To match with the FY2022 DRPA Capital Budget and with anticipated funds from the Bipartisan Infrastructure Law, DRPA/PATCO actions (Board, Administrative, and Informational) reflect:

- DRPA actions (Board, Administrative, and Informational) reflect a $10.1 M DRPA/PATCO program increase to $94 M over First-Four Years (FY22-25)
- Actions include a $29.7 M total increase in Later FY26-31
- 10-year difference: $39.8 M increase
Electrical Cable Replacement
DRPA/PATCO | Add Project Back into the TIP

• TIP Amendment
• Action: Add project back into TIP for FY22-25 Engineering/Right of Way/Construction (ERC) for $3.85 million (M) SECT 5337/DRPA
• Reason: DRPA/PATCO anticipates funding from the Bipartisan Infrastructure Law (BIL); match FY2022 DRPA Capital Budget
• Background:
  • Previous FY2020 TIP project
  • $3.85 M total cost
  • Line item provides for systemwide replacement of electrical cable to improve reliability and fire resistance of PATCO Speedline
TIP ACTION | Proposed - NJ

Requests Board Approval of TIP Amendment

Electrical Cable Replacement
Add $3.85 M project to the TIP for FY22-25 ERC
PATCO Station Platform Rehabilitation  
DRPA/PATCO | Cost Increase (First-Four Years of TIP)

- **TIP Modification**
- **Action:** Increase FY22-25 ERC by $600,000; decrease FY26-31 ERC by $15.6 M SECT 5307/DRPA
  - 10-year difference: $15 M decrease
- **Reason:** Updated cost estimates; match FY2022 DRPA Capital Budget
- **Background:**
  - Line item provides for planning, design, and reconstruction activities of PATCO station platforms
PATCO Viaduct Preservation  
DRPA/PATCO | Cost Increase (First-Four Years of TIP)

- **TIP Modification**
- **Action**: Increase FY22-25 engineering/construction (EC) by $6.5 M and FY26-31 EC by $6.25 M SECT 5337/DRPA
  - 10-year difference: $12.75 M increase
- **Reason**: Updated cost estimates; match FY2022 DRPA Capital Budget
- **Background**:
  - *Line item to improve and protect Collingswood and Westmont viaducts*
PATCO Interlocking & Track Rehabilitation
DRPA/PATCO | Cost Increase (First-Four Years of TIP)

- **TIP Modification**
- **Action:** Increase FY22-25 EC by $5.3 M and FY26-31 EC by $14.7 M
  - 10-year difference: $20 M increase
- **Reason:** Updated cost estimates; match FY2022 DRPA Capital Budget
- **Background:**
  - Line Item to rehabilitate and replace interlockings, rail bed, and other rail improvements to ensure overall PATCO system safety, reliability, and minimize service disruptions
PATCO Stations Modernizations
DRPA/PATCO | Cost Decrease (First-Four Years of TIP)

- **TIP Modification**
- **Action:** Decrease FY22-25 EC by $3.5 M and increase FY26-31 EC by $15 M SECT 5337/DRPA
  - 10-year difference: $11.5 M increase
- **Reason:** Updated cost estimates; match FY2022 DRPA Capital Budget
- **Background:**
  - FY22-25 decrease from $9.5 M to $6 M
  - Line Item to modernize all PATCO commuter stations and extend the useful life of the stations and their major components
Request Board Approval of TIP Modifications

- **PATCO Station Platform Rehabilitation**
  
  Increase FY24-25 ERC by $600,000 SECT 5307/DRPA
  Decrease FY26-31 ERC by $15.6 M SECT 5307/DRPA
  10-year difference: $15 M decrease

- **PATCO Viaduct Preservation**
  
  Increase FY22-25 EC by $6.5 M SECT 5337/DRPA
  Increase FY26-31 EC by $6.25 M SECT 5337/DRPA
  10-year difference: $12.75 M increase
TIP ACTION | Proposed - NJ

Request Board Approval of TIP Modifications

- **PATCO Interlocking & Track Rehabilitation**
  Increase FY22-25 EC by $5.3 M SECT 5307/DRPA
  Increase FY26-31 EC by $14.7 M SECT 5307/DRPA
  10-year difference: $20 M increase

- **PATCO Stations Modernizations**
  Decrease FY22-25 EC by $3.5 M SECT 5337/DRPA
  Increase FY26-31 EC by $15 M SECT 5337/DRPA
  10-year difference: $11.5 M increase
• **TIP Amendment**

