



The EMS Funding Challenge for State Highway 376

Shihan Shen
Jackie Wu
Chris Strehl

Agenda

- **Introduction**
- **Policy Analysis**
 - **System Analysis**
 - **Comparative Analysis**
 - **Pittsburgh's Specific Circumstances**
- **Real world data analysis of Monroeville**
- **Results, Opportunity & Limitations, Suggestions**

Introduction

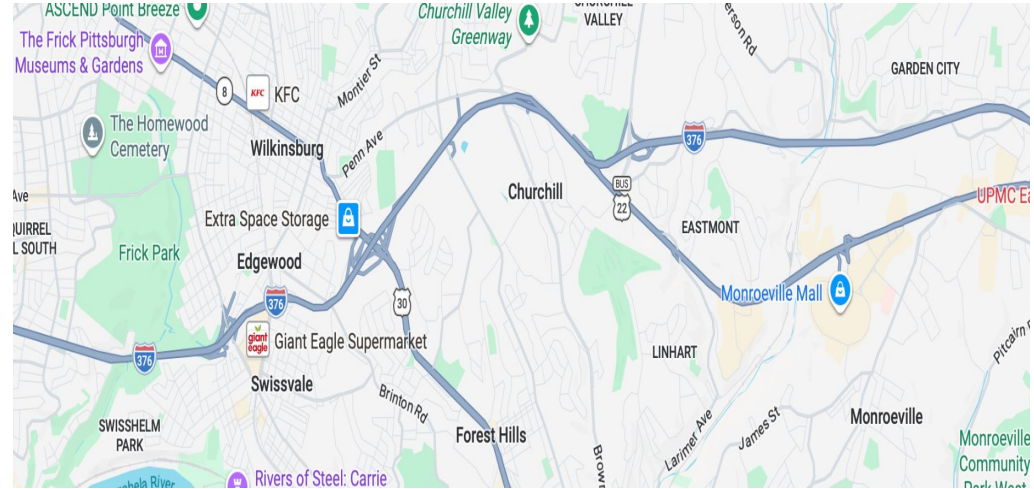


Introduction of CONNECT

- **CONNECT** – a nonprofit organization
- Supports collaboration among more than 40 member municipalities in Allegheny County on infrastructure, wellbeing, and resilience.
- SWPA Hub helps municipalities and community organizations across a 12-county region design and implement sustainable economic development projects.

Study Area: State Highway 376 from Squirrel Hill to Monroeville

- **Churchill**
- **Monroeville**
- **Wilkins Twp**
- **Swissvale**
- **Edgewood**
- **Penn Hills**



Problem statement: EMS Providers Lack of Funding

- Many municipalities rely on volunteer EMS providers that face serious funding shortages.

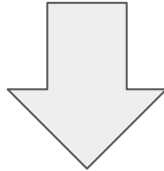
Goal:

- Produce a research report that can convince government agencies and funding organizations to provide more financial support for EMS services.

Policy Analysis

Summary: System Analysis

- Financial pressure
- Workforce shortage
- Fragmented governance



How to sustain EMS services under increasing financial and workforce pressures?



Pittsburgh's Specific Circumstances

Context for Funding Gap

Funding Context: Why Gap Still Exists

- Annual grants exist (federal and state support to EMS agencies)
- Grants are limited, short-term, and often restricted in use
- Core EMS costs are ongoing (staff, equipment, operations)

Supporting Evidence

- FEMA AFG program focuses on capacity building, not full operational funding
- National EMS reports highlight fragmented and insufficient funding structures
- Case evidence shows insurance + local funding + grants still fail to cover costs

Key Insight

- **Grants help, but they do not cover the full cost of EMS services.**

Grants awarded to area first responders

State Rep. Brandon Marko, D-Monroeville, announced nearly \$242,000 in grants to 17 fire and EMS companies serving the 25th Legislative District.

The funding, awarded by the Office of the State Fire Commissioner through the Fire Company and Emergency Medical Services Grant Program, will support first responders' operations and emergency response capabilities.

