TRANSIT ADVISORY BOARD
AGENDA
March 17, 2021
10 A.M.

Wichita Transit Van Maintenance Facility Conference Room
777 E Waterman
Wichita, KS 67202

Item
1. **Call to Order**
2. **Approval of Minutes**
3. **Public Comments**
   
   This is an opportunity for members of the public to address the board on transit matters in Wichita.
   
   Participants must email comments to lparker@wichita.gov prior to the meeting.

4. **Discussion Items**
   - Place for People Presentation - M. Hunt
   - 5310 Grant Allocation Overview - R. Alexander
   - Optimal Electric Bus Overview

5. **Information Items**
   - Delano Multimodal Procurement Update - K. Dimick
   - Wichita Bicycle and Pedestrian Advisory Board (WBPAB) Update
   - Marketing Report
   - Director Report

6. **Old Business**
   - Outreach to Appointed Body

7. **New Business**

8. **Announcements**

9. **Adjourn**

The Wichita Transit Advisory Board meeting will be held all virtually using the following information:

Please join my meeting from your computer, tablet or smartphone.

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[https://global.gotomeeting.com/install/373223069](https://global.gotomeeting.com/install/373223069)
The Wichita Transit Advisory Board met in regular session.

Present:
Ellen Abbey, LeAnna Beat, Shannon Bohm, Jared Curello, Jason Gregory, Dorsha Kirksey, and Mika Pyyhkala,

Absent:
Matt Byrum, Darryl Kelly Jr., Catherine McMurray, Shana Chivon Stephens, and Troy Tabor

1. **Call to Order**
The regular meeting of the Wichita Transit Advisory Board was called to order at 10:02 A.M. on February 17, 2021 in regular session by Chair LeAnna Beat.

2. **Approval of Previous Meeting Minutes**
Member Abbey proposed a motion to the board to approve the minutes for the January 20, 2021, Transit Advisory Board meeting. Member Abbey noted that minutes needed to be amended to reflect the correct award amount. Wichita Transit was granted $14 million in April and May of 2020. The minutes were seconded by Member Gregory. Minutes will be redistributed to the board.

3. **Public Comments**
No one signed up to make a public comment to the board.

4. **Discussion Items**

   A. **Safety Management Systems (SMS) Presentation**

   Jay Hinkel, Deputy City Attorney for the City of Wichita, provided the Transit Advisory Board with an overview of the public transportation agency safety plan for Wichita Transit (Approved by City Council on December 1, 2020). The Federal Transit Administration (FTA) was given authority to link performance and grant funding nationwide.
There are four components of the system.

1. Safety Management Policy (Confirms accountability)
2. Safety Risk Management Policy (Identify risks and responses)
3. Safety Assurance (Safety management monitoring)
4. Safety Promotion (Training awareness)

The goal of SMS is to constantly improve the safety experience for employees, passengers, and others on the roadway with transit systems. Various pilots will be used to test the new plan before implementation in July 2021. Please review presentation material for additional details.

5. **Information Items**

   **A. Wichita Bicycle and Pedestrian Advisory Board (WBPAB) Update**

   Chair LeAnna Beat provided the advisory board with updates with the Wichita Bicycle-Pedestrian Advisory Board. The WBPAB met on February 8, 2021 and discussed many items including the McLean from Central to 13th Traffic Study, connecting trails over the Big Ditch, and train trestles.

   The next WBPAB will be held on March 8, 2021@ 5:30 PM.

   **B. Marketing Report**

   A copy of the marketing report was emailed to the board with the current focus points:

   - Ticket Vending Machine and Mobile Ticketing testing, preparation for promotion
     Wichita Transit is currently testing platforms and functionalities.
   - Solicitation of interest in commercial retail space at the Multimodal Center
   - Update to Riverfront Stadium parking and shuttle plan, educational media campaign
     Partnering with the City of Wichita Communication Team to update and refresh marketing and social media content and messaging.
   - Community Outreach with Allied Healthcare Training
     Partnering with Allied Healthcare to place shelters and provide information to students so they could effectively use the transit service.
   - Promotions with MyStop Mobile App, Hiring, WSU and School routes, apparel branding update
     Re-familiarizing riders with real-time features, adding hiring message on
buses for vacation operation positions, and SWTA virtual conference (02/18-0/19/2021)

• Ridership Summary for the 2020 calendar year through January 2021

C. Director’s Report

Director Tann informed the board members of the Director’s report.

