CGA Common Ground Alliance℠

Between the Lines: The True Cost of Damage to America's Buried Utilities

ECONOMIC IMPACT REPORT – AUGUST 2026

The Ripple Effect:
How One Utility Damage Incident Creates Costs Across Five Dimensions

One **incident**.

Five **dimensions**.

Multiple **stakeholders** impacted.

DIRT
Damage Information Reporting Tool

Direct Repair
- Emergency response
- Repair labor & materials
- Equipment & contractors
- Restoration
- Lost product

Operational Response
- Emergency services
- Traffic control
- Evacuations
- Investigations
- Insurance & litigation
- Regulatory compliance

Business & Economic Impact
- Service interruption
- Delayed utility projects
- Delayed third-party projects
- Business interruption
- Indirect impacts (blocked access)
- Reputational costs

Human Impact
- Worker injuries
- Public injuries
- Fatalities
- Medical costs

Community & Environment
- Evacuations and road repair
- Property damage
- Environmental remediation

Methodology: Data-Driven Analysis

This report was compiled in partnership with Burson Insights, Data and Intelligence (BIDI), a core analytics and data-driven strategy division of the Burson Group.

The methodology uses a rigorous quantitative modeling framework that combines 2025 data from CGA's Damage Information Reporting Tool (DIRT), modeled national damage volumes, confidential interviews with CGA members and industry executives, publicly reported incidents and government data.

Costs were modeled by utility type, incident severity and urbanicity and then aggregated across the five impact dimensions.

The $83.2 billion estimate applies this framework to a higher-reporting scenario derived from the 94th percentile of consistent DIRT reporters, providing a modeled measure of national economic impact.

Full Economic Impact of Utility Damages:

METHODOLOGY / CALCULATION FROM REPORTED DAMAGES TO ECONOMIC IMPACT

1 Inputs

Comprehensive data

DIRT-Reported Damages

CGA Member and Executive Interviews

Media-Reported Incidents

Public Data Sources (PHMSA, FEMA, USDA, etc.)

2 Attributes

Each damage is described...

Utility Type: Natural Gas, Electric, Telecom, Water, Sewer, Oil, Other

Urbanicity: Urban, Less Urban, Rural

3 Cost Allocations

...and assigned a cost basis.

Incident Type: Minor / Moderate / Major (utility type, duration- & footprint-based)

Cost Scaling: Urban 1.30x / Less Urban 1.00x / Rural 0.70x

Adjustments based on Member and Executive Interviews

4 Calculations

That cost is calculated for each incident.

Incident Cost × DIRT-based volumes

Adjusted for Utility-, Incident-Type and Urbanicity

Aggregated across five cost dimensions

5 Results

Aggregated results reveal the full impact.

Total Estimated Economic Impact

Distribution by Incident Type, Utility, Urbanicity, & Cost Type

Notes: Estimates are informed by DIRT-reported damage volumes, CGA member and executive interviews, media-reported incidents, and public data sources (PHMSA, FEMA, USDA and others). National calculations are based on modeled national incident volumes derived from the 94th percentile of 2025 DIRT-reported damages among consistent reporters. Urbanicity classifications follow the USDA Rural-Urban Continuum Codes (RUCC). Economic impact spans five cost dimensions — Direct Repair · Operational Response · Business & Economic Impact · Human Impact · Community & Environment. "Other" facility damages use a conservative cost basis drawn from comparable utility categories to avoid unsupported reassignment.

Definitions

Incident Types

Minor: Generally do not result in a service interruption. Localized, short-duration events with minimal third-party disruption.

Moderate: Longer-duration or broader-footprint events with measurable disruption and likely regulatory engagement.

Major: Extended-duration and/or multi-site events with high-consequence potential.

Urbanicity*

Urban: Densely developed territory with 5,000+ people or 2,000+ housing units.

Less Urban: Intermediate classification between Urban and Rural.

Rural: All territory outside the USDA's urban definition.

Utilities

Natural Gas: Containing and/or transporting natural gas.

Electric: Any underground electrical lines and related facilities.

Telecom: Used for communications or internet/data transfer.

Water: Supplying or transporting water for consumption.

Sewer: Forced mains, gravity sewers, and lift station facilities.

Oil: Liquids other than water, including petroleum products.

Other Utility Types: Non-natural gas, non-oil utility damages (e.g., steam, irrigation, and stormwater), the costs of which were estimated as an average of sewer, water, telecom and electric.

