



Replacement, Reliability & Resiliency: Infrastructure & Ratemaking Issues in the Power & Natural Gas Distribution Industries

Louisiana State Bar, Public Utility Section Meetings
November 15, 2013

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Tracker Mechanisms

Definition of Tracker Mechanisms

- Mechanisms that **remove cost and/or revenue recovery** from base rates to a **separate rider** or tariff.
- Can be for the collection of new costs not included in base rates or true-ups of revenues or expense items from levels that differ from the test year.
- **Cost recovery is more frequent** than rate cases (monthly, quarterly, bi-annual).
- Mechanisms originally developed with fuel-cost recovery, but **have expanded to a variety of other sales, capital and expense-related changes.**

Tracker Mechanism Examples

Tracker Mechanism	Recovery Type	Purpose
Asset Replacement Riders	Capital	Replace aging or inferior assets.
Inflation Riders	Expense	Inflate costs to match general inflation or other measure.
Asset Development Riders	Capital	Facilitate preferenced assets like baseload generation, smart meters.
Energy Efficiency Riders	Expense	Recover energy efficiency expenses as incurred.
Renewable Energy Riders	Capital	Recovery renewable energy development costs, rebates, and/or PPAs.
Environmental Cost Riders	Capital/Expense	Recovery of capital investment or air emission credits.
Weather Normalization Clauses	Revenue	Recovery of changes in sales due to weather.
Revenue Decoupling	Revenue	Recovery of changes in sales due to other factors.

Commonly Cited Rationales for Trackers

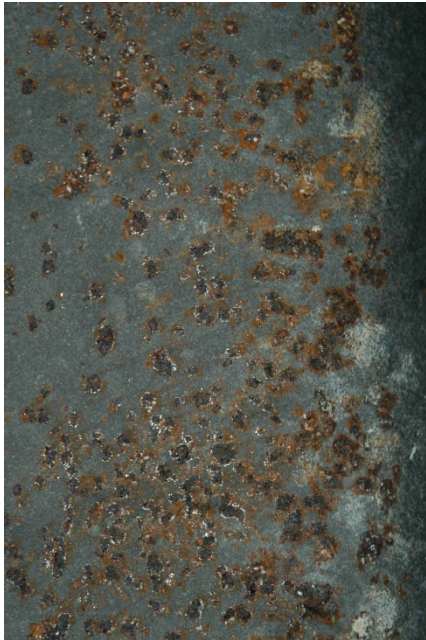
Rationale	Driver
<p>Volatile and unknown cost changes.</p>	<p>Recent increases in commodity costs and inflation.</p>
<p>Remove disincentives to pursue public policy goals.</p>	<p>Energy efficiency, renewables, fuel diversity.</p>
<p>Required by “Wall Street.”</p>	<p>Capital crisis/recession.</p>
<p>Required to ensure recovery of revenue requirement.</p>	<p>Changes in UPC, climate change, other “exogenous factors.”</p>
<p>Reduce rate cases.</p>	<p>Increase in recent number of rate cases.</p>

Risk Shifting

Risk Type	Risk Shifting Perceptions	Potential Consequence
Regulatory Risk	Ratepayers have higher burden to prove investments are imprudent rather than utilities proving that they are prudent.	Takes away, or significantly reduces the power of a regulatory disallowance that is long recognized as a powerful regulatory tool in minimizing cost and expense inefficiencies and offsetting potential “A-J” or “X-inefficient” outcomes.
Performance Risk	Ratepayers have higher burden to prove that tracker objectives were not met on sometimes illusive (qualitative) cost and investment decisions.	Effectively paying for a service before it has been rendered.
Sales Risk	Ratepayers will make utilities whole for any change in sales regardless of reason (economy, price, weather).	Decoupling revenues from sales is likely to lead to a decoupling of costs from revenues in a regulated cost-based industry.

Infrastructure Riders – Natural Gas

Common Types of Infrastructure Trackers – Gas Industry (“Priority” Pipes)



Industry has pipes of various different material types, sizes, and vintage.

Older unprotected steel and cast iron pipe can corrode and carries certain safety risks due to corrosion-related leaks.

Often called “leak-prone” pipes or “priority” mains and services.

Leaks can be categorized by Class 1, 2, and 3 leaks.

Common Types of Infrastructure Trackers – Gas Industry (Couplings/Joints)



Other examples include pipeline integrity issues raised by various different pipeline coupling or joint issues.



In some instances, claims that leaks have been/are being aggravated by natural gas quality issues.



Regional/State Priority Main Shares

New England and Mid-Atlantic states have higher priority main shares relative to other parts of the country.



Region/State	Unprotected Steel		Cast Iron	Total	Unprotected as a Percent of Total (%)
	Bare	Coated (miles)			
Northeast					
CT	187.3	50.0	1,487.9	7,559.1	22.8%
MA	1,704.5	1,159.4	3,719.4	20,312.7	32.4%
ME	2.3	14.1	59.5	523.2	14.5%
NH	37.5	22.2	128.2	1,832.3	10.3%
NY	6,702.9	1,379.3	4,540.9	46,818.2	27.0%
RI	392.2	187.9	874.6	3,163.2	46.0%
VT	-	-	-	687.5	0.0%
Total Northeast	9,026.6	2,812.9	10,810.4	80,896.3	28.0%
Mid-Atlantic					
NJ	1,732.0	786.7	5,137.5	33,646.1	22.8%
PA	7,516.8	1,340.3	3,234.7	46,627.0	25.9%
MD	316.0	131.0	1,418.0	13,503.0	13.8%
DC	28.0	68.0	425.0	1,190.0	43.8%
DE	19.6	25.0	96.0	2,775.8	5.1%
WV	2,759.7	137.8	-	8,781.8	33.0%
VA	362.8	497.1	108.2	17,927.1	5.4%
Total Mid-Atlantic	12,734.8	2,985.9	10,419.4	124,450.8	21.0%
Southeast					
AL	337.2	516.8	1,106.5	13,240.5	14.8%
FL	696.9	3.4	116.1	13,890.8	5.9%
GA	141.6	-	17.0	32,369.5	0.5%
KY	734.9	-	89.2	13,722.9	6.0%
MS	-	-	-	10,866.6	0.0%
NC	-	-	-	25,375.2	0.0%
SC	-	-	-	12,094.7	0.0%
TN	74.3	-	20.9	8,017.8	1.2%
Total Southeast	1,984.9	520.2	1,349.7	129,578.0	3.0%



