutters but for the **welfare** of the entire historic district).

D. In passing upon matters before it, the commission shall **strive to advance the purposes of this bylaw**, and shall consider, among other things, the historical and architectural value and significance of **the site**, building or structure, the general design, arrangement, proportions, texture, material and color of the features involved, the relation of such features to **similar features of buildings and structures in the surrounding area** [e.g., electrical storage cabinets; hardscape; 300 kW induction chargers; etc.], and the position of such buildings or structures **in relation to the public streets, public ways, public parks or public bodies of water in the surrounding area**. The commission shall consider **both the land area** upon which the building or structure is situated and to the buildings and structures **in the vicinity** [i.e., Main Street; Town Hall; St. Elizabeth's Church; the Old Whaling Church; the Vincent House; the Dr. Daniel Fisher House; the Preservation Trust's Gardens; the Court House, etc.: the heart of the Edgartown Historic District].

E. Further, the commission shall not make any recommendation or requirement with respect to any matter before it except for the purpose of **preventing developments incongruous with the historic aspects** or the architectural characteristics of **the surroundings and of the historic district**.

F. Ordinary Maintenance: contribute to the **historic authenticity** of the Edgartown Historic District.

G. Decision-making: The commission shall give public notice ... in such manner as it may reasonably determine, and by mailing a copy of said notice to **the owners of all adjoining property and other property deemed by the commission to be materially**, and to such other persons as the commission shall deem entitled to notice [n.b., Edgartown Historic District

Commission failed to notify all residents of the Edgartown District of the Church Street/VTA hearings].

H. Changes: “Such changes include, but are not limited to, repairs, replacements and alterations to windows, doors, roofs, new construction, additions, fences, walls, driveways, sidewalks, decks and changes in grade. While landscaping is **generally** not subject to design review by the Commission, the following are subject to review and approval by the Commission: (1) changes to **grade**, (2) **outside HVAC equipment** [the GA *is* used as an AC unit: code dictates 4’ of open air around it] and (3) yard structures, including, but not limited to, **fences**, swimming pools, play houses and **pergolas**.

I. Insubstantial: “...as the case may be, is so insubstantial in its effect on the historic district that it may be reviewed by the commission without public hearing on the application, provided, however, that the commission dispenses with a public hearing on the application, notice of the application shall be given to the owners of all adjoining property **and other property deemed by the commission to be materially affected thereby**...[e.g., residents of the Historic District and the town]

V. Historic District 10/03/19 Minutes:

“It was noted that **the electrical equipment is the most unsightly part of the project. The electrical boxes may be wrapped with a type of plastic sheeting with graphics** that would be of interest to bus riders and **be attractive**. It was suggested that wrapping the cabinets with recommendations for graphic design from the MV Museum or Vineyard Trust, may be a good way to approach this Q: wrap the boxes with what material?

A: a plastic type wrap.

Q: Can they be inside a structure?

A: **No, must have 4 feet air space surrounding area for work, per code.**

A: **Yes, but it is not a practical idea**

Discussion ensued about other locations for charging buses. Angie said that no other location choice is operationally sound for many reasons, including operational costs and passenger considerations [vs., residents’ considerations].

A: Any height is fine really we are **looking for aesthetics to blend with the environment and provide some shade**”. [“Aesthetics” vs. Historic Preservation: see I. above definition].

VI. VTA Minutes 6/25/02:

“Three weeks ago, West Tisbury selectmen demanded concessions and route changes, seeking to reduce the impact of transit buses on their historic town center. **Transit leaders let selectmen know it's time to face geographic reality: West Tisbury's main street may be quaint, but it's also the main artery for Vineyard traffic headed up-Island.** For more than two years, transit authority officials have met with **West Tisbury residents who complained that the presence of a bus hub in the town center not only posed safety risks but also threatened the historic character that townspeople were committed to protecting.** Selectmen formed a bus committee that **recommended moving the bus hub out of the town center. They eyed the airport and the fire station,** but those sites were rejected. According to business owners in North Tisbury, the **new hub** at the Cronig's parking lot is operating smoothly”.

VII. 2/09/18 VTA Minutes

“Deployed Induction Charging in the Future: **4 proposed inductive charging locations** [see I. above, re “**no other** location choice”] on Island map – Church Street, Edgartown; Aquinnah Cliffs; West Tisbury Town Hall; Ocean Park, Oak Bluffs. Solar may be an option as several of these locations and the VTA may look at this RFP and select a preferred solar vendor charging station.”