**Urbanicity classifications follow the USDA Rural-Urban Continuum Codes (RUCC).*

National Economic Impact Numbers

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Five Dimensions of Utility Damage Costs

IMPACT BY COST TYPE

39.2% $32.6B

Community & Environment

Captures the physical, community, and environmental consequences of a utility damage incident. This includes public facility impacts, property damage and restoration, road and pavement repair, goodwill programs, temporary relocation or evacuation support, environmental assessment, soil and groundwater remediation, air quality impacts, and related cleanup or monitoring activities.

38.0% $31.6B

Business & Economic Impact

Service interruption and lost revenue, delayed projects (both utility and third-party), direct business interruption for customers without service, indirect business impacts (e.g., retailers losing customers when road access is blocked), reputational costs to companies and the industry, and productivity/efficiency losses.

5.9% $4.9B

Direct Repair

Emergency crew mobilization, repair labor and materials, equipment, contractor costs, coating repair, site restoration, and lost product (leaked natural gas, water, etc.).

7.5% $6.2B

Human Impact

Worker and public injuries (medical costs, workers' compensation, lost wages), fatalities (legal settlements, using Value of Statistical Life methodology), and long-term disability.

9.4% $7.8B

Operational Response

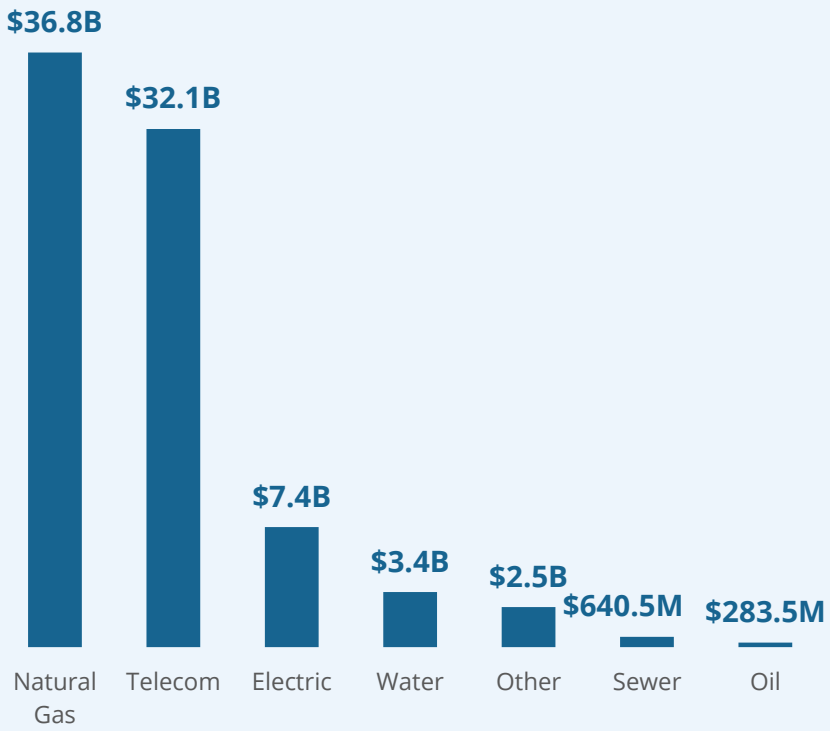
Emergency services (fire, police, EMS, hazmat), traffic control and road closures, evacuations, incident investigations, insurance claim processing, litigation and legal proceedings, regulatory compliance, and customer communications.

Estimates are based on modeled national incident volumes derived from the 94th percentile of 2025 DIRT-reported damages among consistent reporters, with structured cost assumptions applied by utility type, urbanicity, and severity.

