



# SUSTAINABILITY

AT THE  
PA TURNPIKE COMMISSION

2022 Highlight Report

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# A Message from the CEO

With a 30-year commitment to sustainable best practices, the Pennsylvania Turnpike Commission (PTC) aims to become America's First *Sustainable* Superhighway by 2040. As a transportation leader, we are committed to following the [United Nations' 17 Sustainable Development Goals](#), which provide a shared blueprint for peace and prosperity for both people and the planet. Following these goals helps us to create sustainable programs and initiatives to deliver on our promise of a regenerative future for our customers and communities.

Each day, I ask myself and others, "are we getting there?"

*Are we leading by example?*

*Are we meeting the needs of our customers?*

Since the PTC's first Sustainability Report was published in 2021, we have made significant progress.

- We became the first state agency to achieve a 100% score from the [GreenGov Council](#) by committing to high sustainability standards.
- We earned an [IBTTA Toll Excellence Award](#) for Social Responsibility for our stormwater management program.
- Our first solar microgrid came online in Greensburg.

We are committed to improving efficiency and sustainability by integrating new technologies into our processes. For example the new DIRT application helped us improve site inspections required for stormwater management. And when complete, our 500-mile fiber optic network will reduce our carbon footprint and extend broadband to help close the digital divide in underserved areas along the Turnpike. That's what it means to be a good neighbor.

Over the next two decades, we will integrate solar, fiber, inductive charging, and connected and autonomous vehicle technology across our system. These and other innovations will help increase mobility, reduce congestion, and decrease our carbon footprint. Please turn to page 23 to view a series of maps that showcase how we will create a sustainable roadway by 2040.



In 2023, the PTC will also release its first report from the Task Force on Racial and Social Justice: *Our Commitment to Diversity*, which aims to prioritize outreach to under-resourced areas. Through the efforts of the Task Force, we also improved and expanded internal policies and programs, which have helped us to form new partnerships with energy companies, colleges and universities, and other state agencies.

Through this report, I am proud to share our sustainability strategy set forth by the leadership of our Sustainability Committee.

To help us maintain our commitment to sustainability, I'd like to challenge you to reduce your carbon footprint at home and work. After all, actions speak louder than words.

Thank you,

**Mark Compton**

CEO, PA Turnpike Commission

## Our Mission for Sustainability

To create and build an organization-wide culture of sustainability where all decisions consider our economic, environmental, and social impact.

## Our Vision for Sustainability

Driving the Pennsylvania Turnpike Commission past green into sustainable and ultimately toward restorative practices across our 550+ mile toll road operation.



## Our Environment. Our Agency. Our Assets.

**“RESPONSIBILITY MATTERS”** is one of [five core values](#) in the PTC’s strategic plan, emphasizing its commitment to “diversity, integrity, and sustainability in all our practices.” This extends to all of its assets including service plazas, maintenance facilities, salt storage sheds, and equipment. Protecting the environment through sustainability has been a guiding principle within the Facilities Department for more than three decades.

One of the first steps toward sustainability began with designing new buildings using LEED certification. LEED projects seek to maximize the use of locally sourced sustainable materials and provide environmentally friendly and energy efficient systems throughout the building construction. Typical elements of LEED design include heating, ventilation, and air conditioning (HVAC) with advanced controls; placing windows strategically to provide natural lighting and reduce

electricity consumption, collecting rainwater for reuse in toilets and truck wash water; using waterless urinals and utilizing energy-efficient lighting systems.

The Central Administration Building was the first high-profile project incorporating the LEED principles. These values minimize energy consumption, diminish the environmental impact, and reduce the carbon footprint with each newly designed facility.

Examples of PTC LEED-certified projects are:

- Somerset Maintenance Shed (LEED Silver)
- Everett PA State Police Renovation Project (LEED Silver)
- Trevoise Maintenance Shed (LEED Silver)
- Everett Warehouse (LEED Gold)
- Central Administrative Building (LEED Bronze)

Salt storage facilities are another example of a project with large environmental impacts. The PTC Facilities Department worked closely with the Maintenance Department to minimize salt pollution. While using salt for de-icing roads in winter conditions remains essential, the PTC reduced its salt usage and largely eliminated any unnecessary salt pollution due to improper storage by significantly increasing the amount of salt storage space. A new, more efficient building was designed with double wall tanks to improve the pumping and plumbing systems for storing calcium chloride and brine solution.

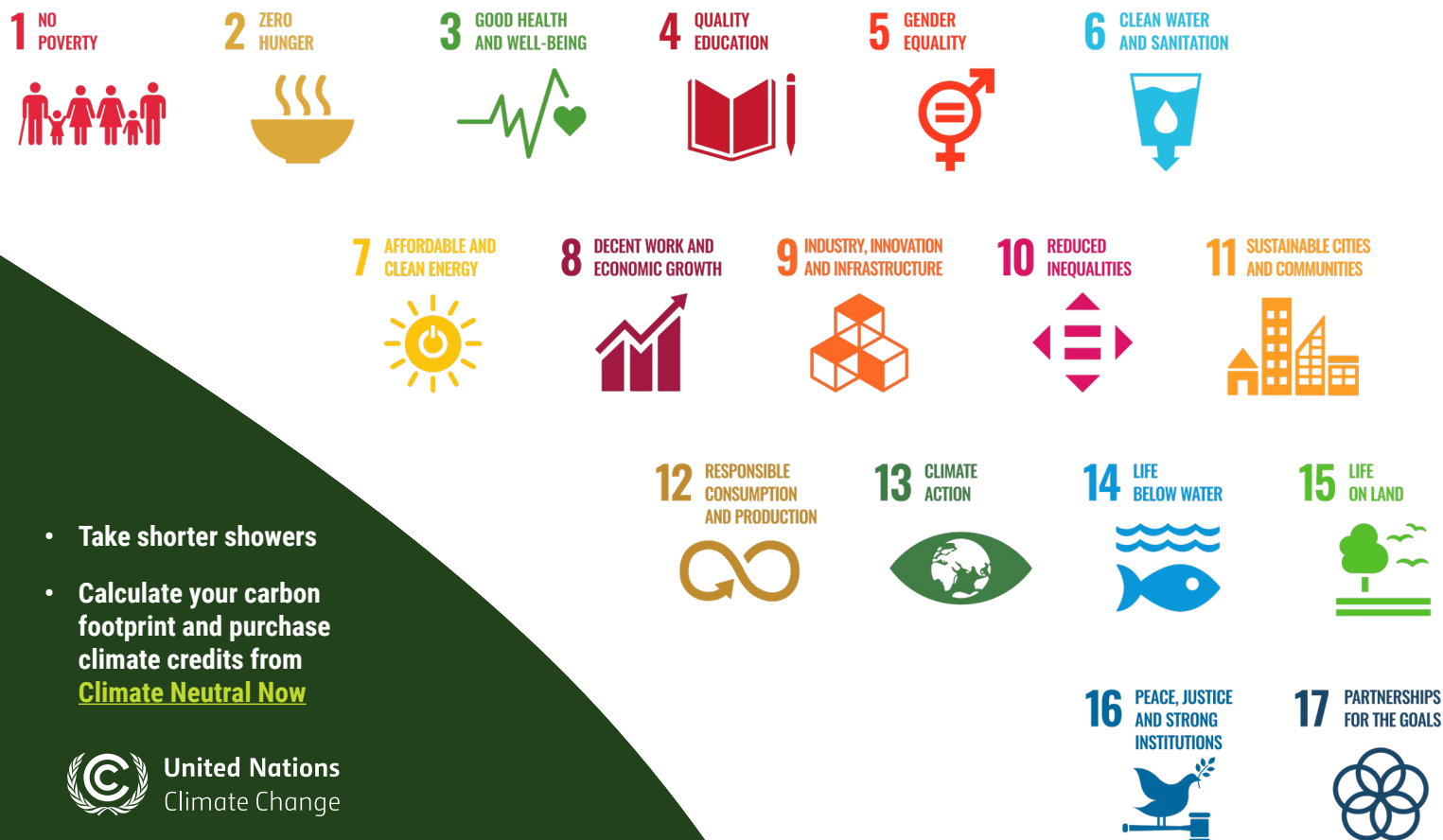
The PTC is committed to sustainability and continues to lead and encourage others to join us in improving the health of our people and planet as we seek to become America’s First Sustainable Superhighway by 2040.