• WT operation update
  Wichita Transit has noticed the effects that the cold weather has on its buses, staff, and passengers
  Transportation normalcy hopefully will return mid-2021

• Preparing for improving ridership, bus service and financial positions, and new opportunities

• Recognition to all that are bringing Wichita Transit to the storefront

• Sedgwick County drive thru vaccines at the Transit Administration Office

• Bikeshare, Q-Line, and Scooters
  May is bike month.

• MultiModal Center Update
  Wichita Transit has started to meet with the Federal Transit Administration (FTA) monthly to keep each other up-to-date on the project.

• Request for Qualifications (RFQ) was issued on January 22, 2021, to hire an architectural/engineering team to design the facility. RFQ responses are due back on February 26, 2021.

• Amazon and Dold Foods
  Both companies are interested in supporting Wichita Transit and providing directions for maximizing the transit system.

• Accessibility
  Paratransit service is available to applicants living outside of city limits with some stipulations.

6. Old Business

• Outreach to Appointed Body Update

• Transit Advisory Board Visit Wichita Seat Vacancy

7. New Business

None.
8. **Announcements**

- **Places for People**

  A presentation will be provided to the Wichita Transit Advisory Board on March 17, 2021. For more information visit:

  [https://www.wichita.gov/Planning/Pages/WichitaPfP.aspx](https://www.wichita.gov/Planning/Pages/WichitaPfP.aspx)

9. **Adjournment**

Member Curello proposed a motion to adjourn the meeting, and the motion was seconded by Member Abbey. The meeting adjourned shortly at 11:13 AM.

The next meeting of the board will be held on **March 17, 2021 @10:00 AM.**
SECTION 5310 PROGRAM UPDATE

PROGRAM GOAL
The goal for the Section 5310 program is to improve mobility for seniors and individuals with disabilities throughout the country by removing barriers to transportation services and expanding the transportation mobility options available. The FTA provides financial assistance for transportation services planned, designed, and carried out to meet the special transportation needs of seniors and individuals with disabilities.

As the designated recipient, Wichita Transit will manage the Section 5310 grant and has entered into an agreement with WAMPO to handle the following activities:

- Issue a call for eligible projects within the community
- Develop and facilitate a competitive selection process for screening projects
- Convene a project selection committee that will recommend projects for the governing body(s)

FUNDING
The federal funding amount available for this year’s 5310 program is made up of money from the Federal Fiscal Years (FFY) 2019 ($400,666) and 2020 ($421,101). The program timeline for this year’s funding is July 1, 2021 - June 30, 2023.

On February 18, WAMPO staff and the selection committee met to review over a dozen applications requesting approximately $1.6M in funding. WAMPO was able to make a recommendation for the allocation of $739,590 that was available. Funding was allocated as follows:

<table>
<thead>
<tr>
<th>Agency</th>
<th>Type</th>
<th>Project Description</th>
<th>Federal Funds Awarded</th>
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<tbody>
<tr>
<td>Breakthrough</td>
<td>OTHR</td>
<td>Operating Expenses</td>
<td>$ 89,987.00</td>
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<tr>
<td>Cerebral Palsy Research Foundation (CPRF)</td>
<td>OTHR</td>
<td>Operating Expenses</td>
<td>$ 54,699.00</td>
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<tr>
<td>Cerebral Palsy Research Foundation (CPRF)</td>
<td>TRAD</td>
<td>Capital (Vehicle Replacement)</td>
<td>$ 112,931.00</td>
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<tr>
<td>Park City Senior Center</td>
<td>TRAD</td>
<td>Capital (Vehicle Replacement)</td>
<td>$ 56,523.00</td>
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<tr>
<td>City of Haysville</td>
<td>OTHR</td>
<td>Operating Expenses</td>
<td>$ 48,522.00</td>
</tr>
<tr>
<td>KETCH</td>
<td>TRAD</td>
<td>Capital (Vehicle Replacement)</td>
<td>$ 78,351.00</td>
</tr>
<tr>
<td>Sedgwick County Dept. on Aging (SCDOA)</td>
<td>TRAD</td>
<td>3rd Party Contracting Services</td>
<td>$ 78,432.00</td>
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<tr>
<td>Sedgwick County Dept. on Aging (SCDOA)</td>
<td>OTHR</td>
<td>Operating Expenses</td>
<td>$ 35,843.00</td>
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<tr>
<td>STARKEY</td>
<td>TRAD</td>
<td>Capital (Vehicle Replacement)</td>
<td>$ 118,702.00</td>
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<tr>
<td>Wichita Transit</td>
<td>TRAD</td>
<td>Capital (Travel Training)</td>
<td>$ 65,600.00</td>
</tr>
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</table>
Optimal Low Floor Electric Paratransit Bus S1
June, 2020
Meeting Purpose

- Introduce Optimal, the S1 product vision & development timing
- Solicit feedback on the design for compatibility to your requirements
  - Overall dimensions, seating capacity, performance targets etc.
  - Preferred charging method, drive cycle & EV operational targets
- Discuss existing challenges with shuttle buses & BEBs that are not currently being addressed by the industry
- Discuss your procurement plans relative to electric shuttle buses
Optimal S1 Shuttle Bus

- 100% Electric Powertrain
- Low floor (<11” step in height)

Key Features:

- Ford E450 DRW based BEB
- Liquid cooled, NMC chemistry battery pack (Proterra Powered)
- Direct drive traction motor
- Range >125 miles*
- Standard E450 suspension or optional MORryde RSX rear suspension
- Low floor center section
- Optional disability ramp
- Composite body construction
- Roof mounted HVAC (customizable by region)
- Up to 23 seated passengers or 3 wheelchairs & 12 passengers
  - Multiple floor plan configurations available
- Significant vehicle optimization & virtual testing using CAE methods
- Designed & engineered in Michigan, built in a new facility in Indiana
- **Demo property Q4 2020**
- **Physical testing & certification beginning Q4 2020**
- **SOP in 2021**

*Range dependent upon: ambient temperature, drive cycle, loading condition, ancillary loads, etc.
S1 Development Timeline

- Critical supplier nomination completed December 2019
  - Including battery pack & motor suppliers
- Complete program funding for development, launch and production in place
  - Subsequent vehicles planned based on electric platform
Section 1
Background
Some Of Our Customers:

Optimal Background

- Founded in 1986 (over 33 years), pioneered CAE (computer aided engineering) and related technologies for the automotive industry.
- Since 2015, Optimal has been devoting itself in full vehicle design and development involving vehicle lightweighting, electrification, and smartization (autonomous drive technologies).
- Recently designed and developed e-SUV platform C1, e-Truck B1 (for customer), passenger EV platform D2, and the current focus of e-shuttle bus S1.
Rapid Increase In Electric Bus Adoption

- Bloomberg prediction in North America – 84% of all new bus sales in 2030 will be electric buses
- Reduced battery costs & technical improvements
- Significant fuel and maintenance savings
- Incentive funding from the nearly $3B VW and state / federal / provincial incentives
- Electric mandates – California 100% electric by 2040
BEB Lower Running Costs