Email sent by Jane Chittick on September 28 at 12:38 PM, captioned Corrections
to be made to September 8th Zoom Meeting

From: jane Chittick jane.chittick@icloud.com
Subject: Fwd: Corrections to be made to September 8th Zoom Meeting
Date: September 28, 2020 at 12:38 PM



To: Strahler, Alan alan@bu.edu, Julia Livingston deutz@comcast.net, Bill Veno veno@mvcommission.org, Doris Ward mvydoris@gmail.com, Keith Chatinover kchatinover@gmail.com, Mark Snider msnider@stanmar-inc.com

Cc: James Hagerly jhagerly@edgartown-ma.us, Edgartown Selectmen's Office selectmen@edgartown-ma.us, Arthur Smadbeck asmadbeck@gmail.com, Sara Piazza sarapiazza@sarapiazza.com

Good Morning

1. Alan reported that I had said that Turin and Genoa had been using inductive charging for "15 years". In fact, I wrote that these two cities had been "testing" inductive charging BUT:

- Genoa is now using **overhead** inductive-charging (pantographs) - not in-ground. Berlin, Madrid, etc., have all stopped using in-ground inductive chargers and are buying low-emission Hybrid buses.

2. Angie agrees now that I was correct in saying FTA funds *do* cover low-emission hybrid purchases. I'm surprised that I, a retired nonprofit executive, knew more about federal funding than she, the paid administrator of our transit system. It's unsettling to say the least. But it shows I have more curiosity and subsequent knowledge than anyone on this committee and the VTA administrator. I think that's shameful.

3. Hybrid electric buses are being bought all over Europe and the U.S. They are seen as the logical step to all-electric buses when these batteries are improved. All cities have as a **goal** 100% zero-emission. But this goal is not realistic at the present moment until battery technology improves. Why does the VTA think **we** are different and we must buy inferior electric buses and inductive chargers now? What is the rush? Why are sophisticated cities with expert panels saying not now?

4. Again asked and no answer "**WHY**" would the island 'need to buy diesels, if we don't embrace inductive charging'? [said Angie]. No other place in the United States says that. Where is a factual and logical answer and why didn't the committee ask for an explanation? What she says is utterly non-sensical.

5. Angie stated that at least 16 mini-buses would be needed to take the place of our 11 large buses coming into downtown. That is misleading and not based on reality. Our 30', 35' and 40' buses are all underutilized - even before Covid. Frequently 1-2 passengers are seen on the bus. Ridership stats prove this. Since the big buses are underused, it would be useful to extrapolate the big bus passenger numbers into the minibuses. I guarantee that this number of minibuses would not be needed. That's an easy exercise for our well paid VTA staff to figure out, right?

6. No where does Bill Veno's matrix address induction charging's current use, its cost, its obsolescence, etc. Something the public should know about before they vote, don't you think? Added to this is Angie stating - as if she had knowledge - that Momentum chargers have a lifetime of "10-15 years". This is ridiculous. They've only been in use for one year now and in one city in the world. How on earth would she know they could go 10-15 years? Even Momentum won't say that — they don't know that yet. But, check back in 2030-2035 (if Momentum is still in business - which is another concern raised by one city) and we'll see if she's right.

7. Angie stated the FTA grant runs out in one year (9/21). If the town votes down the Church Street project, has she started exploring/renegotiating other applications for this grant money with the FTA? It's possible to do so and it's wise to do so now.

8. Bill Veno was the only person who mentioned "narrow roads" and large buses. Earlier I had made point that the VTA's own consultants in the three "Tech Memos" said in each document - several times over - that only 96" wide buses should be used. Instead, we are at the 102" wide buses. The VTA has completely ignored their own consultants directives. The Memos each talked of the "character of the Vineyard", its "winding roads", etc. Instead the VTA is buying huge oversized city buses.

9. Bill Veno's comment brings me to the total ignorance of what you all think a historic district is and should be. It's clear you didn't read my memos. You don't talk about Church Street becoming the "Hub of the VTA", totally incongruous for a 17th c. historic village. You don't talk about the "district" and "preserving our historic area"... instead, you all talked about 'graphics', 'attractive appearance' and 'visuals' ... exactly what my Memo on Historic Preservation says is NOT preservation. You are talking "aesthetics" which has nothing at all whatsoever to do with historic districts.