# The 17 Goals for Sustainable Development

The Commonwealth recognizes the importance of caring for our planet and the people who call it home. That's why it formally adopted the [United Nations' 17 Sustainable Development Goals](#) which span a spectrum of issues facing the planet and serve as a roadmap to more sustainable operations by 2030.

The goals identify 17 key areas, including infrastructure, affordable and clean energy, sustainable communities, responsible production and consumption, and climate action. The PTC has embraced these goals and incorporates them into all its decisions and operations.

The United Nations created the [Lazy Persons Guide to Saving the World](#) to introduce the concept to the world. It explains simple ways in which every person can do their part to promote the 17 goals in their personal and professional lives.



## Simple ways to support sustainability:

- Go paperless
- Support food charities
- Reduce food waste
- Turn off lights
- Mentor youth
- Volunteer in your community
- Take shorter showers
- Calculate your carbon footprint and purchase climate credits from [Climate Neutral Now](#)



United Nations  
Climate Change

# PTC Achieves Perfect Score from GreenGov Council

The GreenGov Council, established by Gov. Tom Wolf by executive order in 2019, will help the state reach its climate goal of an 80% reduction of net greenhouse gas emissions from 2005 levels by 2050. Housed within the Pennsylvania Department of General Services, the council helps to integrate sustainability into the Commonwealth's policies, planning, operations, procurement and regulatory functions. Each year, all state agencies complete the [GreenGov Agency Certification Checklist](#) which scores each agency in 20 key areas.

It's an extensive checklist, looking at roughly 100 standards for sustainability, like achieving a 3% reduction in energy consumption in the last year, inspecting doors and windows for proper sealing to reduce energy loss, and upgrading 25% or more of lighting fixtures to LED.



**In 2022, the PTC became the FIRST AGENCY to achieve a 100% score from the GreenGov Council for its efforts to create sustainable operations.**

The Council highlighted the Turnpike's "responsibility matters" portion of the public website as a model for all agencies.

Some of the highlights of the PTC's ranking include the following:



# PTC Sustainability Snapshot

## Strong Governance Culture



100%  
Ranking from GreenGov Council  
1<sup>st</sup> state agency



5

Engineer  
Trainee  
Career Fairs



80

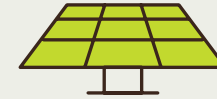
9<sup>th</sup> to 12<sup>th</sup> Grade  
Female Students Who  
Participated in the  
First STEAM Event

## Environmental Stewardship



5

LEED Certified  
Buildings



1<sup>st</sup>

Solar Microgrid  
Comes Online



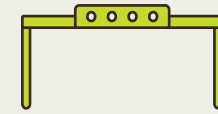
55

Electric Vehicle  
Charging  
Stations



903.7

Total GHG Tons of  
Emissions Saved  
from Telework



\$1 Billion

Anticipated Savings  
over 40 Years with  
ORT Conversion

## Recognition



PTC received  
IBTTA Toll Excellence Award for  
Social Responsibility  
for its MS4 Program:  
A Journey to Clean Water

## Community Impact



\$28,300

Raised  
for SECA in 2022



2,000+

Adults and children have been helped  
through the Pick an Angel Program  
since 2000