**Fuel Costs**

- ICE: $8250/yr
- EV: $2308/yr

- $5942/yr saved

**Maintenance Costs**

- Fewer oil & filter changes
- Reduced brake wear

- $1500/yr saved

**Customers Can Save >$7000 Per Year Deploying The S1 vs Gasoline Shuttle Buses**

*Notes:*

- Fuel savings based on 25,000 miles per year, ICE: 10 mpg, $3.3/gal, EV: $0.1 kW/hr, 130 EV miles per charge
- Maintenance costs based on $1500 per year
<table>
<thead>
<tr>
<th>Differentiators</th>
<th>optimal</th>
<th>GP</th>
<th>Motiv Champion</th>
<th>Lightning Systems</th>
<th>PHOENIX MOTORCARS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Floor</td>
<td>Yes</td>
<td>No</td>
<td>Not Standard (By Special Order)</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Complete Bus Design</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Battery Capacity/Range</td>
<td>113 kWh &gt;125 Miles</td>
<td>&lt;95 kWh ?</td>
<td>106 kWh 95 Miles</td>
<td>&lt;129 kWh &lt;110 Miles</td>
<td>105 kWh &lt;110 Miles</td>
</tr>
<tr>
<td>Gradeability</td>
<td>30%</td>
<td>?</td>
<td>&lt;20%</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>Purpose-built Full Vehicle Development Capability</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
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<tr>
<td>Proximity To Auto R&amp;D Centers</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
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<tr>
<td>Global Footprint</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
Low Floor Battery Electric Buses

- Majority of current battery electric buses are built on OEM’s existing chassis cab EV conversions
  - Example is Motiv EPIC chassis based Champion bus

- Typical battery packaging necessitates high floor bus with stair access and lift for wheelchair access
  - Paratransit operations require lift installation
  - Lifts limit floor plan flexibility and are slow to operate

- Optimal will be the first to market with a Low Floor Battery Electric Bus
Section 2
Optimal Low Floor Electric Paratransit Bus S1
S1 Updated Exterior Design

- Contemporary design inspired by high-end products, hinting at electrification.
## S1 Bus Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>GVWR</td>
<td>14,500 lbs.</td>
</tr>
<tr>
<td>Weight Class</td>
<td>4</td>
</tr>
<tr>
<td>Curb Weight</td>
<td>10,000 lbs.</td>
</tr>
<tr>
<td>Battery Pack</td>
<td>Li-Ion (NMC)</td>
</tr>
<tr>
<td>Pack Size</td>
<td>113 kWh</td>
</tr>
<tr>
<td>Charging</td>
<td>Level 2 (J1772)*</td>
</tr>
<tr>
<td>System Voltage</td>
<td>326V (Nominal)</td>
</tr>
<tr>
<td>Drive Configuration</td>
<td>RWD</td>
</tr>
<tr>
<td>Range</td>
<td>&gt;125 Miles**</td>
</tr>
<tr>
<td>Top Speed</td>
<td>70 mph</td>
</tr>
<tr>
<td>Gradeability</td>
<td>30%</td>
</tr>
<tr>
<td>Passengers</td>
<td>23</td>
</tr>
<tr>
<td>Wheelchairs</td>
<td>3</td>
</tr>
<tr>
<td>Step In Height</td>
<td>9.8”-11”</td>
</tr>
<tr>
<td>Disability Ramp</td>
<td>Yes</td>
</tr>
<tr>
<td>Length</td>
<td>26.5’</td>
</tr>
<tr>
<td>Telematics</td>
<td>CARB Compliant</td>
</tr>
<tr>
<td>Buy America</td>
<td>Yes</td>
</tr>
<tr>
<td>Altoona Test</td>
<td>150,000 Miles/5 Years</td>
</tr>
</tbody>
</table>