Natural Gas Definitions

Integrity: the preservation a system to remain at, or better than those required under existing safety regulations. Ruptures tend to happen more often on higher pressure transmission systems while distribution integrity challenges usually begin with leaks.

Safety: publically-acceptable conditions in which the state of a pipeline system is allowed to operate. No system is 100 percent safe but a safe system is one that reasonably protects people and property from incidents.

Incidents: violations of standard safety conditions that can result in damage or harm to individuals or property.

Threats: various different types of conditions that can lead to incidents.

High Consequence Area (“HCA”): geographic area that has a relatively high population or natural resource concentration.

PHMSA Defined System Threats

The U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration (“PHMSA”) defines eight different threat categories for natural gas pipelines:

Most
common



- (1) Corrosion
- (2) Natural forces
- (3) Excavation damage
- (4) Other outside force damage
- (5) Welding & materials
- (6) Equipment failures
- (7) Incorrect operations
- (8) Other concerns.



Leak Types

Grade 1. A leak that represents an existing or probable hazard to persons or structures. Such leak requires immediate repair until the conditions are no longer hazardous.

Grade 2. Any leak that is recognized as being non-hazardous to persons or structures but damages public or private vegetation. Repair is required within 15 months with monitoring every six months.

Grade 3. Any leak that is non-hazardous to persons, structures or vegetation and is expected to remain non-hazardous to persons, structures or vegetation. Repair is required within 36 months. Monitoring is required annually not to exceed 15 months



Gas Pipeline Safety Accidents

Date and Location	Description
September 2010 – San Bruno, CA ¹	<ul style="list-style-type: none">• A gas transmission line ruptured causing an explosion that killed 8 people, destroyed 38 homes, and damaged 70 others.• A panel of experts created by the California Public Utilities Commission stated that the explosion was caused by “multiple weaknesses in PG&E’s management and oversight of the safety of its gas transmission system.”• The panel said that an external force, namely the 2008 sewer replacement project where 1600 feet of sewer was replaced, probably caused the pipe to fail because it created extra stress on the seam.• The panel also said that PG&E has no strategy to improve how it assesses the strength and safety of its pipeline.• Rep. Jackie Speier (D-Hillsborough) said that the utility did not have a supervisor on site during the 2008 sewer project that took place near the pipe that failed and that the company did not inspect a segment of pipe that was uncovered during the sewer project.
December 2008 – Rancho Cordova, CA ²	<ul style="list-style-type: none">• An explosion occurred killing one man and sending his daughter and granddaughter to the hospital.• The cause of the explosion was a poor repair job and slow response from PG&E.• NTSB investigated and said that two years earlier, a PG&E repairman used an “out-of-specification polyethylene pipe with inadequate wall thickness that allowed gas to leak from the mechanical coupling.”• NTSB also stated that the disaster was made worse because it took 3 hours for PG&E to respond to it.

Gas Pipeline Safety Accidents (Cont.)

Date and Location	Description
January 2007 – Missouri City, TX ³	<ul style="list-style-type: none"> • An explosion occurred due to a leak in the compression coupling on a 2-inch polyethylene main. • It was found that the coupling was installed without the required internal stiffener.
December 1977 – Lawrence, KS ³	<ul style="list-style-type: none"> • An explosion and fire occurred downtown. • A 2-inch polyethylene main that was inserted inside of a 3-inch abandoned steel gas main, pulled out of a compression coupling that was connecting them. • It was determined that one end of the polyethylene main was anchored and the other end was not.
February 1976 – Phoenix, AZ ³	<ul style="list-style-type: none"> • An explosion and fire occurred at a residence. • A compression coupling on a 2-inch plastic main was leaking behind the house and the gas was trapped from above by compacted soil and then it leaked into the house and was ignited by an unknown source. • The NTSB said that the 2-inch pipe was inserted insufficiently through the gasket into the coupling. • NTSB also found that the company had a similar incident in the past that was also due to inadequate installation training and procedures.
January 1976 – Fremont, NE ³	<ul style="list-style-type: none"> • An explosion and fire occurred at the Pathfinder Hotel. • A 2-inch polyethylene main which was inserted inside a 4" steel casing and joined by a compression coupling was pulled out of the coupling. • The NTSB said that the "pipe was not installed in accordance with several important manufacturer's recommendations."

Pipeline Safety Legislation/Regulation

First comprehensive pipeline safety legislation was passed by Congress in **1968 (Natural Gas Pipeline Safety Act)**.

Title 49 Code of Federal Regulations Chapters 190-199 govern pipeline safety by PHMSA. Safety regulation typically a cooperative federal/state task.