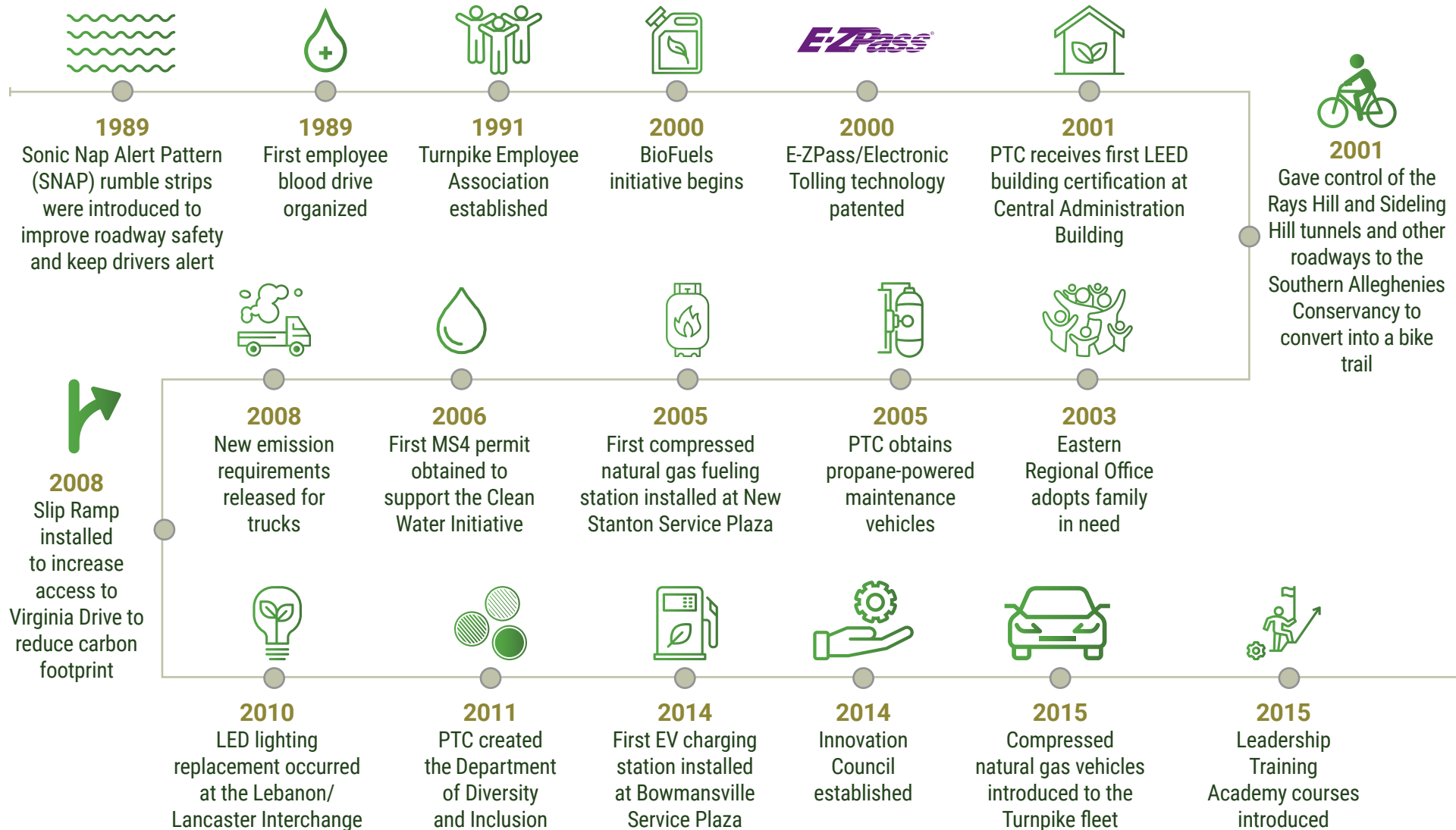


\$75,300

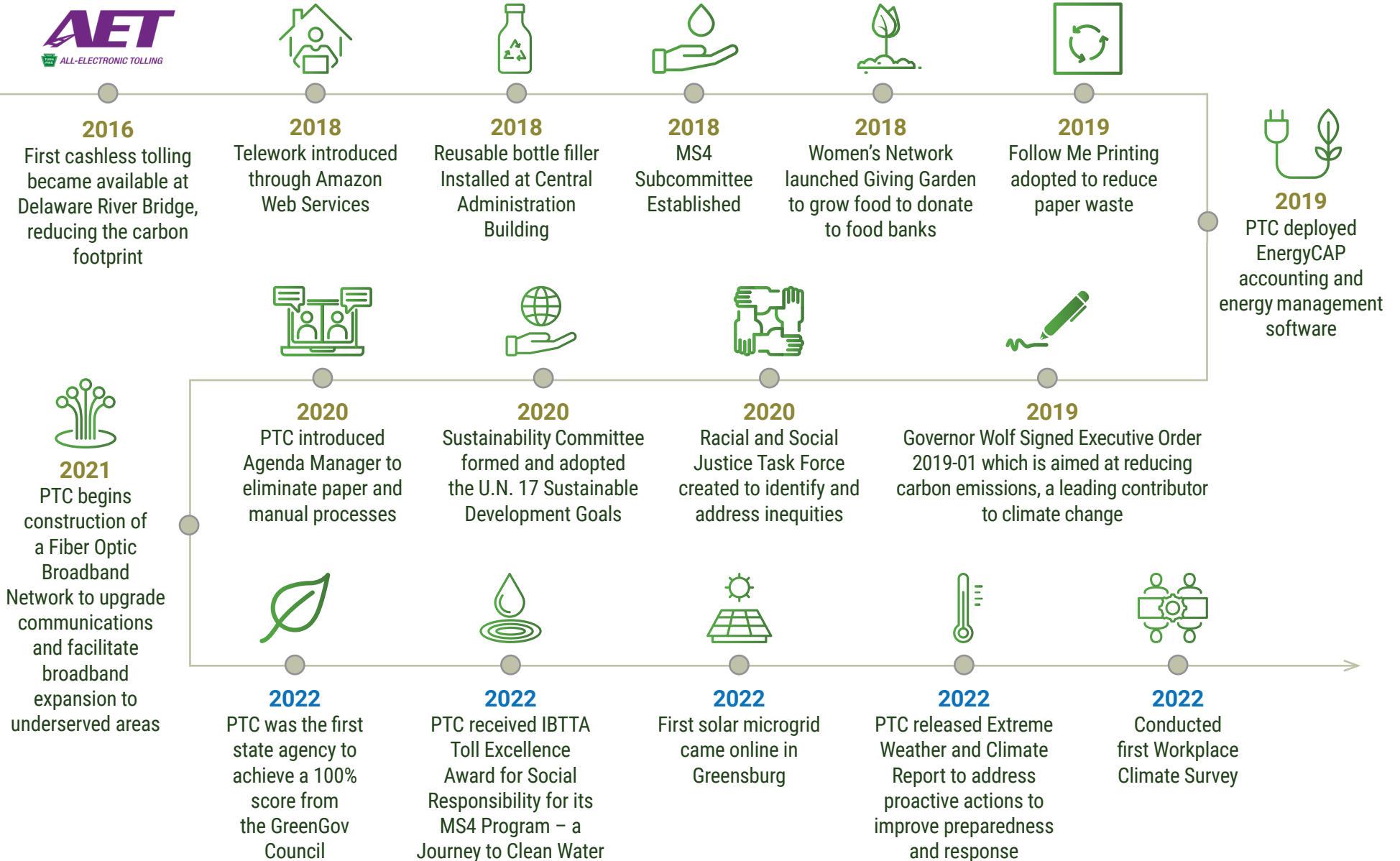
Raised for Wounded  
Warriors since 2013

# PTC's 30 Year Commitment to Sustainability

On our road to becoming America's First Sustainable Superhighway, the PTC strives to achieve a transportation system where we carefully consider our economic, environmental and social impacts in every decision. For more than 30 years, the PTC has been a leader in innovative and sustainable best practices.









## Our Commitment to Sustainability

Sustainability is an integral part of our vision and core values. That's why, in 2020, the PTC created the Sustainability Committee to build an organization-wide culture where all projects consider economic, environmental, and social impacts as identified by the [United Nations' 17 Sustainable Development Goals](#). Globally, these goals provide a shared blueprint for people and the planet, now and into the future.

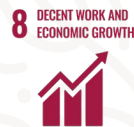
The PTC Sustainability Committee's core responsibilities include the following.

- Promotion of sustainability activities at meetings, workshops, and conferences to improve the collaborative culture within and outside the organization.
- Workforce development through specialized training and focus on other local and national sustainability initiatives.
- Establishment of core principles and goals to guide decision-making and policy development.
- Development of programmatic approaches and milestones to advance sustainability.
- Identification of funding opportunities to support the sustainability plan.

To raise awareness and collaboration with employees, a Sustainability Questionnaire has been developed to identify project highlights, including creating a Sustainability Scale to help quantify where projects are measuring today on the key pillars of sustainability. These articles are featured in the PTC's internal monthly newsletter, the *Mileposts*.

## Promoting a Culture of Innovation at the PTC

Since its creation in 2015, the Turnpike Innovation Council has fostered a collaborative environment for the rapid implementation of ready-to-deploy and beneficial innovations to efficiently deliver a high-quality transportation system. The Council has moved forward with projects that focus on safety, collaboration, sustainability, and digital delivery innovations.



During its 2022 Culture of Innovation Week, the Council hosted its Shark Tank 2.0 competition. PTC employees presented 23 ideas, including innovations for utility invoice processing, wind turbines at tunnels, recouping revenue, musical Sonic Nap Alert Pattern (SNAP) rumble strips, truck lane signage, and rechargeable batteries. The winning project – inventory barcode scanning – is being developed.

To help cut down on distracted driving, the Innovation Council has already implemented another Shark Tank project, truck-mounted attenuators (TMAs). These are dump trucks with arrow boards with a truck or trailer-mounted crash cushion affixed to the back and stationed in the travel lane ahead of active work zones.

Another dozen projects were previously developed and 10 others are under consideration.

## PTC Employees Committed to Giving Back

Sustainability isn't just about being green; it's about positively impacting the community. Throughout the year, PTC employees are committed to giving back. Here are several highlights of the PTC's community efforts.



### Statewide Employee Combined Appeal (SECA) Campaign

The State Employee Combined Appeal (SECA) is the Commonwealth's annual charitable giving campaign, through which employees may donate to any of approximately 1,000 participating non-profit agencies. This year, PTC employees raised more than \$28,000 through personal pledges and fundraisers.

### Fundraising & Collecting Supplies to Support Ukraine

When PTC employees heard of Russia's invasion of Ukraine, a grassroots effort started supporting Ukraine troops. Collection drives were held at the CAB, regional offices and field locations to provide needed medical supplies. Through the effort, three large boxes of tourniquets, wound dressings and other medical supplies were collected, and \$650 was donated to [World Central Kitchen](#).



### Fighting Hunger

To raise awareness of Hunger Action Month, employees and their families volunteered at the [Central PA Food Bank](#). The PTC also supported a virtual food drive benefiting the [Westmoreland Food Bank](#), the [Greater Pittsburgh Community Food Bank](#), and the [Harry & Jeanette Weinberg Northeast Regional Food Bank](#). PTC employees were also able to buy "Making Sustainable Attainable" t-shirts, which were made from recyclable materials. A percentage of the proceeds was donated to the Central PA Food Bank.

A group of PTC staff and their families volunteered at the Central PA Food Bank during Hunger Action Month. They are: Kathryn Hartzell, Jim Bence, Rick Dreher (and his wife Jeanine), Doreen McCall, Stacey Zimmerman (and her daughter Peyton Szekeres), Brittany Piazza (and her sister Kim Piazza-Smith and nephew Camran Smith), Pam Hess, Krupali Mody, Jeanine Emery, Kathy Brilla, Ali Sebring and Carl DeFebo.