Among the local entities receiving grants are:

- Monroeville EMS Inc., \$15,000
- Eastern Area Prehospital Service, \$15,000
- Monroeville Fire Company No. 6, \$14,487
- Monroeville Vol Fire Company No. 5, \$15,930
- Monroeville Volunteer Fire Company No. 4, \$16,136
- Monroeville Volunteer Fire Company No. 3, \$12,426
- Monroeville Volunteer Fire Company No. 1, \$16,136
- Turtle Creek Volunteer Fire

Context for Declining Volunteers

Interviews with Dr. Bialy, a physician at UPMC Shadyside
& Survey of Pennsylvania Emergency Medical Services Agencies:

1. Financial Barriers

- Volunteers receive **limited or no compensation** (44–61% agencies in PA report budget deficits; 43% volunteer-based, only 18% fully paid)
- Difficult to sustain participation alongside jobs or studies (More providers leaving than joining)

2. Rising EMS Demand

- EMS call volumes are **increasing over time**
- Harder for volunteers to:
 - Take shifts
 - Respond quickly

3. Increasing Training Burden

- Required training hours increased (~50 → ~100 hours)
- Applies to all volunteers regardless of background

Context for I-376 Traffic Problem

1. Traffic congestion

Traffic volume: 100,000+ vehicles drive through the interchange in front of the Squirrel Hill Tunnel each day.

(<https://www.511pa.com/>)

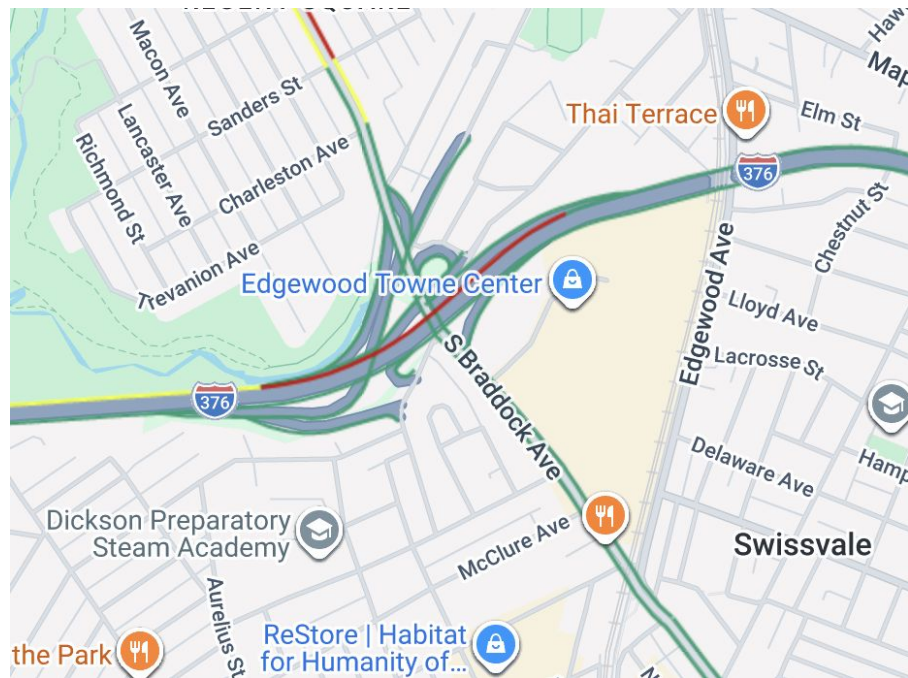
Congestion → sudden braking → chain collisions → EMS calls

2. High-Frequency Incidents

- Regular **multi-vehicle crashes**
- Includes **injury and fatal incidents**

I-376 functions as a cross-jurisdictional emergency hotspot,

concentrating EMS demand along a single corridor



Recommendation Analysis

1. Pennsylvania Context (Upper Dauphin Case)

- Municipalities must ensure EMS, but no mandated funding mechanism
- Insurance reimbursement < operating cost
- Multi-municipality service, but fragmented funding

2. Funding Models (Cross-State Comparison)

- Dedicated EMS Tax
- Inter-Municipal Cost Sharing
- State EMS Subsidies
- Hybrid Model (Most common)

3. Workforce Solutions (Cross-Region Comparison)

- Mixed Career + Volunteer Model
- Regional Workforce Sharing
- Training & Incentive Programs
- Hybrid Staffing Model