Pipeline Inspection, Protection, Enforcement, and Safety Act of 2006 (“PIPES”) – expands federal pipeline safety programs to include a number of ongoing mandates that include the development of DIMP.

Pipeline Safety, Regulatory Certainty, and Job Creation Act (2012) reauthorizes safety programs through 2015 and provides for higher penalties, state incentives on one-call programs, automatic and remote control valves on new and replaced pipes.

Distribution Integrity Management Programs (“DIMPs”)

DIMP requires distribution utilities to take seven major steps:

- (1) Develop and implement a written integrity management plan.
- (2) Acquire knowledge of its distribution system.
- (3) Identify existing and potential system threats.
- (4) Analyze, assess, and prioritize threats.
- (5) Mitigate risks through the identification and implementation of safety actions.
- (6) Measure, monitor, and evaluate performance.
- (7) Report results of measurement, monitoring, and ongoing evaluation processes.

NARUC and DIMPs

NARUC 2005 resolution supports DIMP practices/philosophies but emphasizes that approaches must adopt **cost-effective measures** and needs to reduce risk of system failures while **balancing the needs** to ensure continued safe operations and reliable service and the **implications of any increased financial demands on ratepayers.**

Gas Infrastructure Design

Tracker designs can be varied, but there are usually a number of common elements:

- (1) Defined set of recoverable costs;
- (2) Define recovery period usually annual;
- (3) Reconciliation/review filings;
- (4) Assessed on all customers, usually on volumetric basis.

Infrastructure Cost Recovery Methods

Costs are usually recovered on one of three basis:

- (1) On a **continuous (annual) basis** with annual review/reconciliation.
- (2) On a **deferral basis** where costs are booked annually (with return) and not recovered until the next rate case. (no volumetric tracker)
- (3) **Hybrid** could be used that combines both – part of the costs recovered on annual basis through a tracker with the balance deferred.

Ratepayer Protection Mechanisms

Trackers are often adopted with a number of ratepayer protection mechanisms that include:

- Term/cap/sunset provision
- Rate Impact cap
- Deferrals/Carrying charge limitations
- O&M Offset
- Reduced Returns
- Performance Benchmarks

Terms/Cap/Sunset Provisions

Sunset Provision: Clause within the infrastructure tracker mechanism which provides for its own expiration upfront.

Colorado Decision R11-0743, Docket No. 10AI-963G (¶57)

Public Service of Colorado: Petition for a Pipeline System Integrity Adjustment (“PSIA”)

“In order to adequately protect the ratepayers of Colorado, but still accept the basic tenets of the Settlement, the PSIA rider shall have an initial term of three calendar years, and shall expire on December 31, 2014. Prior to that expiration, Public Service shall file an Application by October 1, 2014 seeking re-instatement of the rider for a period of an additional three years if such an extension is warranted.”

Examples :

National Grid (RI) – Infrastructure, Safety, and Reliability Provision:
Annual Renewal

South Jersey Gas(NJ) – Accelerated Infrastructure Replacement Program:
4 Years

Dominion(OH) – Pipeline Infrastructure Replacement Program: 5 Years

Rate Impact Cap

Rate Impact Cap: Cap on the tracker's annual adjustment to Company rates, expressed usually as a percentage of Total or Base Revenues. This along with a more direct investment cap limits overcapitalization.

Examples:

Bay State Gas Company (MA) – Targeted Infrastructure Replacement Factor (“TIRF”)

Peoples Gas Light & Coke(IL) – Infrastructure Cost Recovery Rider: 5 percent of base revenues.

AmerenUE(MO) – Infrastructure System Replacement Surcharge: 10 percent of base revenues.

Investment Cap

Investment Cap: A direct cap on the annual monetary investments which can be included within an infrastructure rider. This prevents overcapitalization or rapid escalations in infrastructure replacement costs.

Examples:

Vectren North-Indiana Gas(IN) – Distribution Replacement Adjustment: \$20 million per year.

NorthWest Natural(OR) – Integrity Management Program: \$12 million per year.

Deferrals

Deferrals: Permits utilities to defer (with or without carrying charges) investments in excess of rate impact or investment cap. Often, if carrying charges are allowed, they are set at a discounted rate to the utility's overall financing rate (such as the utility's cost of debt only).

Examples:

Vectren North-Indiana Gas(IN) – Distribution Replacement Adjustment: Deferred without carrying charges.

Bay State Gas(MA) – Targeted Infrastructure Recovery Factor: Deferred without carrying charges.

Carrying Charges

Carrying Charges: Allows the utility to increase capital cost amounts to reflect the carrying charges incurred from the time of the project in-service to the filing.

Examples:

Black Hills Energy(IA) – Capital Infrastructure Investment Automatic Adjustment Mechanism

Semco Energy(MI) – Main Replacement Program Rider.

O&M Offset

Operations and Maintenance Offset: A provision which reduces the amount of the infrastructure tracker by a fixed amount per mile of main and service replaced. This accounts for the fact that replaced natural gas pipe should be less maintenance intensive due to newer, more corrosive resistant, materials.

Examples:

Atlanta Gas Light(GA) – Pipeline Replacement Program Cost Recovery Rider.

Peoples Gas Light & Coke(IL) – Infrastructure Cost Recovery Rider.

Reduced Return

Reduced Return: Inclusion of a reduction in the Company's Rate of Return on natural gas infrastructure investments recovered through the infrastructure tracker. This reduced ROR reflects a reduced risk to the utility from more immediate cost recovery, and thus reduced regulatory lag.

Examples:

Colorado Natural Gas (CO) – Capital Expenditure Rider: Reduced ROR on mechanism rate base equal to 8.46 percent.