• **Action:** Add 2 new bridge projects to TIP using $2.9 M of Bucks County’s Act 13 allocation:
  - FY22 PE: $150,000 per bridge
  - FY22 FD: $100,000 per bridge
  - FY23 ROW: $25,000 per bridge
  - FY23 UTL: $25,000 per bridge

• FY23 CON: $1.3 M for East College Ave over PA Canal, and $1 M for Old Bethlehem Pike over Three Mile Run

• **Reason:** For replacement or repair of locally owned at-risk deteriorated bridges

• **Background:**
  - Act 13 funds are additional to the region
East College Ave over PA Canal (CB #55)

- Built in 1973
- Substandard safety features at the bridge approaches
- Classified as “poor” due to condition of substructure and advanced deterioration of structural elements
- Includes safety upgrades to the bridge railing and guide rail

Old Bethlehem Pike over Three Mile Run (CB #258)

- Built in 1955
- Substandard safety features at the bridge approaches
- Classified as “poor” due to condition of super/substructure and advanced deterioration of structural elements
- Includes safety upgrades to the bridge railing and guide rail
TIP ACTION | Proposed - PA

- **Request Board Approval of TIP Amendment**
- **East College Ave over PA Canal (CB #55) & Old Bethlehem Pike over Three Mile Run (CB #258)**
  Add 2 new bridge projects to TIP using $2.9 M of Bucks County’s Act 13 allocation:
  
  FY22 PE: $150,000 per bridge
  FY22 FD: $100,000 per bridge
  FY23 ROW: $25,000 per bridge
  FY23 UTL: $25,000 per bridge
  FY23 CON: $1.3 M for East College Ave over PA Canal, and $1 M for Old Bethlehem Pike over Three Mile Run
ADA Ramps
City of Philadelphia | Add New Projects to TIP

• **TIP Amendment**
• **Action:** Add 2 new projects totaling $500,000 STP/State 581 for FY22 PE:
  • ADA Ramps Center City Phila: $400,000 ($320,000 STP/$80,000 State 581)
  • 2022-23 ADA Ramps Phila: $100,000 ($80,000 STP/$20,000 State 581)
• **Reason:** For repair or reconstruction of damaged/deteriorated ADA facilities
• **Background:**
  • ADA Ramps Center City Phila: repair/reconstruct ~107 ADA ramps on Market, Chestnut, and Walnut Streets
  • 2022-23 ADA Ramps Phila: improve ~258 ADA ramps along Chestnut, Walnut, Fifth, and Spring Garden Streets
TIP ACTION | Proposed - PA

• Request Board Approval of TIP Amendment

• ADA Ramps
  Add 2 new projects totaling $500,000 STP/State 581 for FY22 PE:
  • ADA Ramps Center City Phila: $400,000 ($320,000 STP/$80,000 State 581)
  • 2022-23 ADA Ramps Phila: $100,000 ($80,000 STP/$20,000 State 581)
IIJA/BIL FFY 2022 Funding Allocation
Various Counties | Additional Funding Availability

- **TIP Amendment**
- **Action:** Add $98.879 M in additional funds in FY22 from the Infrastructure Investment and Jobs Act (IIJA)/Bipartisan Infrastructure Law (BIL)
- Funds will be moved to existing/new line items, and to a specific project for a cost increase
- **Reason:** The DVRPC region is receiving $115,259,000 in additional FY22 federal funding from the IIJA/BIL
- $98.879M is being added to the TIP with this action
- **Background:**
  - IIJA/BIL funds are additional to the region
  - Remaining FY22 IIJA/BIL funds will be added once amounts are finalized by FHWA and PennDOT
IIJA/BIL FFY 2022 Funding Allocation

Adding the following funds to their respective line items:

- $41,313,000 Bridge Improvement Program (BRIP) in FY22 to Bridge Investment Program line item
- $7,050,000 HSIP to Regional Safety Initiatives line item
- $6,222,000 Bridge Off-System (BOF) to Bridge Reserve line item
- $500,000 CMAQ to CMAQ line item

Adding the following funds to a specific project:

- $43,794,000 NHPP to FFY 2022 funding allocations then shifted to specific project as part of next action (PA21-73)
TIP ACTION | Proposed - PA

• Request Board Approval of TIP Amendment

• IIJA/BIL FFY 2022 Funding Allocation
  Add $98.879 M in additional funds in FY22 from the Infrastructure Investment and Jobs Act (IIJA)/Bipartisan Infrastructure Law (BIL). Funds will be moved to existing/new line items, and to a specific project for a cost increase:

Adding the following funds to their respective line items:
• $41.313 M Bridge Improvement Program (BRIP) in FY22 to Bridge Investment Program line item
• $7,050,000 HSIP to Regional Safety Initiatives line item
• $6,222,000 Bridge Off-System (BOF) to Bridge Reserve line item
• $500,000 CMAQ to CMAQ line item

Adding the following funds to a specific project:
• $43.794 M NHPP IIJA/BIL to FFY 2022 funding allocations; shifted to project as part of next action (PA21-73)
I-95 CAP/Waterfront Access
City of Philadelphia | Cost Increase and Add Breakout Project to TIP

• **TIP Amendment**

• **Action:** Increase CON phase of I-95 CAP/Waterfront Access project by $94,000,000 (FY22: $2,758,000 BRIP/$43,794,000 NHPP/Toll Credit; FY29: $34,949,000 STU/$12,499,000 STP/Toll Credit) and

• Add Penn’s Landing Project Development – Local as new breakout project for $105,000,000 ($60,000,000 LOC/$45,000,000 PRIV) CON in FY22

**Reason:** CON cost estimate increase as detailed on next slides; project will be delivered on 2 separate contracts
I-95 CAP/Waterfront Access

• Project Background:
  • Innovative cap structure, viaduct, road, and trail to re-establish connection between Central Philadelphia and the waterfront
  • Multimodal enhancements to improve experience for pedestrians, cyclists, and vehicles
  • Create and develop public spaces on the bridge/cap structure
    • These elements are not eligible for federal/state transportation funding
I-95 CAP/Waterfront Access – 2 Contracts

• Contract 1: I-95 Central Access Philadelphia (CAP) / Waterfront Access
  • Foundation, substructure, superstructure, and other Federal/State funding eligible items
  • Increased CON costs associated with:
    • Increased cost for materials (incl. steel)
    • Retaining walls and deeper foundations due to soil conditions
    • Utility relocation
    • Pavement/barrier improvements; automated lane control with VSL
    • Lighting and trail improvements; external elevator
    • Relocation and restoration of Scottish and Irish memorials
I-95 CAP/Waterfront Access – 2 Contracts

- **Contract 2: Penn’s Landing Project Development – Local**
  - Funded via Local and Private funds
  - CON of essential items for public spaces that are ineligible for Federal/State transportation funding
  - PennDOT only responsible for heavy infrastructure
  - City and DRWC responsible for landscape, buildings, and amenities
I-95 CAP/Waterfront Access
5 Components:

• Replace/expand structure near Penn’s Landing; new, extended structure spanning I-95 and CC Blvd between Walnut and Chestnut streets

• Extend South St pedestrian bridge to Penn’s Landing

• Construct section of Del. River Trail along CC Blvd

• Repair/replace existing underwater concrete piles at Penn’s Landing

• Enable creation of public spaces on bridge/cap
South Street Pedestrian Bridge Extension

Image Credit: PennDOT
Park at Penn’s Landing – Memorials

PROPOSED MEMORIAL SCHEME

Image Credit: PennDOT
Project Elements – Park at Penn’s Landing – CAP Structure
• Request Board Approval of TIP Amendment

• I-95 Central Access Philadelphia (CAP) / Waterfront Access
  Increase CON phase of I-95 CAP/Waterfront Access project by $94,000,000 (FY22: $2,758,000 BRIP/$43,794,000 NHPP/Toll Credit; FY29: $34,949,000 STU/$12,499,000 STP/Toll Credit) and
  Add Penn’s Landing Project Development – Local as new breakout project for $105,000,000 ($60,000,000 LOC/$45,000,000 PRIV) CON in FY22
Route 29, Cass Street to Calhoun Street, Drainage
City of Trenton | Cost Increase

- **TIP Amendment**
- **Action:** Increase FY22 CON by adding $17.57 M NHPP from $12.22 M to $29.79 M NHPP
  - Increases overall CON cost from $24.22 M to $41.79 M
  - No change to FY23 CON cost
- **Reason:**
  - Meet SFY22 authorization deadline, advertise/bid/award by June 2022
  - Design change relocates new, longer flood wall closer to the Delaware River to create parkland and additional repairs to sections of the existing floodwall
- **Background:**
  - Project addresses flooding by preventing the Delaware River from backing up into the existing storm sewer pipe systems within the Route 29 right-of-way. With these improvements, various locations of the roadway will be protected from events ranging between the 15-year and 50-year floods in the river’s main channel
Cost increase due to:
installation of 15 backflow prevention valves; stormwater drainage inlets & culverts; shoulder widening; 3 water quality treatment devices; replacement of 590 feet of existing deteriorated floodwall