Key Policy Insight

- Sustainable EMS requires:
 - **Stable funding + diversified revenue**
 - **Regional coordination + hybrid workforce**
- Single-source funding or purely volunteer models are not sufficient

Recommendations for 376 in Pittsburgh

Hybrid Funding Model (Finance)

- **Targeted Corridor Subsidy (State-level)**
 - additional operational funding for I-376 EMS responses beyond annual grants
 - reducing restrictions on how grant funds can be used
- **Regional Cost-Sharing Mechanism**
 - municipalities along I-376 jointly fund corridor EMS services
 - align funding with shared demand

Hybrid Workforce Model (People)

- **Direct Financial Incentives for Volunteers**
 - per-shift stipend or per-response payment
 - tax credits or tuition support
- **Paid Core + Volunteer Support Model**
 - small group of paid EMS staff ensures baseline coverage
 - volunteers supplement peak demand



Real World Data Analysis of Monroeville

Midterm

- Proportional framework
- Problems with EMS not being representative of true cost

Monroeville Emergency Response Costs

Monroeville was selected as the initial case study municipality due to several factors.

- Located directly along **I-376 Parkway East**
- Regular emergency response activity along the corridor
- Detailed Data relatively available, specifically total calls for each emergency service
- Detailed municipal financial data available through **budget documents**
- Provides a **replicable example for estimating costs in other corridor municipalities**

This case study demonstrates how the framework can be applied using **real municipal data**.



Data Sources

Municipal Financial Data

- **Monroeville 2025 Budget (2024 actual budget results)**

Emergency Response Data

- EMS, Fire, & Police I-376 emergency response data provided by Monroeville Municipality thanks to CONNECT, focusing on 2024 data
- Overall 2024 monthly EMS, Fire, & Police incident volume data

I-376 Corridor Incident

Record List - Total:217

POLICE

[Data provided by Monroeville
Municipality and CONNECT]

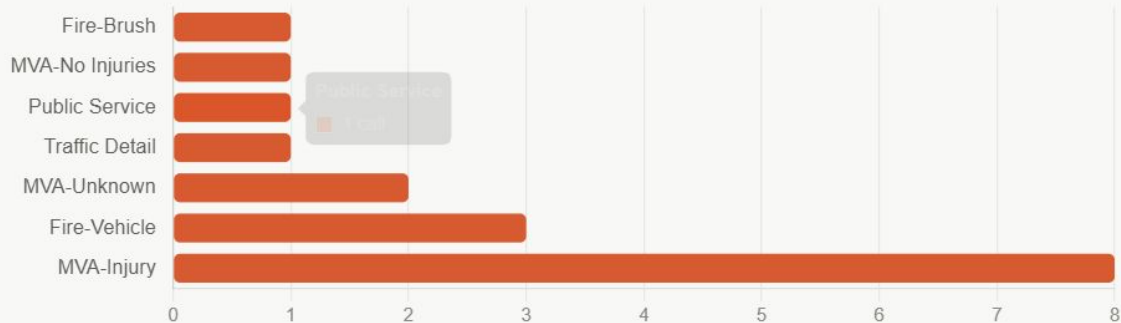
Total EMS, Fire, & Police:

2024: 80

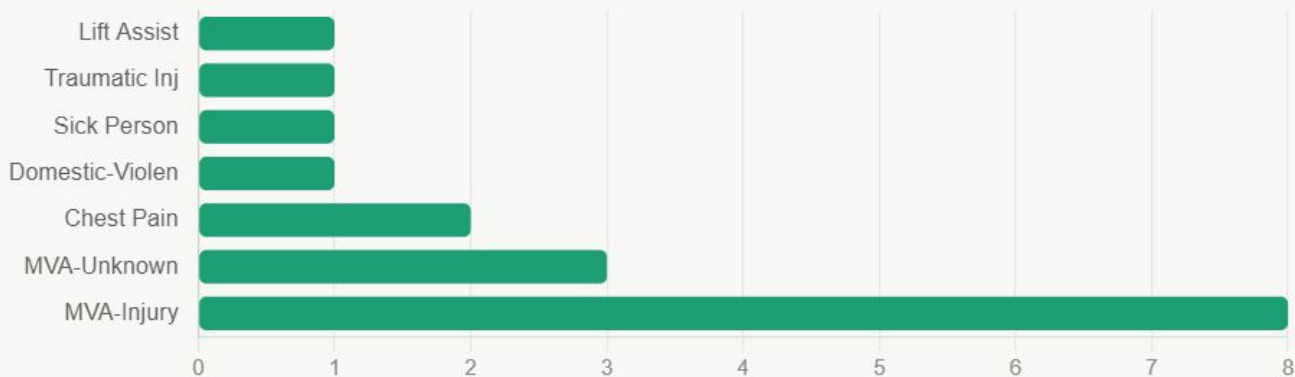
CallID	When Reported	Typ	Nature	P	Location	Cty
23-007955	11:06:38	03/30/23 I	Traffic Stop	4	PARKWAY/ PENN HILLS EXIT	
23-008581	01:30:52	04/05/23 I	Traffic Stop	4	PARKWAY	
23-010528	00:11:26	04/25/23 I	Traffic Stop	4	PARKWAY ON RAMP WB/ AVIS	
23-013285	20:51:33	05/22/23 I	Traffic Stop	4	4290 OLD WILLIAM PENN HWY; PARKWAY OFFICE BLDG	MON
23-013636	10:19:47	05/26/23 I	MVA-Injury	1	PARKWAY 84.0 MM WB	MON
23-014069	00:28:31	05/31/23 I	Traffic Stop	4	PARKWAY RAMP/ 22 WB	
23-014394	00:54:42	06/03/23 I	Agency Assist	7	PARKWAY 84.0 MM EB	MON
23-014932	10:06:13	06/08/23 I	Pursuit	1	PARKWAY 82.5 MM WB	MON
23-015020	10:24:08	06/09/23 I	Traffic Stop	4	PARKWAY 82.5 MM WB	MON
23-015088	21:26:02	06/09/23 I	Traffic Stop	4	PARKWAY 820 MM WB	
23-016714	10:12:18	06/27/23 I	Alarm-Panic Com	1	274 CENTER RD; PARKWAY EURO	MON
23-017216	23:26:08	07/01/23 I	Traffic Stop	4	PARKWAY ON RAMP/ 48NB	
23-018003	03:43:50	07/10/23 I	Traffic Hazard	3	PARKWAY 83.0 MM EB	MON
23-019419	08:13:40	07/23/23 I	Traffic Stop	4	PARKWAY 83.0 MM WB	MON
23-019826	02:01:06	07/27/23 I	Traffic Stop	4	GARDEN CITY DR & PARKWAY OVERPASS	
23-021465	15:55:43	08/11/23 I	Traffic Stop	4	PARKWAY 84.5 MM WB	MON
23-021472	16:33:09	08/11/23 I	Traffic Stop	4	PARKWAY 84.5 MM WB	MON
23-021484	17:45:02	08/11/23 I	Traffic Stop	4	PARKWAY 84.5 MM EB	MON
23-021620	07:45:52	08/12/23 I	Agency Assist	7	PARKWAY 82.0 MM EB	MON
23-021767	02:07:29	08/13/23 I	Extra Patrols	8	339 OLD HAYMAKER RD; PARKWAY BUILDING	MON
23-021782	02:30:49	08/13/23 I	Extra Patrols	8	PARKWAY SHOPPING CENTER	
23-022079	01:28:03	08/15/23 I	Extra Patrols	8	PARKWAY SHOPPING CENTER	
23-023030	02:23:27	08/18/23 I	Extra Patrols	8	339 OLD HAYMAKER RD; PARKWAY BUILDING	MON
23-023258	00:47:55	08/19/23 I	Extra Patrols	8	PARKWAY SHOPPING CENTER	
23-023609	01:22:56	08/20/23 I	Extra Patrols	8	4290 OLD WILLIAM PENN HWY; PARKWAY OFFICE COMPLEX	MON
23-025208	19:08:02	09/03/23 I	Juvenile Prob	4	339 OLD HAYMAKER RD; PARKWAY BUILDING	MON
23-025530	09:03:43	09/07/23 I	Water Condition	4	4280 OLD WILLIAM PENN HWY; PARKWAY OFFICE COMPLEX	MON
23-025539	10:57:13	09/07/23 I	Agency Assist	7	PARKWAY 82.0 MM EB	MON
23-025718	00:13:57	09/09/23 I	Traffic Stop	4	WILLIAM PENN & PARKWAY	