Performance Benchmark

Performance Benchmark: A requirement that the utility seeking extraordinary ratemaking treatment through the use of tracker recovery reduce pipeline leaks by a set amount or commit to replacement of a set amount of miles of natural gas mains and services each year.

Example:

South Jersey Gas – Capital Investment Recovery Tracker II: Company committed to reducing leak inventory by 236, or approximately 15 percent. To the extent the Company does not reduce leak inventory by 15 percent, accrued AFUDC is reduced by the fraction unattained.

Infrastructure Cost Recovery Mechanisms

State	Company	Recovery Mechanism - Gas/Electric	Date of Decision	Decision Type	Mechanism	Term/Period	Limited Recovery / Revenue Cap	Expenditures Limited / Capped	Carrying Charges on Investment	Carrying Charges on Deferrals	Deferral-Based Cost Recovery	O&M Offset	Reduced Rate of Return	Reliability Benchmarks
Electric/Gas Utilities														
FL	Florida Public Utilities Company	Gas	9/24/2012	Order	Gas Reliability Infrastructure Program	2013-2023								
KS	Midwest Energy	Gas	5/28/2009	Order	Gas System Reliability Surcharge	n.a.	XXX							
KY	Louisville Gas and Electric Company	Gas	12/20/2012	Order	Gas Line Tracker	2013-2017								
MO	Union Electric Company/AmerenUE	Gas	2/26/2008	Order	Infrastructure System Replacement Surcharge	n.a.	XXX							
NH	Northern Utilities, Inc./Unitil	Gas	7/21/1992	Settlement	Bare Steel Replacement Program	1992-2017								
NJ	Public Service Electric & Gas	Electric/Gas	4/28/2009 & 7/14/2011	Settlement	Capital Infrastructure Investment Program	2009-2012			XXX	XXX		XXX		
NY	National Grid - Niagara Mohawk	Gas	9/17/2007	Order	Capital Tracker	2008-2012		XXX	XXX	XXX				XXX
OR	Avista	Gas	3/10/2011	Settlement	Incremental Rate Adjustment	2012-2013			XXX		XXX			
RI	National Grid	Gas	4/7/2009	Order	Accelerated Replacement Program	n.a.								XXX
RI	National Grid	Gas	9/12/2011	Order	Infrastructure, Safety, and Reliability Provision/ Distribution Adjustment Clause	Annually								
Gas-Only Utilities														
AL	Mobile Gas Service Corporation	Gas	11/27/1995	Order	Cast Iron Main Replacement Factor	30 years								
AR	CenterPoint Energy Arkla	Gas	5/31/2006	Settlement	Main Replacement Program Rider	2006-2026							XXX	
AZ	Southwest Gas Corporation	Gas	1/6/2012	Settlement	Early Vintage Plastic Pipe Replacement Plan	20 years								
CO	Colorado Natural Gas, Inc.	Gas	3/18/2011	Settlement	Capital Expenditure Rider	2011-2014		XXX						XXX
CO	Public Service Co. of Colorado	Gas	7/8/2011	Settlement	Pipeline System Integrity Adjustment	2012-2014		XXX	XXX	XXX				
DC	Washington Gas Light	Gas	12/16/2009	Settlement	Vintage Coupling Replacement and Encapsulation Program	2010-2017		XXX						
FL	Peoples Gas System	Gas	9/18/2012	Order	Cast Iron/Bare Steel Pipe Replacement Rider	2013-2023								
FL	Florida Division of Chesapeake Utilities Corporation	Gas	9/24/2012	Order	Gas Reliability Infrastructure Program	2013-2023								
GA	Atmos Energy	Gas	12/14/2000	Order	Accelerated Pipe Replacement Program	15-20 years							XXX	

Infrastructure Cost Recovery Mechanisms

State	Company	Recovery Mechanism - Gas/Electric	Date of Decision	Decision Type	Mechanism	Term/Period	Limited Recovery / Revenue Cap	Expenditures Limited / Capped	Deferrals	Carrying Charges on Investment	Carrying Charges on Deferrals	Deferral-Based Cost Recovery	O&M Offset	Reduced Rate of Return	Reliability Benchmarks
GA	Atlanta Gas Light	Gas	9/3/1998 & 10/6/2009	Settlement & Order	Pipeline Replacement Program Cost Recovery Rider/STRIDE	2009-2022									XXX
IA	Black Hills Energy	Gas	3/15/2013	Order	Capital Infrastructure Investment Automatic Adjustment Mechanism	n.a.				XXX					
IL	Peoples Gas Light & Coke	Gas	1/21/2010	Order	Infrastructure Cost Recovery Rider	2010-2030	XXX								XXX
IN	Vectren North - Indiana Gas	Gas	2/13/2008	Settlement	Distribution Replacement Adjustment	20 years		XXX	XXX	XXX		XXX			
IN	Vectren South - SIGECO	Gas	8/1/2007	Settlement	Distribution Replacement Adjustment	20 years		XXX	XXX	XXX		XXX			
KS	Atmos Energy	Gas	5/12/2008 & 12/11/2009	Settlement	Gas System Reliability Surcharge	n.a.	XXX								
KS	Black Hills (formerly Aquila Networks)	Gas	7/15/2008	Settlement	Gas System Reliability Surcharge	n.a.	XXX								
KS	Kansas Gas Service	Gas	12/18/2008	Order	Gas System Reliability Surcharge	n.a.	XXX								
KY	Atmos Energy	Gas	5/28/2010	Settlement	Pipe Replacement Program Rider	n.a.									XXX
KY	Columbia Gas	Gas	10/26/2009	Settlement	Accelerated Main Replacement Program Rider	n.a.									XXX
KY	Delta Natural Gas	Gas	10/21/2010 & 8/24/2012	Order	Pipe Replacement Program Surcharge	n.a.									XXX
MA	Bay State Gas	Gas	10/30/2009	Order	Targeted Infrastructure Recovery Factor	15-20 years	XXX		XXX					XXX	XXX
MA	National Grid Gas	Gas	11/2/2010	Order	Targeted Infrastructure Recovery Factor	10 years	XXX		XXX					XXX	
MA	New England Gas	Gas	3/31/2011	Order	Targeted Infrastructure Recovery Factor	15 years	XXX		XXX					XXX	
ME	Northern Utilities, Inc./Unitil	Gas	7/30/2010	Settlement	Cast Iron Replacement Program	2011-2027	XXX		XXX		XXX		XXX		XXX
MI	DTE Gas Company (formerly Michigan Consolidated Gas Company)	Gas	4/16/2013	Order	Infrastructure Recovery Mechanism	2013-2017									XXX
MI	Semco Energy	Gas	12/22/2011	Settlement	Main Replacement Program Rider	2012-2017				XXX				XXX	
MO	Atmos Energy	Gas	10/31/2008	Order	Infrastructure System Replacement Surcharge	n.a.	XXX								
MO	Laclede Gas	Gas	6/4/2004 & 7/19/2007	Settlement	Infrastructure System Replacement Surcharge	n.a.	XXX								
MO	Missouri Gas Energy	Gas	2/26/2004	Order	Infrastructure System Replacement Surcharge	n.a.	XXX								
NE	SourceGas Distribution LLC	Gas	6/25/2013	Order	Pipeline Replacement Charge	n.a.	XXX								