## Women's Network is Charting the Course for Change

Since 2018, the Women's Network has empowered employees to connect, mobilize, network, and participate in mentoring activities while supporting work-life balance and career development. Over the years, it has supported the PTC's human trafficking initiative, created a giving garden to provide Harrisburg-based food banks with fresh produce, and organized programming for employees to learn about equity within the workplace, professional development, and work-life balance.



### Giving Garden

Each week, PTC staff volunteer time in the 39-by-27-foot garden at the Central Administration Building, cultivating fruits and vegetables to donate to three local food banks. PTC employees also volunteered at the [Central PA Food Bank](#) to support Hunger Action Month.

### Coffee Connections

Since March 2020, the Women's Network has hosted weekly virtual Coffee Connections with an average of 120 employees participating in each session.

### Human Trafficking

The PTC teamed up with the Pennsylvania State Police and [YWCA of Greater Harrisburg](#) to bring awareness about human trafficking. Roadway signage along the Turnpike and messaging in service-plaza restrooms to increase public education are just the beginning

### Women's Conference

The third Women's Conference was held virtually in 2022. The theme, "Accelerating Our Impact and Expanding Our Reach!", included topics on retirement planning, engaging girls and women in STEAM, learning to be an influential ally in the room, and overcoming adversity in your personal life. The sessions had 1,025 individual logins, beating last year's 966.

### STEAM Day

Nearly 80 female students from 10 central Pennsylvania high schools participated in the agency's first Science, Technology, Engineering, Arts, and Mathematics (STEAM Day) on Nov. 2, 2022. The inaugural event was hosted by the [Women's Transportation Seminar of Central PA](#), along with the PTC Women's Network and PennDOT District 8. The event was organized around National STEM/STEAM Day, celebrated annually on November 8.

The importance of STEM/STEAM education cannot be underestimated, as careers have increased by 79% since the 1990s and are projected to continue to grow by at least 13% into 2027. The students learned that the transportation industry needs accountants, marketing professionals, and information technology professionals.

The PTC's STEAM Day activities gave high school students a glimpse of the science, technology, engineering, arts and mathematics that go into making the Turnpike operate and encouraged them to consider a career in the transportation industry.

**8 out of 10 employers**  
in the U.S.



are looking for employees  
with STEM education.

Source: PEW Research Center.



## TEA Engages Employees in Community Efforts

The Turnpike Employee Association (TEA) was formed more than 25 years ago to host holiday parties and picnics and support employees. Now, the association has expanded to a much larger footprint, including fundraising for community nonprofits, and supporting local families in need.

Over the years, TEA has hosted a variety of internal and external programming. From 2013 to 2019, TEA hosted an annual golf outing to raise money for [Wounded Warriors](#) and has raised more than \$75,000 to support wounded veterans in the state. TEA has also partnered with the Salvation Army to help the Backpack Program to provide children with school supplies.

TEA is often the backbone of other PTC programming, although it may not always be obvious. The association plants a tree to memorialize a deceased colleague. It also supports other PTC programming by donating gift cards or other donations.

### Pick an Angel Program: 2000 - Present

TEA's Pick an Angel Program supports local charities including [Catholic Charities](#), the [Salvation Army of Harrisburg](#), [Shalom House](#), and [Paradise School](#). Organizations provide TEA with the names of adults and children needing help around the holidays. Tags with the recipient's name and gift suggestions are displayed on the Christmas trees at the Central Administration Building and the TIP Building. For more than 20 years, PTC employees have provided gifts for more than 100 children and adults annually.

### Toys for Tots: 2005 - Present

Since 2005, PTC employees have participated in the US Marines [Toys for Tots Program](#). The primary goal of Toys for Tots is to help bring the joy of Christmas and send a message of hope to America's less fortunate children through the gift of a new toy.

Image: The Angel Tree Program helps 100 children each year.



## PTC Hosts First Earth Week Celebration

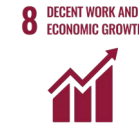
In conjunction with Earth Day on April 22, the PTC Sustainability Committee organized its first virtual weeklong celebration to bring awareness of the greener side of America's First Superhighway. Some Earth Week sessions included an overview of the PTC's green initiatives.

Employees were challenged to evaluate their purchasing and sustainability habits. Virtual events throughout the week focused on creating sustainable practices like purchasing fewer disposable, one-time-use products, creating less trash, and moving away from buying consumables in plastic.

Coming out of Earth Week, employees were encouraged to find ways to be more sustainable in their daily lives.



# Engineer Trainee Program Prepares Future Transportation Leaders



The PTC's Engineer Trainee Program offers a career path forward for recent college graduates by providing broad, practical experience in the transportation field while preparing them for a role in the agency's organizational leadership. In addition, future trainees will be able to help build the Turnpike's future roadway with innovative technologies like solar, fiber, and inductive charging.

The Engineer Trainee Program is not new. It began two decades ago and included the PTC's current Assistant Chief Engineer for Design, Kevin Scheurich in the second class of Trainees. In addition to providing great benefits and work-life balance, Scheurich saw an opportunity to advance quickly in an organization that was a leader in the transportation industry.

"It's a unique opportunity that doesn't exist anywhere else," Scheurich said. "The PTC is culture-driven and innovation-based, and if you have an idea, you can chase it. You won't get that anywhere else."

A 2016 Engineer Trainee from Penn State, Ryan Rago said one of the best aspects of the program is that trainees rotate through all divisions of the Engineering Department, including Construction, Geotech, Bridge, Roadway, Tunnels, Environmental, and Traffic Operations.

Trainees also lead their own transportation projects, including bridge rehabilitation or shoulder and roadway surface rehabilitation. Now an Engineer Project Manager, Rago said his experience allowed him to work on the I-95 interchange project.

Carlton Monster, a 2020 Trainee, said he enjoys seeing a project through from start to finish. From his experience, he observed that trainees get to manage projects quicker than private sector jobs. Now an Engineer Project Manager, Monster said he learned about the program through a career fair when he was a Penn State student.

A trainee in 2004 with Scheurich, Janielle Eby-Malick also wasn't sure what area she wanted to specialize in when she graduated from the University of Pittsburgh, which is why she found this program to be unique. Now an Engineer Project Manager, she hopes female students will be encouraged to enter the transportation field, which she admits is still male-dominated.

Tad Redinger, a Trainee in 2019, said he enjoyed the unique experience of working with construction managers and inspectors. Now an Engineer Project Manager, he said that's an opportunity you wouldn't rapidly experience in the private sector.

PTC Chief Engineer Brad Heigel encourages future applicants to consider the PTC for its opportunities, career advancement, and internal culture. The department prioritizes a more inclusive approach to its outreach through a more efficient hiring process, targeting accredited colleges and universities, attending career fairs, and promoting cross-training opportunities.

To learn more about the Engineer Trainee Program, visit <https://careers.paturnpike.com>.



# PTC Prioritizes Extreme Weather and Climate Resiliency



The PTC has undertaken a comprehensive assessment of its internal planning, operations, and best management practices related to extreme weather events such as floods, blizzards, hurricanes, and heat waves. Its [Extreme Weather and Climate Resiliency Report](#) captures the impact of extreme weather and describes current and future weather mitigation strategies. The PTC evaluated the most effective strategies to address and prepare for extreme weather events.

According to the United Nations, climate change refers to long-term shifts in temperatures and weather patterns. The Earth is now about 1.1°C (1.98°F) warmer than in the late 1800s, with the last decade (2011-2020) being the warmest on record.

One of the consequences of a warming world is an increase in the intensity and frequency of extreme weather events.

In late 2016, the PTC conducted a Weather Management Study to assess current weather information systems and data needs comprehensively. The efforts included reviewing information and resources used by other peer agencies and making recommendations for streamlining current systems to improve and aid decision-making.

In addition, the PTC developed and regularly updates its *Weather Event Management Playbook* to provide a consistent approach to weather events and to

identify Department roles and responsibilities. These procedures focus on pre-event planning and during-event communication protocols to ensure flexibility to adapt to changing conditions. The Playbook includes Department-specific checklists that guide strategy implementation and communication steps based on weather event, severity, and type.