Activity breakdown between 376 calls

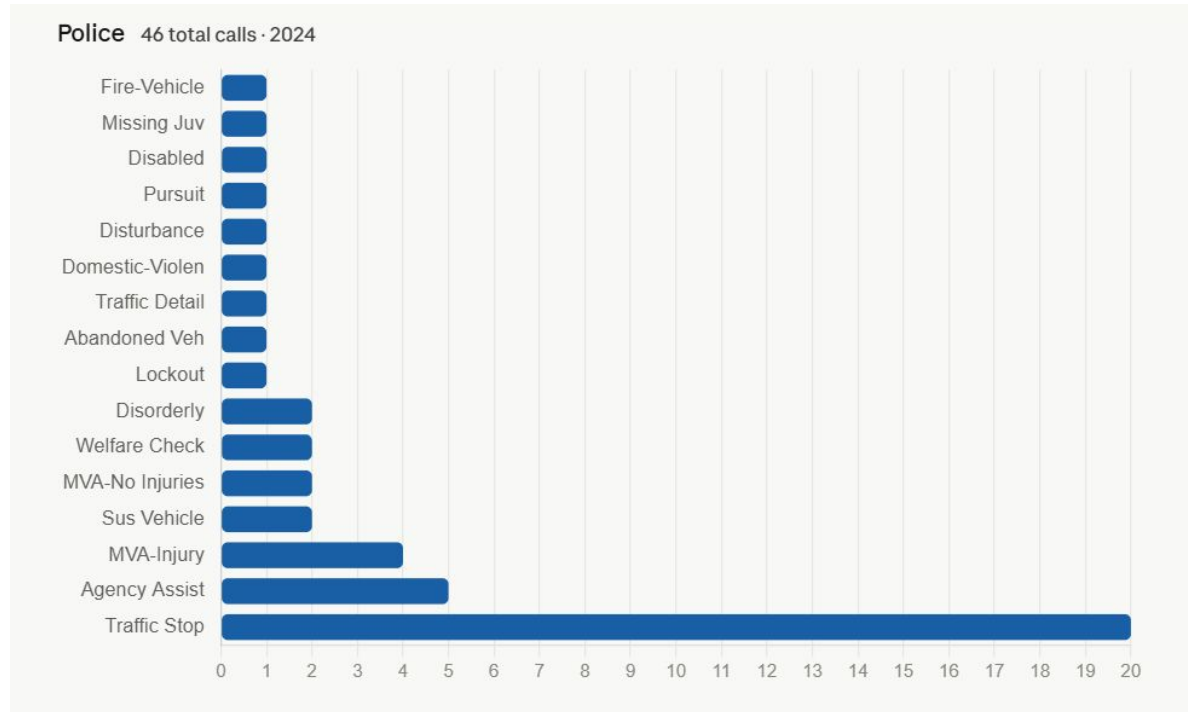
Fire 17 total calls · 2024



EMS 17 total calls · 2024



Police 376 Calls



Framework

Municipal governments maintain emergency service systems to ensure **continuous readiness and rapid response capacity**.

These systems include:

- Police departments
- Fire suppression services
- Emergency medical services (EMS)

Most emergency service costs are **operational readiness costs**, meaning they support the ability to respond to incidents at any time.

Since municipal budgets are reported as **departmental lump sums rather than per-incident expenses**, we utilize a time-weighted proportional framework to estimate the highway's share of total annual costs.