Infrastructure Cost Recovery Mechanisms

State	Company	Recovery Mechanism - Gas/ Electric	Date of Decision	Decision Type	Mechanism	Term/ Period	Limited Recovery / Revenue Cap	Expenditures Limited / Capped	Deferrals	Carrying Charges on Investment	Carrying Charges on Deferrals	Deferral-Based Cost Recovery	O&M Offset	Reduced Rate of Return	Reliability Benchmarks
NH	EnergyNorth	Gas	7/12/2007	Settlement	Cast Iron Bare Steel Replacement Program	n.a.									
NJ	Elizabethtown Gas	Gas	4/28/2009 & 5/16/2011	Settlement	Utility Infrastructure Enhancement Program	2009-2012				XXX		XXX			
NJ	New Jersey Natural	Gas	4/28/2009 & 3/30/2011	Settlement	Accelerated Energy Infrastructure Investment Program	2009-2012				XXX		XXX			
NJ	South Jersey Gas	Gas	4/28/2009 & 5/1/2012	Settlement	Capital Investment Recovery Tracker	2009-2012				XXX		XXX			
NJ	South Jersey Gas	Gas	2/20/2013	Settlement	Accelerated Infrastructure Replacement Program	2013-2017		XXX		XXX		XXX	XXX		XXX
NV	Southwest Gas Corporation	Gas	9/7/2011	Settlement	Strip Reliability Plan	n.a.				XXX		XXX			
NY	Coning Natural Gas	Gas	1/25/2011	Order	Limited Pipeline Replacement Cost Recovery Mechanism	10-15 years from 2012							XXX		XXX
OH	Dominion Energy	Gas	10/15/2008	Order	Pipeline Infrastructure Replacement Program	5 years								XXX	
OH	Duke Energy	Gas	5/30/2002	Settlement	Accelerated Main Replacement Program	Annually	XXX			XXX		XXX	XXX		
OH	Columbia Gas of Ohio	Gas	12/3/2008	Settlement	Infrastructure Replacement Program Rider	5 years	XXX		XXX	XXX	XXX			XXX	
OH	Vectren Ohio	Gas	1/7/2009	Settlement	Distribution Replacement Rider	5 years	XXX			XXX				XXX	
OK	Oklahoma Natural Gas	Gas	8/31/2007	Settlement	Integrity Management Program	Annually							XXX		
OR	NW Natural	Gas	3/1/2009	Settlement	System Integrity Program	2009-2021		XXX	XXX					XXX	
TX	Atmos Energy	Gas	2003	Statute	Gas Reliability Infrastructure Program	n.a.							XXX		
TX	CenterPoint Energy	Gas	2003	Statute	Gas Reliability Infrastructure Program	n.a.									
TX	Texas Gas Service	Gas	2003	Statute	Gas Reliability Infrastructure Program	n.a.									
UT	Questar Gas	Gas	6/3/2010	Settlement	Infrastructure Replacement Adjustment	3 years		XXX		XXX		XXX			
VA	Washington Gas Light	Gas	4/21/2011	Order	SAVE Plan/Rider	2011-2014		XXX		XXX					
VA	Columbia Gas of Virginia	Gas	11/28/2011	Order	SAVE Plan/Rider	2012-2016		XXX		XXX					
VA	Virginia Natural Gas, Inc.	Gas	6/25/2012	Order	SAVE Plan/Rider	2012-2016		XXX		XXX					