*Optional DC-FC under development
**Range dependent upon: ambient temperature, drive cycle, loading condition, ancillary loads, etc.
<table>
<thead>
<tr>
<th>DIMENSION</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Length</td>
<td>26.5ft</td>
</tr>
<tr>
<td>Wheelbase</td>
<td>212”</td>
</tr>
<tr>
<td>Exterior Width</td>
<td>Lower 8.2ft /Upper 8.1ft (Excl. Rear Wheel Lips)</td>
</tr>
<tr>
<td>Interior Width</td>
<td>At Floor Height 92.7in</td>
</tr>
<tr>
<td>Exterior Height - Curb</td>
<td>W/O AC 9.3ft</td>
</tr>
<tr>
<td></td>
<td>With AC 9.7ft</td>
</tr>
<tr>
<td>Breakover Angle</td>
<td>Curb 9.6 Degrees</td>
</tr>
<tr>
<td>Departure Angle</td>
<td>Curb 13.5 Degrees</td>
</tr>
<tr>
<td>Ground Clearance</td>
<td>&gt; 8in at Curb</td>
</tr>
<tr>
<td>Step-in Height</td>
<td>At Curb 11in</td>
</tr>
<tr>
<td></td>
<td>At Max Load 9.8in</td>
</tr>
<tr>
<td>Aisle Width</td>
<td>16in</td>
</tr>
<tr>
<td>Standing Height</td>
<td>To Emergency Hatch 72.6in</td>
</tr>
<tr>
<td>Seat Hip To Knee Space</td>
<td>27in</td>
</tr>
<tr>
<td>Door Width</td>
<td>Opening 42in</td>
</tr>
<tr>
<td>Door Height</td>
<td>Opening 79.6in</td>
</tr>
</tbody>
</table>
S1 – Example Seating Configurations

22 Seat Configuration

12 Seat & 3 Wheelchair Configuration
- Side flip seats available in wheelchair locations
Cabin Floor Split Into Two Main Sections

- Lower forward section for wheelchair access
- Higher rear section over the axle
- Two steps connect the two sections
S1 Advantages – Mixed Material Construction

1. **Mixed Material Floor**
   - Light weight & high stiffness & strength
   - Aluminum or steel structure + composite
   - Optimized using FEA processes

2. **Ultra High Strength Steel Tube Roll Structure**
   - Yield strength >1200 MPa (~174 kpsi)
   - High strength for occupant protection

3. **Composite Bodyside Panels**
   - Light weight & moisture resistant
   - Excellent thermal properties
### S1 Advantages – Full Battery Electric Powertrain

#### High Performance Traction Motor
- Direct drive (no gearbox)
- Fully validated & used in commercial buses
- Supplier will be revealed in due course

#### MOTOR SPEC

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous Torque</td>
<td>1000Nm</td>
</tr>
<tr>
<td>Peak Torque</td>
<td>1700Nm</td>
</tr>
<tr>
<td>Continuous Power</td>
<td>170kW</td>
</tr>
<tr>
<td>Peak Power</td>
<td>280kW</td>
</tr>
<tr>
<td>Voltage Range</td>
<td>300 – 750 vdc</td>
</tr>
</tbody>
</table>

#### BATTERY SPEC

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry</td>
<td>NMC</td>
</tr>
<tr>
<td>Cooling</td>
<td>Liquid (Water/Glycol)</td>
</tr>
<tr>
<td>Energy</td>
<td>113kWh</td>
</tr>
<tr>
<td>Cycle Life</td>
<td>&gt;4000 @ 90% DOD</td>
</tr>
<tr>
<td>Temperature</td>
<td>– 22°F to +133°F</td>
</tr>
</tbody>
</table>

#### Commercial Vehicle Grade Battery Pack
- State of the art battery chemistry for exceptional energy density
- Fully validated pack
- Proterra nominated as the battery supplier with a joint development agreement under execution
## S1 Advantages – Full Battery Electric Powertrain

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
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</thead>
<tbody>
<tr>
<td>Battery Pack</td>
<td>Li-Ion (NMC)</td>
</tr>
<tr>
<td>Pack Size</td>
<td>113 kWh</td>
</tr>
<tr>
<td>Charging</td>
<td>Level 2 (J1772)</td>
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<tr>
<td>System Voltage</td>
<td>326V (Nominal)</td>
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<tr>
<td>Drive Config.</td>
<td>RWD</td>
</tr>
<tr>
<td>Range</td>
<td>&gt;125 Miles*</td>
</tr>
<tr>
<td>Top Speed</td>
<td>70 mph</td>
</tr>
<tr>
<td>Gradeability</td>
<td>30%</td>
</tr>
</tbody>
</table>
S1 Advantages – Flexible Charging Options