EMS — CALL TYPES

#	Call Type	Count	Duration (min)	Total Minutes	Source
1	MVA-Injury	8	100.0	800.0	NEMSIS/ACS 2025 national avg
2	MVA-Unknown	3	60.0	180.0	Conservative midpoint
3	MVA-Entrapment	0	140.0	0.0	NEMSIS/ACS 2025 high-acuity
4	Sick Person	1	45.0	45.0	EMS literature general
5	Lift Assist	1	30.0	30.0	EMS literature general
6	Chest Pain	2	74.1	148.2	NEMSIS/ACS 2025 high-acuity
7	Person Down	0	45.0	0.0	EMS literature general
8	Breathing	0	60.0	0.0	EMS literature general
9	Traumatic Inj	1	120.0	120.0	NEMSIS/ACS 2025 national avg
10	Domestic-Violen	1	30.0	30.0	EMS literature general
TOTAL — EMS		17	70.4	1,353.2	

Monroeville Emergency Service Budget

Provided by the 2025 Monroeville Budget

2105 Police Chief	374,844	472,869	412,280	374,738	577,233	387,975	-32.79%
2110 Emergency Communications	1,106,995	989,065	1,034,366	930,310	1,152,956	1,280,552	11.07%
2120 Police Patrol	8,752,895	8,690,488	8,105,490	7,763,478	7,920,457	8,759,821	10.60%
2130 Police Detective Division	1,129,144	1,210,047	1,039,198	1,002,830	1,068,972	1,122,325	4.99%
2135 Support Services	246,350	211,672	212,581	192,523	230,125	241,678	5.02%
2160 School Crossing Guards	7,829	24,161	54,953	43,196	46,636	52,980	13.60%
2200 Fire Suppression	376,395	390,845	498,878	494,799	496,337	566,062	14.05%
2300 Building & Engineering Svcs Dir	245,224	146,761	119,912	100,546	249,166	253,997	1.94%
2350 Building Inspection/Fire Prev	331,065	327,156	337,336	303,804	343,959	355,301	3.30%
2400 Ambulance Service	240,721	253,476	272,156	277,186	289,600	313,110	8.12%
2500 Public Safety Training Center	36,960	36,698	70,493	40,334	77,500	46,000	-40.65%

Total Emergency Service Cost

\$14,156,409

Police

\$11,792,351

Fire

\$566,062

EMS

\$313,110

ROUTE 376 MUNICIPAL COST BURDEN — MONROEVILLE

Emergency Services Cost Model | FY2024 Budget Basis

DEPARTMENT BUDGETS (FY2024 ACTUALS)

Department	Budget Code(s)	FY2024 Budget	Notes
Police (All Divisions)		\$11,792,351	Chief, Dispatch, Patrol, Detective, Support Svcs
Fire Suppression		\$566,062	Volunteer fire — municipal subsidy
Ambulance Service		\$313,100	Municipal EMS budget

TOTAL MONROEVILLE CALL VOLUME (DENOMINATOR)

Department	Total Annual Calls	year	Notes
Police	16,443	2024	
Fire	1,633	2024	
EMS	6,656	2024	

ROUTE 376 CALL COUNTS (FROM MONROEVILLE CAD DATA)

Department	376 Calls	Date Range	Notes
Police	46	2024	
Fire	17	2024	
EMS	17	2024	

	LOW CASE 15 min avg	BASE CASE 25 min avg	HIGH CASE 35 min avg	Flat Proportional (Midterm)	Notes
POLICE					
376 Call Minutes (numerator)	1,140	1,140	1,140	46	Sum of (count × duration) per call type
Total Monroeville Minutes (denominator)	246,645	411,075	575,505	16,443	Total calls × avg duration scenario
Weighted Share	0.46%	0.28%	0.20%	0.28%	376 min ÷ total min (FLAT. PROP by 376 calls/total calls)
Department Budget	\$11,792,351	\$11,792,351	\$11,792,351	\$11,792,351	FY2024 police total
Estimated 376 Cost	\$54,505	\$32,703	\$23,359	\$32,990	Weighted share × budget — KEY OUTPUT

	FIRE			
	30 min	45 min	60 min	
376 Call Minutes (numerator)	740	740	740	17
Total Monroeville Minutes (denominator)	48,990	73,485	97,980	1,633
Weighted Share	1.51%	1.01%	0.76%	1.04%
Department Budget	\$566,062	\$566,062	\$566,062	\$566,062
Estimated 376 Cost	\$8,550	\$5,700	\$4,275	\$5,893