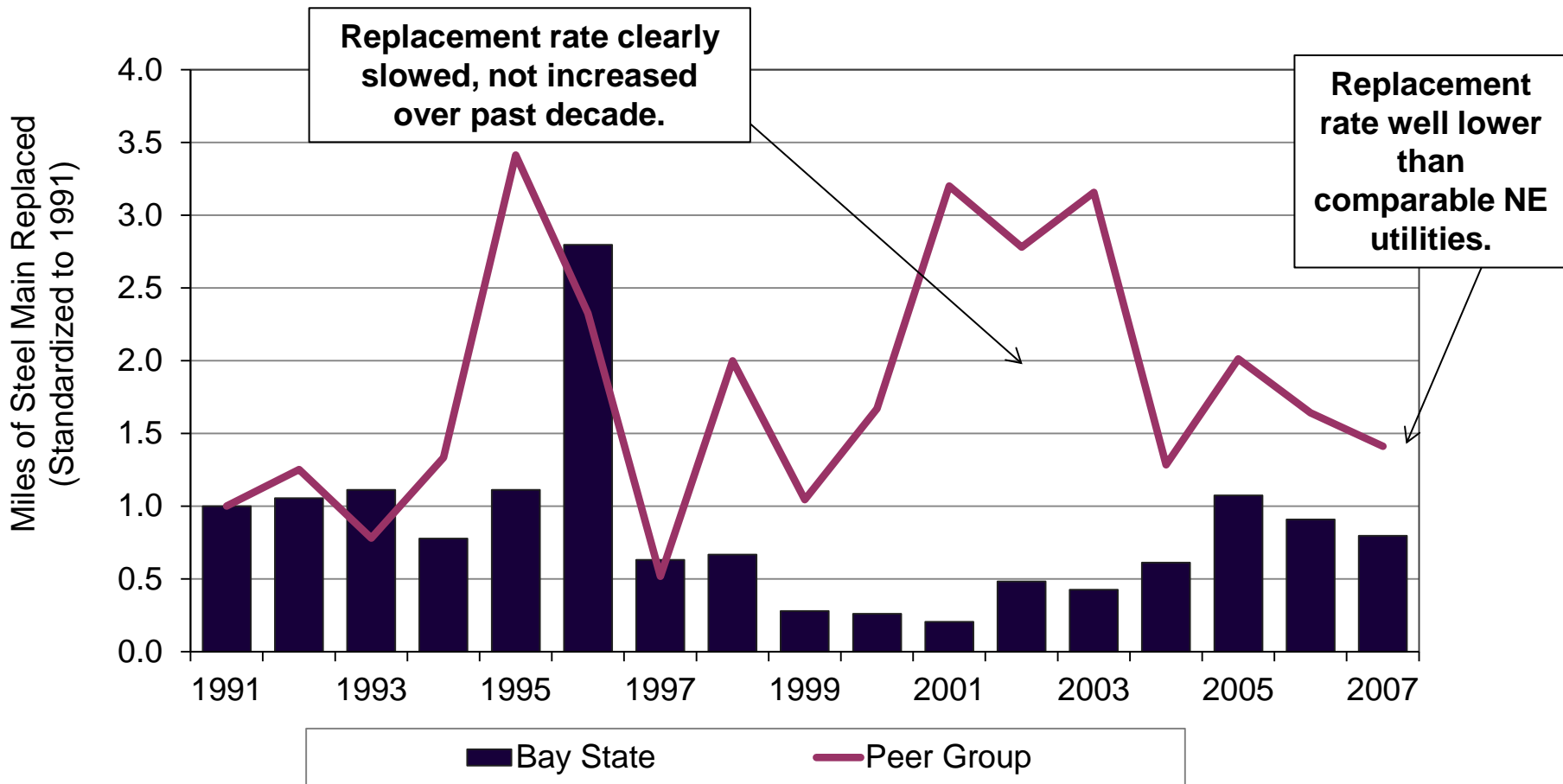
**Infrastructure Riders:
Case Studies (Natural Gas)**

Examples of Tracker Rationales – Gas Industry (Massachusetts)

Company	Tracker Proposal	Tracker Mechanics	Rationale
Bay State Gas Company (Docket 09-30)	Targeted Infrastructure Replacement Factor (“TIRF”)	Used to recover cost of replacing cathodically unprotected steelmains. Includes a rate cap limiting the annual change in revenue requirement to 1% of total revenues of the prior year. Subject to a prudence review in each annual TIRF filing.	Cost of investment in non-revenue producing plant, has negative impact on Company’s ability to recover adequate revenues to provide safe and reliable utility service.