Change in design: will relocate the new flood wall, with longer required length due to river geometry, closer to the Delaware River to create parkland and will repair sections of existing flood walls

Will prevent Delaware River from backing up into the existing storm sewer pipe systems within Rt. 29 ROW
Request Board Approval of TIP Amendment

- Route 29, Cass Street to Calhoun Street, drainage
  Increase FY22 CON by adding $17.57 M NHPP from $12.22 M to $29.79 M NHPP
  - Increases overall CON cost from $24.22 M to $41.79 M
  - No change to FY23 CON cost ($12.0 M NHPP)
Thank You!

www.dvrpc.org/TIP
Bringing an Automated Shuttle to Philadelphia

DVRPC Board Meeting
March 24, 2022
Dan Corey, PE
Global Transportation - Director Strategic Solutions
Vice President
Automation Levels

0: No Automation
   Zero autonomy; the driver performs all driving tasks.

1: Driver Assistance
   Vehicle is controlled by the driver, but some driving assist features may be included in the vehicle design.

2: Partial Automation
   Vehicle has combined automated functions, like acceleration and steering, but the driver must remain engaged with the driving task and monitor the environment at all times.

3: Conditional Automation
   Driver is a necessity, but is not required to monitor the environment. The driver must be ready to take control of the vehicle at all times with notice.

4: High Automation
   The vehicle is capable of performing all driving functions under certain conditions. The driver may have the option to control the vehicle.

5: Full Automation
   The vehicle is capable of performing all driving functions under all conditions. The driver may have the option to control the vehicle.
## Automation Market Share

<table>
<thead>
<tr>
<th>OEM</th>
<th>Intro year</th>
<th>Models¹, #</th>
<th>Examples</th>
<th>Est. sales volume, K</th>
<th>Headlines</th>
</tr>
</thead>
<tbody>
<tr>
<td>GM</td>
<td>2020</td>
<td>22</td>
<td>• Cadillac Lyriq&lt;br&gt;• Buick Encore</td>
<td>38/177</td>
<td>GM’s Super Cruise Self-Driving Tech Will Be on 22 Vehicles by 2023&lt;br&gt;Feb 2021</td>
</tr>
<tr>
<td>Ford</td>
<td>2020</td>
<td>11</td>
<td>• Mustang Mach-E&lt;br&gt;• F-150 SuperCrew</td>
<td>4/53</td>
<td></td>
</tr>
<tr>
<td>Tesla</td>
<td>2020</td>
<td>5</td>
<td>• Model X&lt;br&gt;• Model 3</td>
<td>154/302</td>
<td>Tesla Full Self-Driving subscription model coming in Q2 2021&lt;br&gt;Mar 2021</td>
</tr>
<tr>
<td>Volvo</td>
<td>2023</td>
<td>2</td>
<td>• Volvo XC90&lt;br&gt;• Volvo XC100</td>
<td>0/8</td>
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<tr>
<td>Volkswagen</td>
<td>2020</td>
<td>12</td>
<td>• Volkswagen Atlas&lt;br&gt;• Audi A4</td>
<td>27/52</td>
<td></td>
</tr>
<tr>
<td>Nissan</td>
<td>2021</td>
<td>2</td>
<td>• Infiniti QX50&lt;br&gt;• Infiniti QX55</td>
<td>0/6</td>
<td>2021 Toyota Camry is first to get Safety Sense 2.5 Plus&lt;br&gt;6/2021</td>
</tr>
<tr>
<td>Toyota</td>
<td>2021</td>
<td>46</td>
<td>• Toyota Camry&lt;br&gt;• Lexus LX</td>
<td>0/422</td>
<td></td>
</tr>
</tbody>
</table>

¹ Including models with mixed automation capabilities.
Project Location
Philadelphia First - Smart Traffic Management

2018
Connected Communities - 2021

SMART
E-BUS SYSTEM
1. Journey Planner App
2. Smart Intersections
3. Static Charging Pads
4. Wayfinding Kiosk

CONNECTIVITY
5. Automated Microtransit
6. E-Bikes
7. Car Sharing
8. Ride Share Zone