More intense and frequent extreme weather events are projected in a changing climate and can pose serious challenges for transportation agencies. The PTC is committed to creating a resilient system by proactively incorporating extreme weather events into its transportation planning strategies.

Much of the information gathered in the *Extreme Weather and Climate Resiliency Report* was obtained through these PTC departments and supporting agencies.

- Engineering – Construction
- Engineering – Design
- Engineering – Facilities & Energy Management Operations
- Information Technology
- Maintenance
- Toll Collection Operations
- Traffic Engineering & Operations
- Pennsylvania State Police (Troop T)

Click here  
[TO VIEW THE FULL REPORT](#)



**EXTREME WEATHER AND CLIMATE RESILIENCY**

at the PA Turnpike Commission

2022 HIGHLIGHT REPORT

# The Southern Beltway: A Sustainable Roadway

In October 2021, the Southern Beltway (PA Turnpike 576) opened to traffic and stretches from I-376 at the Pittsburgh International Airport to I-79 near the Allegheny/Washington County line. The Southern Beltway connects the dots between an economic corridor boosting growth in the region and how incorporating sustainable practices saves time and money.



## Boosting the Economy

The Southern Beltway is a new economic corridor linking three employment centers, and connects the region's energy companies predominately in Southpointe; Pittsburgh International Airport's Neighborhood 91's first-in-the-world additive manufacturing ecosystem; and Shell Appalachia Ethane Cracker plant. The Beltway, part of a 52-mile-long corridor covering 23 municipalities, has also been branded the 'Energy Commerce & Innovation Corridor' by the Pittsburgh Airport Area Chamber of Commerce.

The contracts awarded for the project had an immediate economic impact on the region with contractors and workers. This was most influenced by purchasing materials needed for construction and services like gas, food, and office equipment.

## Innovation and Infrastructure

Innovative construction for the Southern Beltway included incorporating future widening needs to minimize costs and effort. The width was added between the overhead bridge abutments, drainage was placed, and an offset from the roadway was added to allow for lane additions. All the bridges' substructures (abutments and piers) have an extra pedestal to accommodate an additional girder.

For the first time, the PTC used long-life pavement which reduces maintenance and rehabilitation work and fewer traffic disruptions and work zones, which increases safety and reduces life-cycle costs as the concrete has a projected service life of 30 to 60 years.

The new state-of-the-art maintenance facility, located in Cecil and South Fayette townships, incorporated energy efficiency measures, including LED lighting and controls, building automation and scheduling, and equipment setback and run-time optimization. A highly efficient HVAC system with ground source heat pumps was installed, and high-speed garage doors were used to minimize how long the doors are open during cold weather to preserve inside heat. In addition, the building has a rain harvesting system to collect and store rainwater to be reused for washing vehicles and equipment. These measures reduce the facility's operating costs, energy usage, and carbon footprint.





# Sideling Hill Trailhead Project Aims to Make the Turnpike a Destination

*The PTC has focused on making the Turnpike a destination, not just a journey.*

At the Sideling Hill Service Plaza, the PTC will build a trailhead and several other amenities connecting to a biking trail that leads to abandoned tunnels. The Sideling Hill and Rays Hill tunnels once carried traffic along the highway in Bedford and Fulton counties before the Turnpike built a bypass to accommodate increasing traffic volumes.

Recently, the tunnel and surrounding trails, which the PTC sold to the Bedford Fulton Joint Recreation Authority, have become a popular attraction for bicyclists and pedestrians to explore and enjoy the outdoors. The PTC is already expanding parking and saw this area as an opportunity to create a

community connection, support sustainability efforts, and provide a unique feature to Turnpike customers. The trailhead amenities include areas around the plaza with additional hardscaping, landscaping, signs, and an upgraded center walkway.

The project's first phase started in the fall of 2021 and came to fruition in early 2022. For the pilot project, the PTC created an improved walkway from the trailhead parking area to the Service Plaza, making the amenities of the plaza available to anyone utilizing the trails. Even better, Turnpike travelers now have a direct way to reach the nearby trails to enjoy a breath of fresh air. The walkway is

now ADA-compliant and has permeable surfaces to help with rainwater runoff.

The next phase will include the installation of EV car and bike charging stations. Solar panels are also expected to be installed on the pavilion roof to power the charging stations. RV amenities like water hook-ups are also on the list of upcoming features. The project is expected to be completed in 2025.

Additionally, the Turnpike owns a 66-acre parcel near the tunnel that the team is considering converting into mountain-biking trails.

3 GOOD HEALTH AND WELL-BEING



4 QUALITY EDUCATION



8 DECENT WORK AND ECONOMIC GROWTH



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



10 REDUCED INEQUALITIES



17 PARTNERSHIPS FOR THE GOALS



Click here

The abandoned Sideling Hill tunnel is on the [PA Bucket List](#) of places to explore.



# DIRT Application Automates Erosion and Sedimentation Control Inspections

*An innovative tool launched by the PTC allows its staff to conduct visual site inspections of construction projects along the Turnpike more efficiently.*

The new Documentation Inspection Reporting Technology (DIRT) application was created to help the PTC comply with state and federal erosion and sediment controls and best management practices (BMPs) required for stormwater management and associated permits.

PTC inspectors, construction managers, and quality assurance teams recorded their findings on paper for years. They returned them to the office, where the construction staff reviewed and approved them before scanning and uploading them into a quality assurance database. Today, more than 180 DIRT users are more responsive to assessments required by the PA Department of Environmental Protection (DEP) and the US Environmental Protection Agency (EPA). This change is expected to save the PTC 2,300 hours of staff time and \$204,300 each year.

A new DIRT profile is automatically created for new projects entered into the system, saving time and eliminating duplication by creating profiles linking all data. Projects and BMPs are monitored more closely with automated alert systems. They notify staff of project inspection needs and include an escalation system of alerts so that deficiencies are addressed promptly to comply with project permits. This provides more resiliency for the PTC by incorporating more checks and balances and ensuring that the work is completed in compliance with DEP and the EPA requirements.

DIRT provides summary reports for the EPA and the DEP on inspections and the corrective actions taken without requiring manual reporting. Most importantly, if a deficiency in an inspection is identified, it is automatically emailed to the contractor so that the construction manager and contractor can coordinate corrective action for the BMP more responsively.

*DIRT is expected to save 2,300 hours of staff time and provide \$204,300 in cost savings each year.*

6 CLEAN WATER AND SANITATION



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



13 CLIMATE ACTION



14 LIFE BELOW WATER



# Powering Ahead with Solar

7 AFFORDABLE AND CLEAN ENERGY



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



17 PARTNERSHIPS FOR THE GOALS



Renewable energy, specifically solar power, is critical to the PTC's sustainability plan. Moving away from traditional power sources to solar reduces greenhouse gas emissions and helps lower energy bills over the project's lifetime.

## Solar Microgrid

This year, the PTC's first solar microgrid came online in Westmoreland County. The solar and natural gas-powered microgrid supplies energy to the Greensburg Maintenance Facility campus. The microgrid is also connected to the utility grid allowing excess power to be sold to First Energy, creating an additional revenue source for the PTC.

The microgrid is expected to save approximately \$450,000 annually in utility costs.

The microgrid also taps into the natural gas underground, allowing for the generator's continuous running. It will power the Greensburg Maintenance Facility and the new District 1 Trades Building.

This energy-independent microgrid is the first of its kind in the tolling industry. The Greensburg microgrid pilot project allowed the PTC team to collaborate with utility companies and the Pennsylvania Utility Commission to achieve success. The excess power will be expected to pay for the trades building and microgrid in four to seven years.

The PTC has already started construction and development for two additional microgrids and plans to identify more opportunities in the coming years.