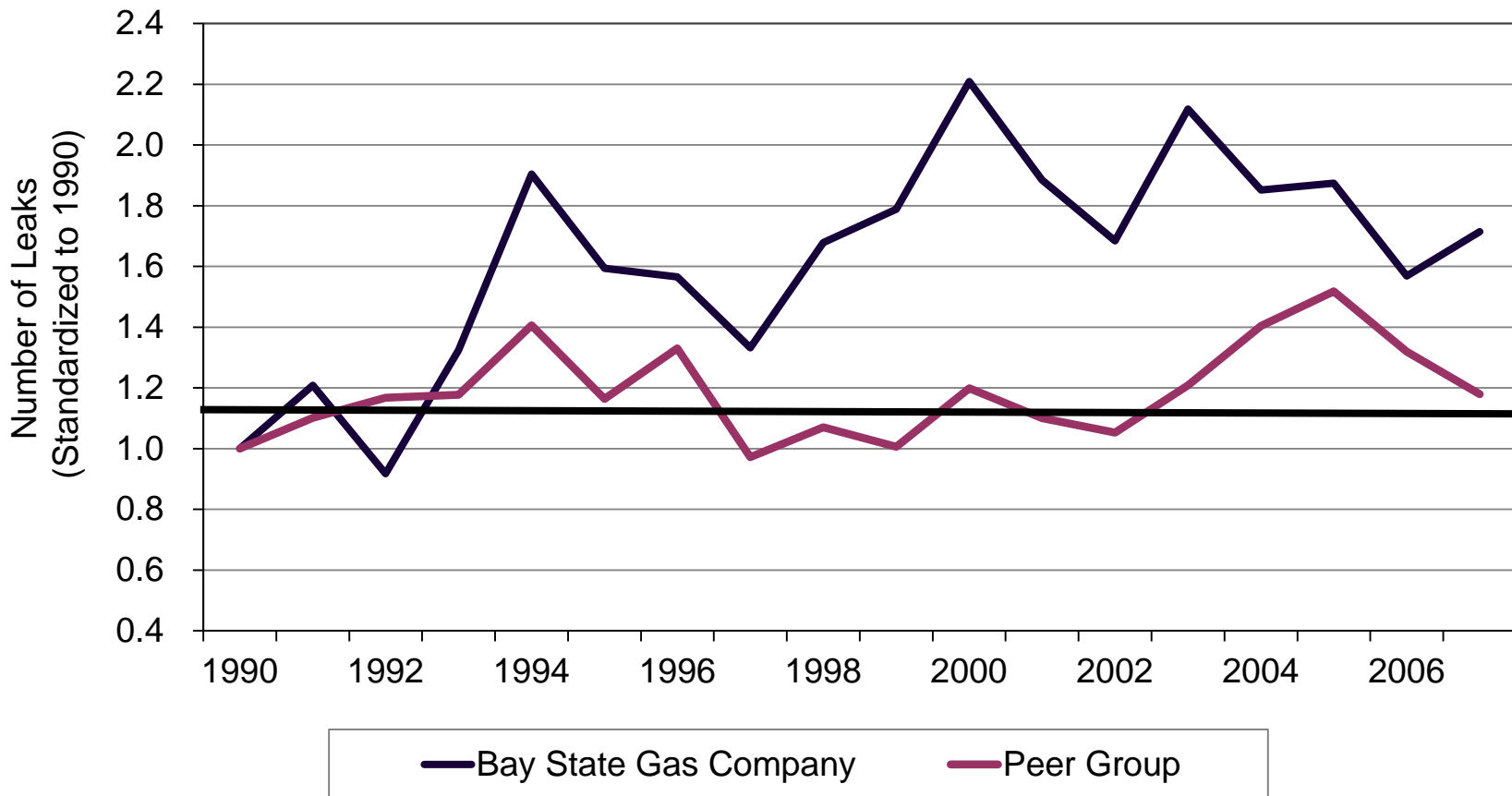
Bay State Gas Company, Replacement of Steel Mains

Bay State's replacement rate did not increase relative to historic standards and was considerably behind comparable utilities.



Bay State Gas Company, Number of Leaks Due to Corrosion

Bay State's corrosion-related leaks worse than peer group as well.



Note: Central Hudson Gas & Electric is standardized to 1991.
 Source: Office of Pipeline Safety, U.S. Department of Transportation.

Massachusetts DPU Decision (D.P.U. 09-30)

The Department finds three significant differences between the TIRF mechanism presently before us and the SIR mechanisms previously proposed and rejected. First, the Company has not deducted a representative level of historical replacement costs in this proposal thereby including all incremental capital investments in the revenue requirement calculations. Second, the Company does not seek to recover carrying charges in the TIRF. Finally, the TIRF includes a rate cap that limits the annual charge in revenue requirement associated with the TIRF to one percent of total revenues of the prior calendar year. (MA D.P.U. 09-30 Final Order, p. 130)

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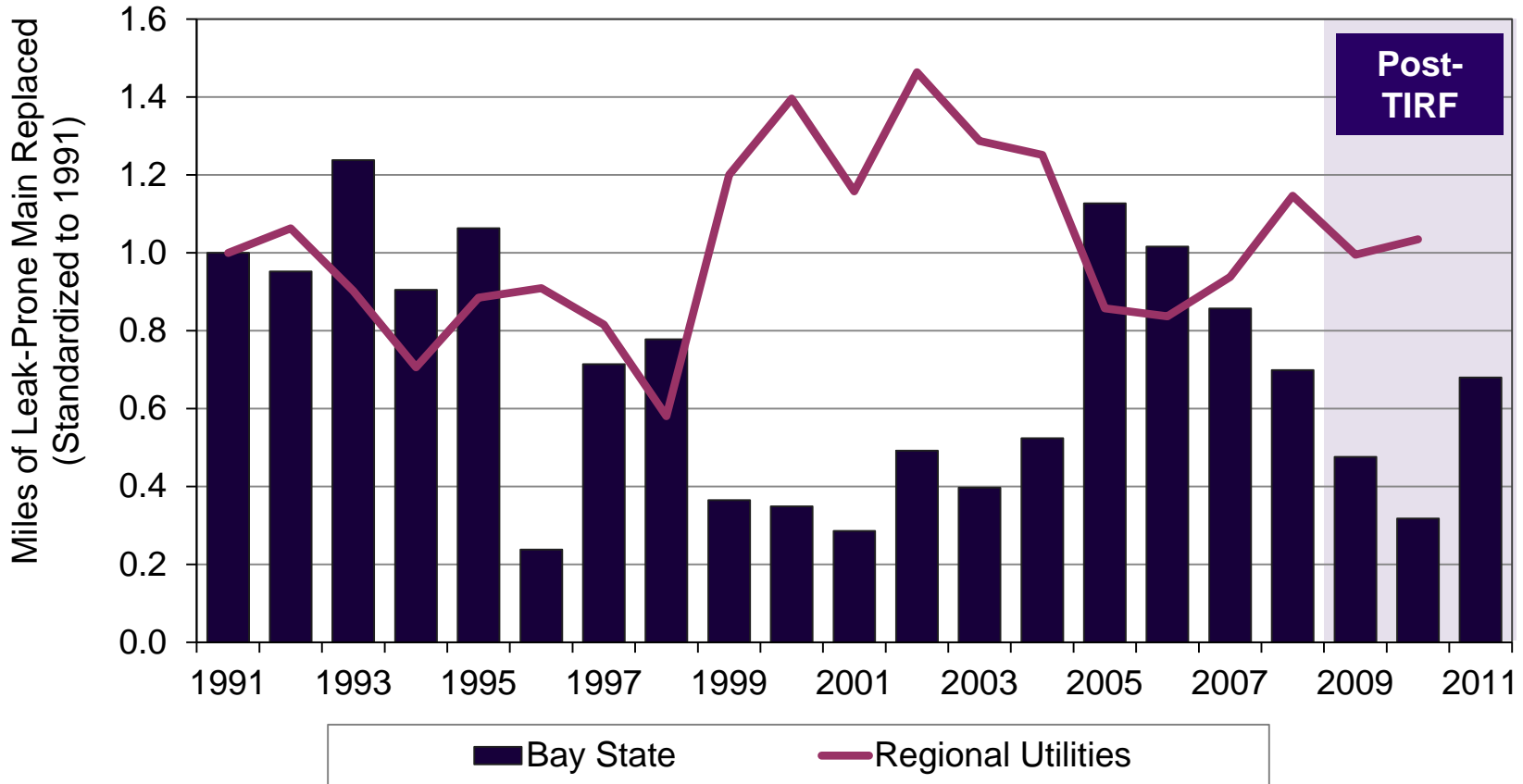
Considering that the scale and scope of the investment is limited to the bare and unprotected steel infrastructure, and the cap both limits the annual rate increase and adds to rate continuity, the Department finds that the TIRF will effectively expedite infrastructure replacement while providing sufficient protections for ratepayers. (MA D.P.U. 09-30 Final Order, pp. 133-134)