Key Cost Statistics

Cost by **Utility Type**

668,999
Modeled 2025 utility damages*



Cost by **Severity**

Minor
$15.0B

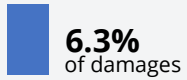
Moderate
$64.5B

Major
$3.7B

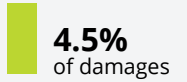
Cost by **Urbanicity**

Urban — $77.9B

Less Urban — $3.7B



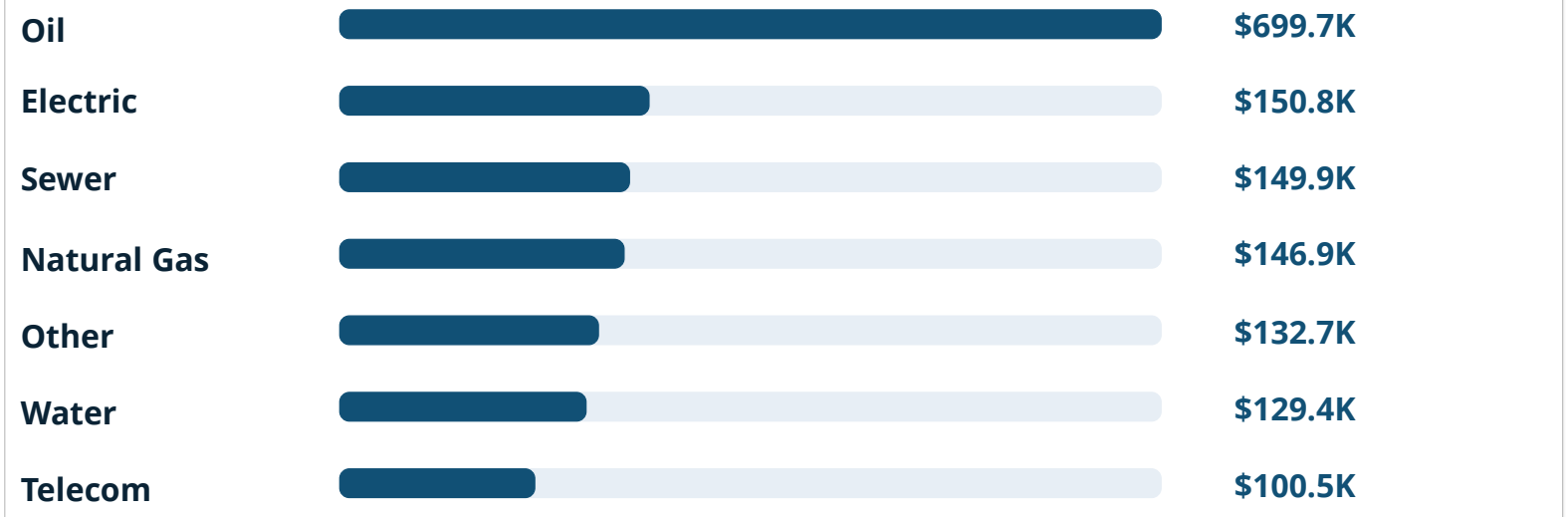
Rural — $1.6B



**Estimates are based on modeled national incident volumes derived from the 94th percentile of 2025 DIRT-reported damages among consistent reporters, with structured cost assumptions applied by utility type, urbanicity, and severity.*

Average Modeled Cost per Damage by Utility Type

Average Modeled Cost per Damage by Utility Type



Modeled Utility Damages*

Utility	Share	Damages
Natural Gas	37.5%	250,572
Telecom	47.7%	319,343
Electric	7.4%	49,243
Water	4.0%	26,435
Other	2.8%	18,728
Sewer	0.6%	4,273
Oil	0.1%	405

Estimates are based on modeled national incident volumes derived from the 94th percentile of 2025 DIRT-reported damages among consistent reporters, with structured cost assumptions applied by utility type, urbanicity, and severity.

The Cost Pathway of Utility Damage Events

UTILITY & AVG. COST	THE STORY, AND THE COST LEVERS BEHIND IT	DOMINANT DRIVER
Oil $699.7K avg.	**An oil dig-in becomes an environmental cleanup — remediation and regulators impact cost.** Spill containment • Soil and groundwater cleanup • Environmental monitoring • Regulatory compliance	COMMUNITY & ENVIRONMENT
Electric $150.8K avg.	**The repair is the least costly — the biggest impact is on customers and communities.** Outage response • Service restoration • Business and school downtime • Traffic and critical systems	BUSINESS & ECONOMIC IMPACT
Sewer $149.9K avg.	**The cleanup radius is far bigger than the break — containment drives the number.** Contamination cleanup • Sanitation response • Environmental monitoring • Property restoration	COMMUNITY & ENVIRONMENT
Natural Gas $146.9K avg.	**Gas' primary concern is safety — crews, evacuations and safety zones dominate the bill.** Emergency response • Evacuations and safety zones • Service interruption • Air quality monitoring	OPERATIONAL RESPONSE
Other $132.7K avg.	**Costs spread evenly across repair, response and disruption — there is no one distinct source.** Infrastructure and property restoration • Road repair • Operational response • Business interruption	NO SINGLE DRIVER
Water $129.4K avg.	**Water is a dig-and-restore cost — the road above the pipe and restoring customers drives costs.** Excavation • Road and pavement repair • Property restoration • Public access restrictions	DIRECT REPAIR
Telecom $100.5K avg.	**Low repair cost, highest dependency — communities and businesses lose critical access.** Network restoration • Contractor repair • Connectivity downtime • Business continuity	BUSINESS & ECONOMIC IMPACT