Instead of talking of the SIZE and INCONGRUOUS nature of the two enormous electric storage cabinets, one 89"x36"x71" [**7.5 feet TALL by 6 feet LONG**!], you talk about pretty little plastic graphics to hide them from the stupid and naive public. What is the matter with your thought processes? This discussion by Alan, a former [sic] professor, Bill, a planner, Julia, a lawyer was incomprehensible to me. Do you really think the elephants in the room (the 2 huge electric cabinets) will be hidden from the eyes of the public when they first see them standing there? "Look, honey! What pretty plastic designs this town has! Aren't they attractive and quaint?" When in fact, they look like plastic-wrapped Stonehenge monuments? By the way: Stonehenge stones are 13' high. **Our electric cabinet will be 7.5' high - more than one-half Stonehenge's height** (!) The Stonehenge monuments sit in an open field. Our two sit on a tiny historic street. NOW do you get what an "incongruous development" in a historic district means??

10. Further, the two storage cabinets will need to sit no farther than 75' from the 450 kW chargers - but Angie said Eversource has stated there is "not enough power now" on Church Street for the chargers. What does that mean? What exactly does Eversource need to do to get that extra power there? Did anyone bother to ask?

11. And Mark Snider's comments about the noise these monoliths will make again showed how instead of addressing problems areas from an *unbiased viewpoint*, just as you did with the graphics and plastic wrap, you intend to pull the wool over the townspeople's eyes. Mark cautioned how to address the noise, at hour 1:20, he said : "Don't say 'vacuum cleaner' for public consumption, because it will get a lot of [negative] reaction". Since when did **coverup become an operating principal** of this committee? So now the committee will instead use the term 'HVAC' to describe the annoying noise to the townspeople in an effort to fool them into thinking the noise won't be "objectionable"?? Really?

12. Finally, the operative term is "former". Obama and Biden are referred to as "former, Jimmy Carter is referred to as "former". Ginsburg is referred to as "former, now deceased". I was legally sworn in and a bona fide member of this committee. Now, I am a "former member" of this committee and have such standing and always will. Your bias exceeded even my own expectations - by telling me that all of my copious and factual research earlier submitted and my oral comments made will not make it into the final report is to negate my research contributions and negate my free speech.

This is truly the Cancel Culture, isn't it?

Jane

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Document sent by Jane Chittick on September 7 at 6:17 PM, captioned 9-08-20
Charging per Tech Memos

9-08-20 Charging Locations

Tech Memos 1, 2, 3 (VEIC 2016)

The two main investments include 1) upgrading VTA's facility to accommodate increased electric usage and installing vehicle chargers at a designated location in the bus parking area; and 2) expanding use of on-route charging systems, potentially including the installation of inductive charging

Between \$500,000 and \$1 million to install wireless (inductive) on-route charging infrastructure at key locations in VTA's service network. With seven vehicles, it is likely VTA would only need one on-route charger, but this depends on VTA's operational plans (**VEIC's overall budget assumes two systems are installed**). Inductive charging system costs are estimated at roughly \$500,000 per site, inclusive of the cost to purchase (\$350,000) and install (\$150,000) the equipment.

Inductive Charging is a **new technology** that involves burying charging equipment in the pavement; The equipment is **expensive**

Fast Charging - Transitioning more of the fleet increases savings, but also means VTA will likely need to purchase and install **on-route fast charging equipment**. This increases costs by an estimated **\$1 million**. Grant funds may be available to pay for part or all of the charging system **but without funding, it is unlikely the operating costs savings could pay for such a large capital investment**. – [Memo 2]

Charging System Compatibility - a challenge with both types of charging systems is compatibility. Currently, charging transit systems are proprietary to the **manufacturer (i.e. Proterra charging systems cannot charge a BYD bus)**. Given the high cost associated with charging equipment, especially fast and inductive charging, being tied to a single vehicle manufacturer is a problem for many transit agencies. The American Public Transportation Association (APTA) has begun to address this issue. As of April 2016, however, electric vehicle charging systems continue to be proprietary. (has it changed now??) – [Memo 2]