## Powering Our Facilities

When the PTC Facilities team knew it was time to replace the roof at the Central Administration Building (CAB) in Middletown, they saw an opportunity to invest in renewable energy. The design includes several electric vehicle charging stations for employees to charge their cars while working.

The CAB energy costs are among the highest in the Turnpike system. By offsetting costs with solar, the PTC will save money by avoiding electricity surge pricing. The team can efficiently work solar into the plans by piggybacking off the existing roof replacement project.

In the western part of the state, the PTC plans to install a solar field – a grouping of photovoltaic solar panels– to power maintenance and office buildings in the short term. Earlier this year, the Turnpike trades crew created a portable solar-powered generator for operating gate access. It's mounted on a trailer so it can be hauled from one location to another. It has solar panels mounted on a pivot system on top that charge a bank of batteries affixed to the trailer.

The first solar microgrid came online in Greensburg this year.



# Pilot Pollinator Habitat Project is All the Buzz

13 CLIMATE ACTION



15 LIFE ON LAND



17 PARTNERSHIPS FOR THE GOALS



The PTC has launched an innovative Pilot Pollinator Habitat Project at the Central Administration Building. It will replace several grassy areas with a mix of native plants that attract and provide a habitat for pollinating insects like bees and butterflies. Almost 90% of all plant species need the assistance of animals to transfer pollen, such as bees, butterflies, moths, beetles, flies, wasps, hummingbirds, and small mammals. These insects travel from flower to flower, gathering pollen from the blooms. As they do, they transfer it to other plants – providing a sort of "service in kind" to help them reproduce.


Conventional roadside management practices of days past included frequent mowing and the extensive use of herbicide which were costly and contributed to an increased potential for runoff contamination. In recent years, the PTC has moved to Integrated Roadside Vegetation Management (IRVM), an ecological-based maintenance approach that includes cost-effective, environmentally safe management alternatives. IRVM techniques restore native and natural habitats; filter pollution, reduce erosion, and improve ecosystem diversity along the PTC's vegetated roadsides.

With hundreds of miles of vegetated rights-of-way next to the Turnpike, the PTC can make a difference in declining pollinator populations by reestablishing pollinator habitats along the roadways, within interchanges, and adjacent to buildings and service plazas.

The PTC has chosen five pilot project locations systemwide to test different seed mixes at varying rates in separate regions and conditions as well as maintenance and management practices. In 2022, two pilot project sites were seeded and monitored for year one of growth at the Central Administration Building and Hickory Run Service Plaza. As flowers began to bloom, hundreds of pollinators were busy at work in areas that were previously maintained lawns, devoid of insect activity. In the late fall, the plots were mowed leaving stems about a foot tall and thatch covering the ground to provide an overwintering habitat.

Similar pollinator-plant seeds will be planted at the Hickory Run Service Plaza soon, and next year will be expanded to the US Route 1 connector, the Irwin Interchange, and the Harrisburg East Interchange. It may take a few years before the new plantings are fully grown, and most of these will be a mixture of native plants that are more attractive to pollinating insects. At the CAB, three different seed mixes are being tested in other patches of ground.

Following an additional year or two of observations at the initial two sites and three more seeded and monitored sites, PTC will develop a pollinator habitat policy and guidance, driven by the results of the five pilot projects.



**Native bees contribute at least \$3 billion of crop pollination annually to the US economy.**

Image: Pollinator Garden at the CAB

# Fiber Optic Broadband Network Will Enhance Communications Efforts, Improve Safety



The PTC is constructing a large-scale Fiber Optic Broadband Network to increase bandwidth for connectivity between buildings, tolling points, devices, and other advanced telecommunications applications for improved customer safety and mobility. The high-speed fiber optic network will also allow the PTC to upgrade its communications capacity, prepare for smart safety and mobility technology and facilitate the extension of broadband to underserved areas.

The project includes:

- 500 miles of fiber optic cable;
- Micro-trenching in the shoulder to minimize impact to the environment;
- High-speed data and fiber optic networks along the Turnpike; and
- Extra fiber for future revenue generation opportunities.

The 220-mile Eastern Network includes the Mainline Turnpike from Harrisburg to the New Jersey border as well as the Northeast Extension. The Mainline section of the Eastern Network is planned for completion in the first quarter of 2023 and the Northeast section will follow in fall of 2023. The 275-mile Western Network, from Harrisburg to the Ohio border, is planned for completion by 2026. It includes the Amos K. Hutchinson Bypass (PA 66) and Beaver Valley Expressway (I-376).

Fiber was installed during the construction of the Southern Beltway expansion project, which opened in October 2021. The 13-mile section of the Southern Beltway between U.S. Route 22 and Interstate 79 connects to the existing six-mile beltway section known as the Findlay Connector. The Southern Beltway leads to I-79 at the Allegheny-Washington County line.

The state-of-the-art system will also accommodate future needs including open road tolling and infrastructure supporting connected and automated vehicles.

## Connecting Communities

The fiber project also extends broadband to help close the digital divide in underserved areas as the Turnpike traverses rural areas that are significantly underserved with either no or limited internet access. Historically, telecommunications companies have not extended broadband to these areas because it needed to be more profitable based on the limited number of customers and the distance from existing infrastructure.

The extra fiber capacity makes the bandwidth available to internet and telecom network providers, cable multiple-system operators, municipalities and educational institutions and area businesses that want to expand their service areas and customer reach with more direct, low-latency routes across Pennsylvania.

## Improving Sustainability

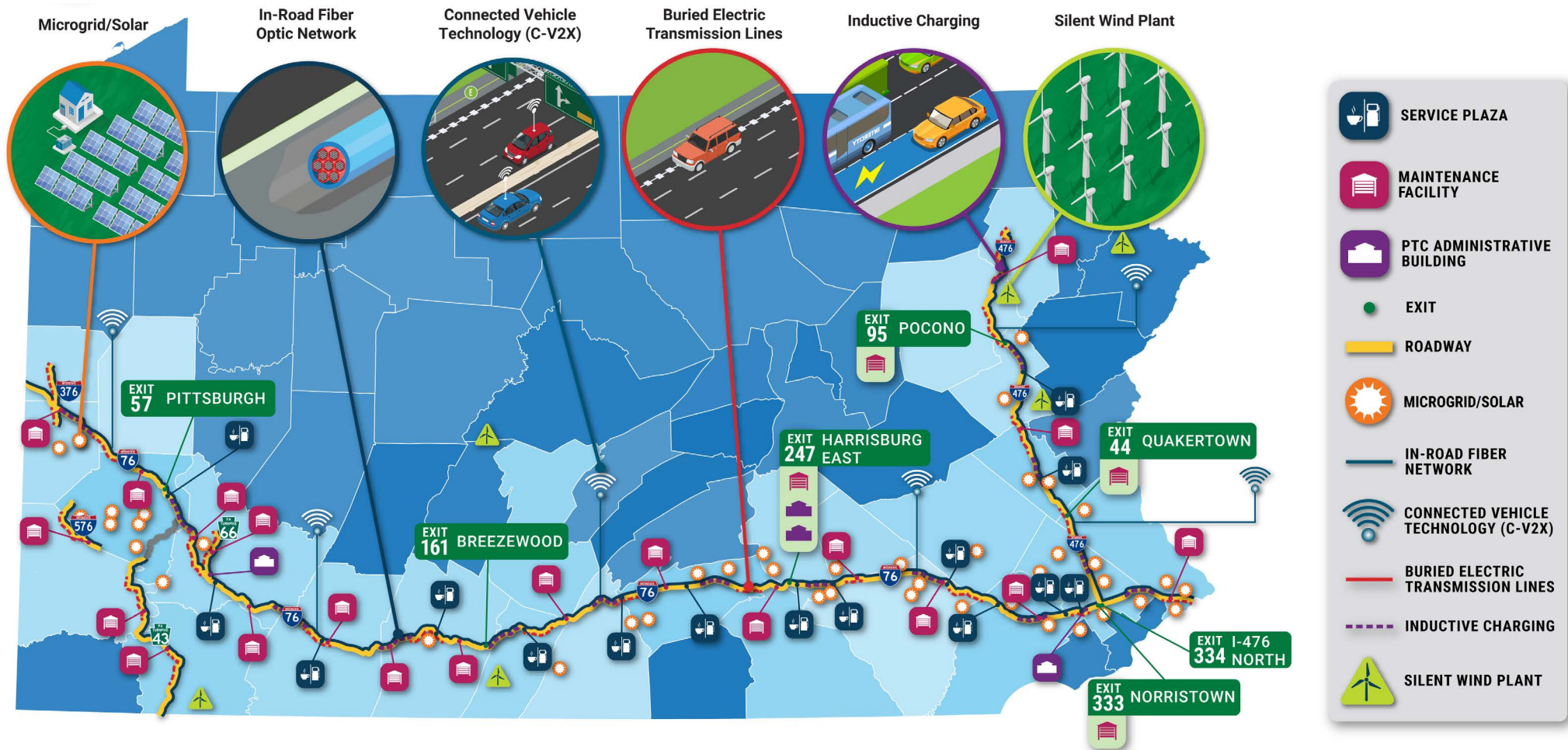
A less-talked-about benefit of fiber is its limited impact on the environment compared to other internet types. Fiber uses less energy than cable internet. Fiber cables are made from sustainable materials like silicon dioxide, rather than copper wires, which have a longer lifespan.