OPTIMIZED INFRASTRUCTURE
9. Public EV Charging
10. Smart Parking
Transportation Demand Management (TDM) Pilot Projects

https://www.dvrpc.org/top

TRAVEL OPTIONS PROGRAM
Transportation Demand Management (TDM) Pilot Projects

pennsylvania
DEPARTMENT OF TRANSPORTATION

Driving growth to every corner of Philadelphia

PIDC
# Roles and Responsibilities

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Primary Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>DVRPC</td>
<td>Project sponsor, governance, project funding</td>
</tr>
<tr>
<td>PennDOT District 6-0</td>
<td>Project Co-sponsor / lead, maintenance of State roadway/upgrades, policy development, project funding</td>
</tr>
<tr>
<td>Philadelphia Industrial Development Corporation (PIDC)</td>
<td>Project Co-sponsor / lead, Shuttle operations (Krapf Transportation) / routing / charging / storage / security, maintenance/upgrades of PNY roadways and traffic signals.</td>
</tr>
<tr>
<td>Krapf Bus</td>
<td>Operator of AV shuttle, shuttle maintenance (4-hour shifts maximum)</td>
</tr>
<tr>
<td>City of Philadelphia / Streets Department</td>
<td>Maintenance/upgrades of City roadways and traffic signal coordination</td>
</tr>
<tr>
<td>Shuttle Manufacturer</td>
<td>Provide shuttle route alignment, shuttle O&amp;M training, data sharing.</td>
</tr>
<tr>
<td>AECOM</td>
<td>Project administration, route development, shuttle testing and reporting</td>
</tr>
<tr>
<td>SEPTA</td>
<td>Data review / future integration with MOOVIT</td>
</tr>
</tbody>
</table>
PennDOT has already funded a ConOps for a partnership with PIDC, the Sports Complex District, and SEPTA to advance the study of AVs within the South Philadelphia Area. There are no current plans to extend the Broad Street Line (BSL) as this is estimated at over a billion dollars.

PennDOT is considering deploying automated shuttles to reduce pedestrian impacts to roadway operations.

PennDOT is exploring how low-speed and low-capacity AVs can successfully augment existing transit services to connect the rapidly developing Navy Yard.
Requested Vehicle Type

- 1-Year Lease
- Fully Electric
- 11-15 Passenger Capacity
- 120 – 150 Mile Range
- Highway Speeds
- Buy America Altoona Tested
- FMVSS Compliant
- ADA Compliant
What Happened?...What’s Next?

- Official Announcement of Award - May 2021
- Stakeholder Internal / Collective Coordination
- Shuttle Procurement - PIDC (February 2022)
- Route Preparation (Spring 2022)
- Testing (Early Summer 2022)
- Operations (Summer 2022 - Summer 2023)

https://www.dvrpc.org/top
THANK YOU!

Dan Corey, PE
Vice President - Director Strategic Solutions
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EXPO
EXPERIMENTAL POP-UPS
PROGRAM UPDATE

DVRPC Board: March 24, 2022

Logan Axelson, Senior Transportation Planner
Cassidy Boulan, Assistant Manager, Bicycle Programs
Tactical Urbanism

Low-cost, short-term projects that spark long-term change.

**Expo** is DVRPC’s tactical urbanism support program.
Where we've popped up

- West Chester
- Newtown Square
- Hatboro

Where we're popping up soon

- Narberth
- Media
- Camden
- Collingswood
- Philadelphia

Ongoing pop-ups

- Ongoing pop-ups
St. Albans Circle, Newtown Square, PA

- Traffic circle redesign
- Public communications
- Materials
- Travel monitoring
- Survey design
- Implementation support
Atlantic Ave, Collingswood, NJ

+ Design elements:
  - Curb extensions
  - Advisory bike lanes
  - New crosswalks

+ Project goals:
  - Improve bicycle and pedestrian access
  - Pilot new street treatments
Advisory bike lanes: what and why

What:

- Provide bike lanes on either side of the street
- All cars use center lane unless passing
- Cars must yield to bicyclists in the lanes

Why:

- Increases passing distance
- Slows cars
- Shows bikes where to position themselves in the road
On Atlantic Ave, about 7% fewer vehicles were going above 25 MPH once the EXPO project was on the ground.

19% fewer vehicles on the Collings Ave were driving above 25 MPH.
What’s Next
Webinar April 20, 2022

More info: dvrpc.org/expo

Contact
Logan Axelson: laxelson@dvrpc.org
Cassidy Boulan: cboulan@dvrpc.org

Credit: Presentation template by Slidesgo