One Page Fact Sheet

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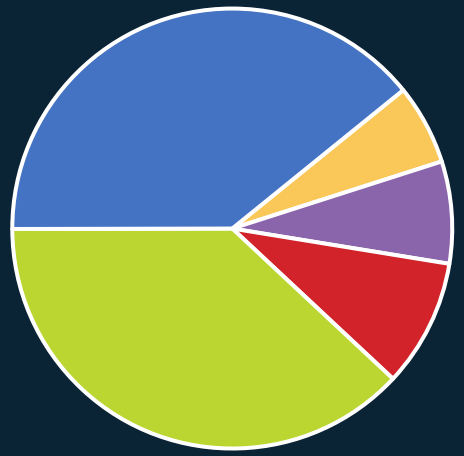
2025 FACT SHEET

$83.2 Billion

The Cost of Underground Utility Damages

668,999 Modeled 2025 Utility Damages*

IMPACT BY COST TYPE



39.2%	Community & Environment	$32.6B
38.0%	Business & Economic Impact	$31.6B
9.4%	Operational Response	$7.8B
7.5%	Human Impact	$6.2B
5.9%	Direct Repair	$4.9B

COST BY UTILITY TYPE

Natural Gas (37.5% of damage incidents) — $36.8B

Telecom (47.7% of damage incidents) — $32.1B

Electric (7.4% of damage incidents) — $7.4B

Water (4.0% of damage incidents) — $3.4B

Other (2.8% of damage incidents) — $2.5B

Sewer (0.6% of damage incidents) — $640.5M

Oil (0.1% of damage incidents) — $283.5M

MOST COSTLY INCIDENT TYPES

Utility	Urbanicity	Severity	Total $ Impact
Natural Gas	Urban	Moderate	$27.2B
Telecom	Urban	Moderate	$22.8B
Telecom	Urban	Minor	$6.0B
Natural Gas	Urban	Minor	$5.6B
Electric	Urban	Moderate	$5.4B

COST BY SEVERITY

Minor	18.0%	$15.0B
Moderate	77.5%	$64.5B
Major	4.5%	$3.7B

COST BY URBANICITY

Urban	89.2%	of damages	$77.9B
Less Urban	6.3%	of damages	$3.7B
Rural	4.5%	of damages	$1.6B

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**National estimates are based on modeled national incident volumes derived from the 94th percentile of 2025 DIRT-reported damages among consistent reporters, with structured cost assumptions applied by utility type, urbanicity, and severity.*

Most Costly Incident Type Examples

$27.2B
total impact

Natural Gas | Urban | Moderate

In a moderate natural gas incident in an urban environment, costs are driven by the operational and public safety activities required to protect nearby residents and businesses while restoring service and managing disruption to surrounding infrastructure.

What Drives the Cost

- Emergency response, evacuation, and safety zones around the site
- Shutting down, repairing, and re-pressurizing the damaged main
- Outages for nearby homes, businesses, schools, and public facilities
- Traffic control, road closures, and detours during the response
- Roadway and property restoration, air monitoring, and public updates

What This Looks Like

A contractor boring for a new fiber line hits a gas main on a busy downtown street. Crews close four blocks, evacuate nearby apartments and shops, and shut off service to hundreds of customers overnight while the main is repaired and the pavement restored.

$22.8B
total impact

Telecom | Urban | Moderate

In a moderate urban telecom strike, costs are driven by restoring connectivity and managing disruptions to businesses, public services, and organizations that depend on reliable network access.

What Drives the Cost

- Specialized splice crews and emergency network restoration
- Outages for businesses, remote workers, schools, and healthcare
- Customer notification, call center volume, and service credits
- Lost business continuity and digital operations during downtime

What This Looks Like

An excavator severs a fiber trunk line under a city arterial road. A hospital's imaging system, two bank branches, and hundreds of remote workers drop offline. Splice crews work through the night; some customers are down 18 hours.