	EMS / AMBULANCE			
	50 min	74.1 min	92.8 min	
376 Call Minutes (numerator)	1,353	1,353	1,353	17
Total Monroeville Minutes (denominator)	332,800	493,210	617,677	6,656
Weighted Share	0.41%	0.27%	0.22%	0.26%
Department Budget	\$313,100	\$313,100	\$313,100	\$313,100
Estimated 376 Cost	\$1,273	\$859	\$686	\$800

TOTAL ESTIMATED 376 COST — MODEL 1 (BUDGET CEILING)				
TOTAL (Police + Fire + EMS)	\$64,328	\$39,262	\$28,320	\$39,682

Model 2

The EMS budget line may understate total operational EMS costs if insurance revenues are netted before budgeting

This creates uncertainty in using the municipal EMS line as a standalone cost measure

Model 2 provides a benchmark estimate using a RAND study on average cost of EMS transport

Using Average Costs

Service	Year	Events	Cost per event	total cost
EMS	2024	17	\$1,526	\$25,942
Average cost per EMS transport	\$2,673			
Reimbursement	\$1,147			
Total cost after reimbursement	\$1,526			

Issues with other municipalities

For both Churchill and Wilkings Township, there is a lack of public data regarding total calls for emergency services

It led to an inability to apply Model 1 to their data

For both 376 data specifically it is impossible to differentiate between police, fire, or ems calls



Data Collection is the True First Step

Incident Resource Use

Incident Resource Use

- Units dispatched per incident
- Personnel assigned
- Miles traveled
- Supplies/equipment used

Time Utilization

- Dispatch time
- On-scene time
- Transport time
- Time cleared (unit-hours committed)

Financial Linkages

Relating to the overall budget

- Operating cost input/Operations Budget (labor, fuel, maintenance)
- Reimbursements collected
- Ability to link incidents to costs

A Corridor, Six Jurisdictions, Zero Consistency

I-376 passes through a patchwork of municipalities — each collecting emergency data in its own way:

● Churchill

● Monroeville

● Wilkins Twp

● Swissvale

● Edgewood

● Penn Hills



Inconsistent Data Collection

Each municipality logs calls differently — field names, formats, and detail levels vary. There is no shared standard across the corridor.



Missing Detail Where It Matters Most

Municipalities struggle to provide the specific call-level detail needed for true cost analysis — the data often simply was not captured.

What Would Have Made Model 1 Work

Model 1 allocates costs proportionally using call volume. The budget figures available are public ceiling estimates — not true operating costs. One change would unlock the whole model.

01

True Operating Budget

The single biggest gap. A real net operating cost — not the public budget line — would allow Model 1 to produce a defensible number instead of a ceiling estimate. This is the core fix.

02

Dispatch & Clear Time

Time on scene is the missing weight. With it, cost allocation shifts from flat call counts to actual resource hours — a far more accurate denominator.

03

Call-Level Service Detail

Knowing whether a response was police, fire, or EMS — and what type — lets costs be matched to the right budget line and the right service burden.

A Realistic Path Forward

CONNECT already coordinates the municipalities along I-376 — the relationship exists. A voluntary shared data standard through CONNECT is achievable without waiting for a county-wide mandate.

01

Adopt a Shared Logging Standard via CONNECT

Corridor municipalities agree through CONNECT to log the same fields for every I-376 response — service type, apparatus, personnel, dispatch time, clear time. A cooperative agreement, not a mandate.

02

Request True Operating Budgets from Each Municipality

CONNECT can facilitate direct requests for net operating cost data — not public budget lines — from member municipalities. This single input unlocks Model 1 for every corridor community.

03

Use the Evidence to Go to the State

Standardized data across the corridor creates a unified, defensible cost figure. That number — not an estimate — is what moves a funding conversation with PennDOT or the state legislature.

Conclusions

Municipalities and Allegheny County both cited difficulty providing granular call-level data, confirming this is a systemic gap — not an isolated one.

Despite those limitations, this project establishes the unfunded burden facing municipalities along I-376 and delivers a clear framework for what complete cost estimation would require.

The next step is not more research —
it is a standardized data collection mandate.

Thank you CONNECT

We want give a heartfelt thank you for CONNECT for allowing us to be able to do this project, and especially Kelly for helping us through the entire process!

Q&A