Because fiber is also highly durable, it is less likely to be affected by severe weather compared to satellite, DSL, or cable. Therefore, it requires fewer repairs and updates to the network.



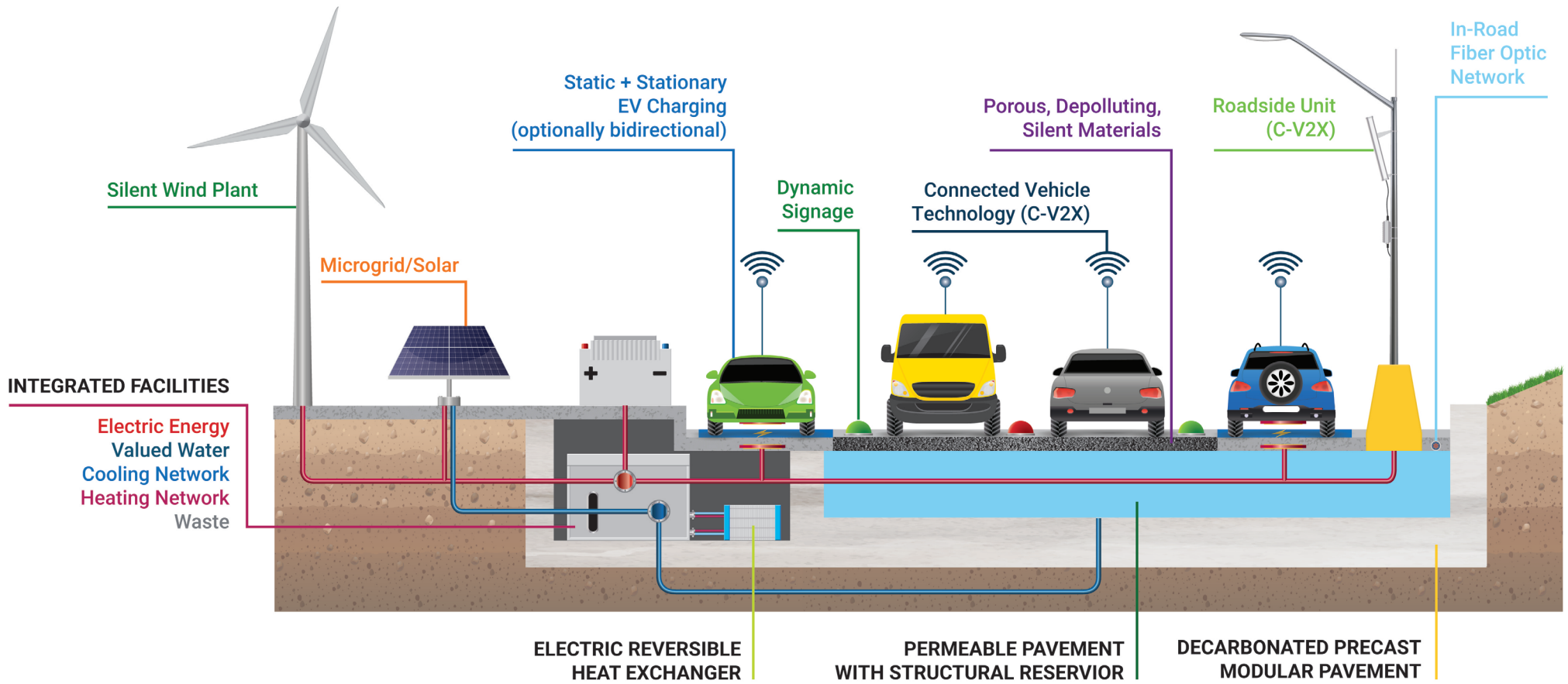
# Driving into a Greener Future

Our future roadway depends on the sustainable work that is done today.



Over the next two decades, the PTC will integrate solar, fiber, inductive charging, connected vehicle technology, buried electric transmission lines, and other innovation to give its users a complete customer experience by increasing mobility and traffic flow, reducing congestion, and decreasing the carbon footprint.

Click here to view a series of maps that create the vision for a [sustainable roadway](#) by 2040.

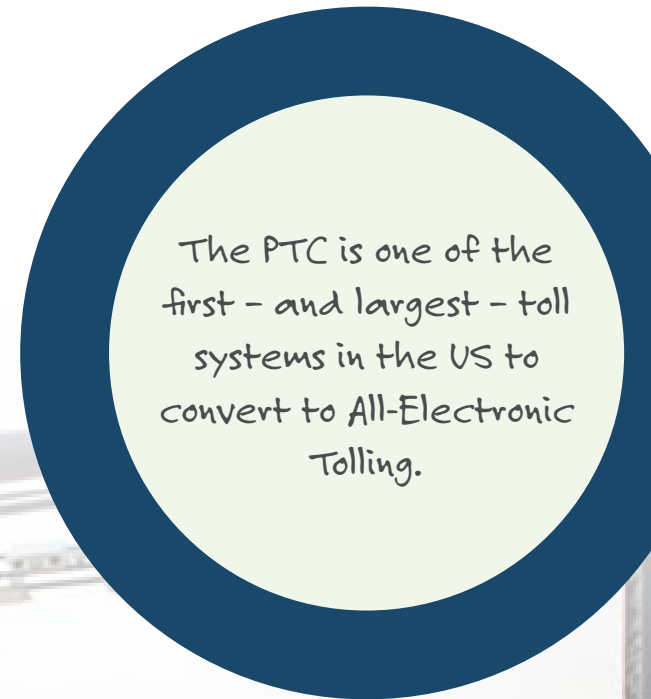


# Paving the Way for Open Road Tolling

Over the next few years, the PTC will make further enhancements by removing the interchanges for an Open Road Tolling (ORT) conversion by the end of 2026. The conversion to ORT is expected to save the PTC \$1 billion over the next 40 years by not having to rebuild interchanges, toll plazas, and toll buildings.

In March 2020, the PTC pivoted from accepting cash payments for tolls to the AET In Place system, using the current tolling equipment and toll booths that allow traffic to cruise through tolling locations at 10 to 25 miles per hour instead of stopping for cash payments.

Moving forward, the advanced ORT system will consist of overhead gantries at convenient points between each interchange. The gantries will support scanners and cameras along with telecommunications equipment.





# Open Road Tolling

## Customer-Driven

Customers – including commuters, tourists, and trucker drivers – pay to use the Turnpike because it is an efficient road with fewer traffic stops. The customer-driven conversion to ORT will reduce congestion, noise, and travel times while maintaining the PTC's commitment to sustainable transportation practices.