National estimates are based on modeled national incident volumes derived from the 94th percentile of 2025 DIRT-reported damages among consistent reporters, with structured cost assumptions applied by utility type, urbanicity, and severity.

$83.2 billion in preventable damages:

COMMUNITY SCALE

Could fund Philadelphia's entire city government for more than a decade.

12 years

Philadelphia FY26 budget: $6.8B.

STATE SCALE

Could cover Michigan's entire annual state budget.

100%

Michigan FY 2024-25 gross appropriations: ~$82.8B.

FEDERAL SCALE

Will equal more than 20% of the $1.95 trillion projected investment in U.S. underground infrastructure over five years.

$416B

$83.2B annual impact × 5 years vs. $1.95T projected investment.

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Community: Comparison is illustrative and based on Philadelphia's enacted FY 2026 budget of $6.8 billion. At this funding level, $83.2 billion would be equivalent to approximately 12.2 years of city government operations. Figure is intended to illustrate relative scale only. National estimate of $83.2B is based on modeled national incident volumes derived from the 94th percentile of 2025 DIRT-reported damages among consistent reporters, with structured cost assumptions applied by utility type, urbanicity, and severity.

State: Comparison is illustrative and based on Michigan's enacted FY 2025 (October 2024–September 2025) gross appropriations of $82.8 billion, including the School Aid Fund, per the Michigan House Fiscal Agency State Budget Overview (February 2025). Figure is intended to illustrate relative scale and is not a direct accounting of how damage-related costs are incurred or could be reallocated. National estimate of $83.2B is based on modeled national incident volumes derived from the 94th percentile of 2025 DIRT-reported damages among consistent reporters, with structured cost assumptions applied by utility type, urbanicity, and severity.

*Federal: Five-year utility damage costs are estimated at approximately $416 billion ($83.2 billion annually × five years), equivalent to nearly 21% of the projected $1.95 trillion investment in U.S. underground infrastructure over the same period. National damage estimates are based on modeled incident volumes derived from the 94th percentile of 2025 DIRT-reported damages among consistent reporters, with structured cost assumptions applied by utility type, urbanicity, and severity. ** $1.95T infrastructure investment between 2026 and 2030 is the combined cost of $240B in new pipeline construction (INGAA); $1.4T in electric grid modernizations (EEI); $42B in broadband expansion (BEAD); and $200B in water/sewer/stormwater revitalization (FMI).*

Appendix

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How CGA's Economic Impact Methodology Evolved

THE NEW ESTIMATE IS BROADER AND MORE GRANULAR, NOT A DIRECT TREND UPDATE OF THE 2019 $30B FIGURE

2019 MODEL

$30B societal cost estimate

Broad national approximation

Damage universe	Regression-based national estimate of 532,000 damages
Cost Assignment	Facility-level repair cost benchmarks; median-based estimate of about $994M.
Build expected costs	Applied a literature-based indirect-to-direct cost ratio of approximately 30:1.
Result	A national order-of-magnitude estimate, with limited segmentation of cost pathways.

METHOD EVOLUTION

2026 MODEL

$83.2B modeled economic impact

Segmented, incident-based cost framework

Damage universe	National: 668,999 modeled damages under CGA's 94th percentile higher-reporting scenario, derived from 2025 DIRT-reported damages among consistent reporters.
Cost Assignment	Each damage is classified by utility type, severity, and urbanicity.
Build expected costs	Applicability × cost when applicable, summed across explicit line items.
Result	National modeled estimate and state estimates based on DIRT-reported damages, segmented by utility, severity, urbanicity, and five cost dimensions.

THE TAKEAWAY | The higher estimate primarily reflects a broader cost scope and more differentiated methodology, not simply an increase in modeled damages.

Cost Assignment Framework

MODELED COST ASSUMPTIONS USED TO ASSIGN ECONOMIC IMPACT ACROSS UTILITY, URBANICITY, AND SEVERITY SEGMENTS

UTILITY TYPE

- **Natural Gas**: Containing and/or transporting natural gas.
- **Electric:** Any underground electrical lines and related facilities.
- **Telecom**: Used for communications or internet/data transfer.
- **Water**: Supplying or transporting water for consumption.
- **Sewer**: Forced mains, gravity sewers, and lift station facilities.
- **Oil**: Liquids other than water, including petroleum products.
- **Other utility types**: Non-natural gas, non-oil utility damages (e.g., steam, irrigation, and stormwater), the costs of which were estimated as an average of sewer, water, telecom, and electric.