AC Charging (Standard)
- 13.2 kW On Board Charger (OBC)
- J1772 Type 1 Charge Inlet
- AC Level 1 Charging (120V)
- AC Level 2 Charging (240V)  
  - Full charge <8 hours

EVSE
- Partner for Level 2
- Charges 2 buses simultaneously
- Wall mount or free standing

DC Fast Charging (Optional)
- No On Board Charger
- CCS Type 1 Charge Inlet
- DC Level 2 (Up to 870V)  
  - 60 kW
  - Full charge <2 hours

EVSE
- J1772 DC-FC
- Compatible with Proterra EVSE (shown)
- Up to 4 dispensers
- Wall or pedestal mount
- Bi-directional V2G capability
| S1 Advantages – Low Floor Ramp Access |

**Low Floor Bus**
- Step in height <11” at curb & 10” loaded
- OEM (standard) steel suspension unmodified

**Standard Electric Ramp**
- Ramp angle 1:5 inside passenger cabin
- Ramp angle >1:12 to curb / 1:6 to ground
- Established U.S. supplier (will be revealed in due course)

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Safety - Frontal Impact Benchmarking
S1 Advantages – Safety & Simulation Driven Design

- Florida Roll-Over Test
- Florida Side Impact Test
- FMVSS 220 Roof Crush Test
- FMVSS 207 / 210 Seat Pulling Test
S1 Advantages – Safety & Simulation Driven Design

Driver Protection
S1 Advantages – Safety & Simulation Driven Design

NVH (Noise, Vibration, & Harshness) Study
S1 Advantages – Safety & Simulation Driven Design

Aerodynamic (Exterior) Flow

Underhood/Underbody (Interior) Flow

Aerodynamics, Underhood, Underbody Flow Studies
S1 PT Bench
S1–M1 Powertrain Mule Vehicle as a Development Tool

Powertrain Mule Development & Testing

- Based on RAM ProMaster van (ICE)
- It is a development tool for vehicle & system developments:
  - Subsequent vehicles planned based on electric platform
  - Motor, inverter, OBC, DCDC & PDU development
- Available to view and drive in Plymouth, MI
- Not intended for commercialization

Cooling System
HV Harness
Battery Pack & BMS
HMI
Front PT
Infotainment System
Charging Port

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S1–M1 Powertrain Mule Property Undergoing Testing

- Conducted at FTTA (Fowlerville, Michigan), started August 2019
- Performance at variety of SOC & ballasting conditions
  - Energy consumption & efficiency
  - Performance relative to computer predictions
S1 Cost Comparison*

*Includes HVAC & seating
Optimal Engineering & Manufacturing Centers

Elkhart Manufacturing Center (Planned)

Plymouth Engineering Center
Thank You
Digital Insights – Last Four Weeks

Facebook
- 2,335 people reached
- 521 post engagements
- 16 new page followers

Google
- 50,720 search/map views
- 22,730 actions taken

Current Focus
- Schedule updates, recent and upcoming
- Preparation for Q-LINE return to service late May
- Transit fleet electrification promotion with Evergy
- Ticket Vending Machine and Mobile Ticketing testing, preparation for promotion
- Promotions with MyStop Mobile app, Hiring, WSU and School routes, apparel branding update

Ridership
- Less than the typical dip from January to February, hopefully, an indication of regaining some COVID ridership loss.
- The veterans ride free pilot program has maintained steady ridership for the past several months averaging over 2,900 rides each month.
- WSU ridership rebounded sharply, with on-campus classes resuming in February.
- We’re averaging 78 weekday rides per day for Wichita Public Schools students.
Ride Free with Shocker ID