Truck drivers will also have an improved customer experience. By switching to an axle and height-based charging system, truck drivers can calculate their tolls before they travel – eliminating the guesswork in their travel costs previously calculated by height and weight measurements.

ORT will also allow the PTC to build new access points at a fraction of the cost of an interchange, connecting communities across the Commonwealth.

## Improving the Carbon Footprint

Toll operations at the PTC toll plazas are a key area for reducing greenhouse gas emissions (CO<sub>2</sub>) along the Turnpike. Toll plazas are where most traffic congestion and bottlenecks happen and where most greenhouse gases are released.

By using the Federal Highway Administration's (FHWA) Congestion Mitigation and Air Quality Improvement emissions toolkit, the conversion of the PTC's systems from full stop tolling operations to AET In Place operations led to systemwide savings of up to 45% of CO<sub>2</sub> emissions, or approximately 65 tons of CO<sub>2</sub> emissions per year. The planned transition to ORT by 2030 is anticipated to further reduce CO<sub>2</sub> emissions by another 7%, or about 11 tons of CO<sub>2</sub> emissions per year.

In addition to reductions through the move to ORT, roadway and facility infrastructure maintenance can also help further reduce future CO<sub>2</sub> emissions throughout the toll system, as all tolling structures at interchanges will be removed and converted to a smooth traditional highway ramp.

*AET In Place operations led to systemwide savings of up to 45% of CO<sub>2</sub> emissions, or approximately 65 tons of CO<sub>2</sub> emissions per year.*

# The Road to Wireless Charging

Electric vehicles (EVs) are becoming one of the solutions for sustainable transportation. By 2040, electric cars could make up 57% of all passenger car sales worldwide.\*

Since 2005, the PTC has been involved in efforts to support and deploy environmentally friendly vehicles. To support the demand, 63 EV charging stations at service plazas across the Turnpike.

To address motorists' anticipated surge in EV usage and maintain its commitment to creating a sustainable roadway by 2040, the PTC is piloting inductive or wireless charging. Using coils embedded in the pavement, inductive charging creates a magnetic field that can be picked up by a receiver installed on electric vehicles. The ability to charge on the go makes inductive charging ideal for long-range trips, especially for truck drivers and tourists. It will also improve the experience for drivers with disabilities.

The PTC wants to improve its operational efficiency. That's why in 2024, the agency will begin using inductive charging for several fleet vehicles housed at the Central Administration Building. With more than 700 fleet vehicles, inductive charging allows smaller batteries to be used since they hold less charge, making EVs lighter and less expensive. Stationary inductive charging is also available, allowing drivers to park in the designated inductive charging spots without the need to plug in. For years, bus companies have been using inductive charging to power vehicle fleets.

The PTC will integrate inductive charging into small sections of the new Mon-Fayette Expressway project,

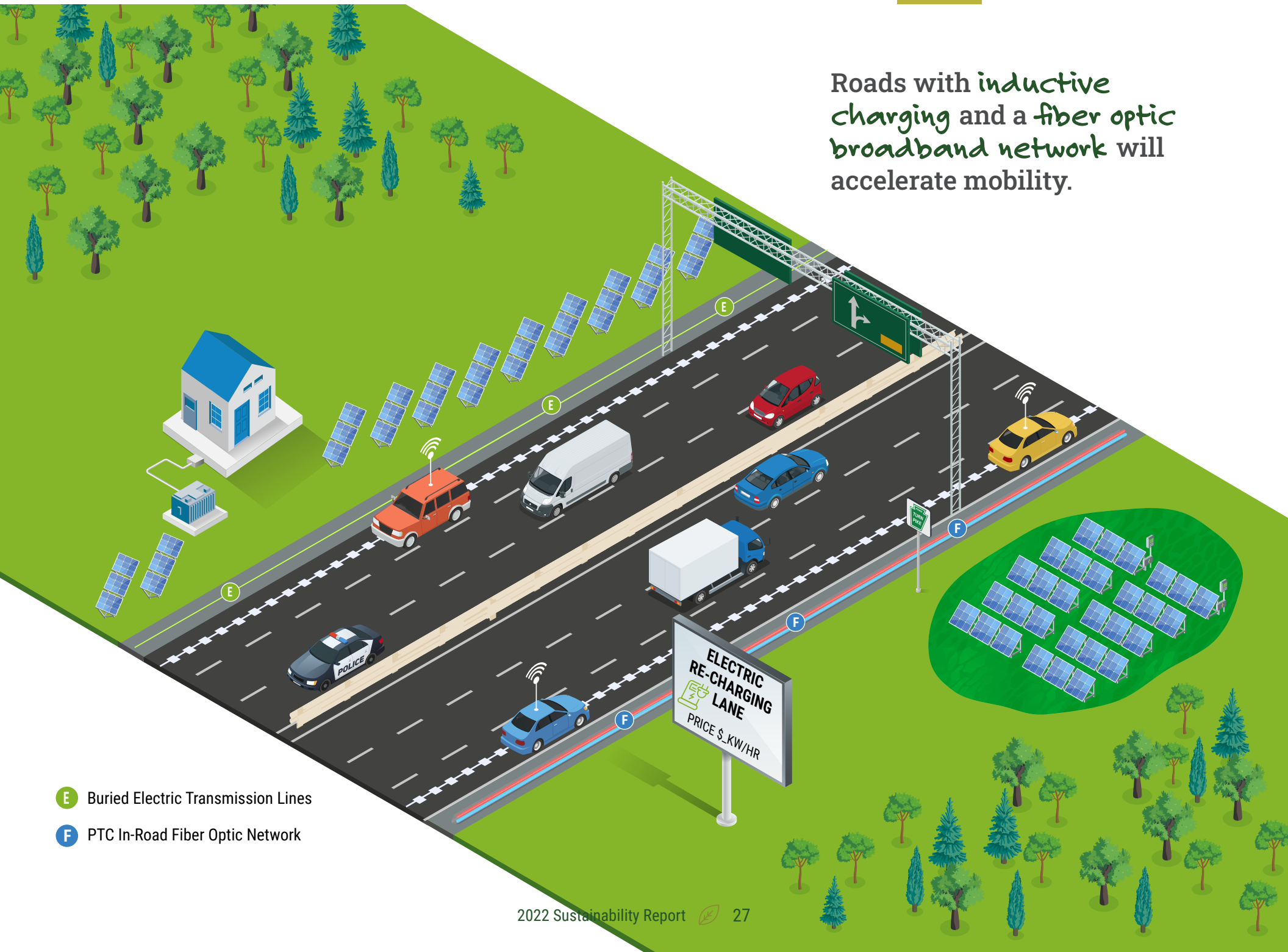
which is expected to occur between 2028 and 2030. While there are many inductive charging pilots across the US and world, the PTC pilot is different in that it demonstrates the technology and also showcases the utilization of multiple systems that create a sustainable transportation future.

In the future, the Turnpike would like to use its own solar-generated power from maintenance facilities and service plazas to charge the roadway. These are part of the enhancements to give its customers a more efficient driving experience with fewer traffic stops while reaching sustainability goals.



\* Source: BloombergNEF

Roads with inductive charging and a fiber optic broadband network will accelerate mobility.



**E** Buried Electric Transmission Lines

**F** PTC In-Road Fiber Optic Network

# Roadway of the Future

The Turnpike was the first long-distance limited-access road in the US. When it opened to the public on October 1, 1940, it was touted as America's First Superhighway, leading to the construction of other toll roads. For over 80 years, it has also been a national superhighway design and engineering leader.

Today, the Turnpike aims to become America's First **Sustainable** Superhighway by 2040 by using greener and more innovative approaches to building and maintaining its roadways. A sustainable system includes access, mobility, movement of goods, safety, and reduced traffic congestion.





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# **SUSTAINABILITY**

**AT THE  
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