URBANICITY

Damage locations are cross-referenced with standardized geographic ID codes (FIPS) to determine their urbanicity:

- **Urban**: Densely developed territory with 5,000+ people or 2,000+ housing units.
- **Less Urban**: Intermediate classification between Urban and Rural.
- **Rural**: All territory outside the USDA's urban definition.

Used to preserve the geographic context of damage and cost exposure.

SEVERITY

- **Minor**: Generally no service interruption, *80.0%*
- **Moderate**: Service interruption < 24 hours, *19.9%*
- **Major**: Service interruption ≥ 24 hours, *0.1%*

Percentages reflect share of damages. Applied uniformly because severity is not consistently captured in DIRT.

Attribute mapping is the bridge between source data and modeled cost assumptions. Once utility type, urbanicity, and severity are assigned, the model can match each damage to the appropriate cost basis.

Attribute	What it controls in the model	Why it matters
Utility type	Which cost profile is assigned	Different utility damages have different repair, response, and community impact pathways.
Urbanicity	Which geographic cost context applies	Urban, Less Urban, and Rural settings carry different exposure and disruption profiles.
Severity	Which impact tier applies	Minor, Moderate, and Major distinguish lower-consequence from higher-consequence damages.

Background: Member and Executive Interviews

How direct input from CGA stakeholders shaped severity, cost, and geographic assumptions

Nearly 30 stakeholder interviews conducted

Stakeholder Type	Percentage
Natural Gas	37.5%
Electric	8.3%
Telecom	8.3%
Oil	4.2%
Excavator	16.7%
811 Center/One Call	12.5%
Public Works	8.3%
Locator	4.2%

What the interviews informed

- **Severity mix** – How incidents typically distribute across Minor / Moderate / Major in practice
- **Response cost ranges** – Validating research and data benchmarks against real operational experience
- **Operational context** – Response protocols, mutual aid practices, typical repair timelines
- **Cost plausibility checks** – Sense-checking modeled cost assumptions against member-reported ranges

All member input was collected on a confidential basis and is reported only in aggregate. No individual company, incident, or cost figure is attributable to a specific respondent. Interview findings were used to validate and calibrate — not replace — the DIRT-based and publicly sourced cost model.

Understanding the Five Cost Types

What Defines Each Cost Type

Category	Definition	Examples
Direct Repair	**Costs directly associated with repairing, restoring, or replacing damaged utility infrastructure.**	Labor, materials, equipment, contractor services, engineering assessment, restoration activities, and lost product where relevant.
Operational Response	**Costs incurred to manage, investigate, and coordinate the response to an incident.**	Emergency services, traffic control, evacuations, investigations, regulatory reporting, communications, insurance claims, and incident command.
Business & Economic Impact	**Financial losses and economic disruption resulting from service interruptions, delays, or reduced productivity.**	Lost revenue, project delays, business interruption, indirect customer impacts, productivity loss, customer retention, and logistics disruption.
Human Impact	**Costs associated with injuries, fatalities, medical treatment, legal settlements, and long-term human consequences.**	Worker injuries, public injuries, rehabilitation, compensation, lost work time, fatality-related costs, disability impacts, and legal costs.
Community & Environment	**Impacts to communities, property, public infrastructure, and the environment resulting from a utility damage incident.**	Property restoration, public facility impacts, temporary evacuation and relocation support, environmental remediation, road repair, and monitoring.

KEY DISTINCTION

Community & Environment captures impacts to communities, property, public infrastructure, and the environment.
Business & Economic Impact captures financial loss, delayed economic activity, lost productivity, and business disruption.

Over five years, utility damages would cost an estimated $416 billion, equal to more than 20% of the $1.95 trillion projected investment in U.S. underground infrastructure.

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*Note: Five-year utility damage costs are estimated at approximately $416 billion ($83.2 billion annually × five years), equivalent to nearly 21% of the projected $1.95 trillion investment in U.S. underground infrastructure over the same period. National damage estimates are based on modeled incident volumes derived from the 94th percentile of 2025 DIRT-reported damages among consistent reporters, with structured cost assumptions applied by utility type, urbanicity, and severity. ** $1.95T infrastructure investment between 2026 and 2030 is the combined cost of $240B in new pipeline construction (INGAA); $1.4T in electric grid modernizations (EEI); $42B in broadband expansion (BEAD); and $200B in water/sewer/stormwater revitalization (FMI).*