Massachusetts DPU Decision (D.P.U. 12-25)

Company	Tracker Proposal	Proposed Modifications	Rationale
Bay State Gas Company (Docket 12-25)	Modifications to the Existing Targeted Infrastructure Replacement Factor ("TIRF")	<ol style="list-style-type: none"> 1) Expand the types of capital investments eligible for TIRF recovery to include cast iron mains less than 12 inches in diameter and cast iron service lines. 2) Allow the use of a partially forecasted test year for the recovery of non-revenue generating investments. 3) Accelerate the true-up process by as much as seven months. 	<ol style="list-style-type: none"> 1) Other Massachusetts utilities had included small diameter cast iron mains and associated services within subsequent TIRF proposals. 2) To accelerate recovery from the TIRF's current recovery lag of nearly a year from end of TIRF investment year. 3) Same as 2 above.

Bay State Gas Company, Replacement of Steel Mains

Bay State's replacement rate even after implementation of the TIRF did not reach levels of replacement seen by other regional utilities, and even fell relative to historic averages prior to the implementation of the TIRF.



Note: Unprotected pipe includes unprotected steel pipe and cast iron/wrought iron pipe.

Source: Office of Pipeline Safety, U.S. Department of Transportation.

Massachusetts DPU Decision (D.P.U. 12-25)

The Company conceded in the proceeding that the TIRF mechanism had not provided the level of benefits that were expected. The Company argued that the cost recovery period in the TIRF were excessive and the scope too limited.

Other parties, such as the Attorney General, argued that the mechanism should be discontinued because the Company has not provided the public benefits on which the program was predicated.

At the very least, the Attorney General argued that the proposed modifications should be rejected and performance metrics should be implemented if the TIRF was to continue.

Massachusetts DPU Decision (D.P.U. 12-25)

Department rejected the proposed forecasted rate base and expansion of tracker eligibility – also agreed that the Company had not been providing the level of benefits the TIRF was premised on; however, the Department declined to discontinue the mechanism. Instead the Department opted to implement a performance target.

... we find that based on the Company's poor replacement rate under the TIRF program, we must implement safeguards to ensure that the public benefits of the program are realized. (MA D.P.U. 12-25 pp. 47-48)

... in light of our decision above to continue the TIRF mechanism, we expect that the Company can achieve a threshold level of main replacement (small cast iron and unprotect steel) of 38 miles per year. While this threshold level of main replacement is the same level proposed by the Attorney General, our decision is based on actual levels of main replacement that the Company has attained in the past. (MA D.P.U. 12-25 p. 54)

Recent Proposal: Massachusetts DPU Decision (D.P.U. 13-75, Active)

Company	Tracker Proposal	Proposed Modifications	Rationale
Bay State Gas Company (Docket 13-75)	Modifications to the Existing Targeted Infrastructure Replacement Factor ("TIRF")	<ol style="list-style-type: none"> 1) Change the Rate Impact cap to 3.75 percent of base distribution revenues as oppose to 1.0 percent of total revenues. 2) Implement a waiver process for years the Company anticipates not meeting its 38 mile replacement requirement. 3) Expand the definition of TIRF-eligible costs to include carrying costs at a long-term debt rate. 	<ol style="list-style-type: none"> 1) With the inclusion of cast iron mains, the Company felt it runs the risk of violating existing Rate Impact Cap. 2) Some circumstances arises where a work plan should focus on a goal other than linear feet of main. 3) Existing ratemaking does not account for these incurred financing costs.

Proposals still under consideration.

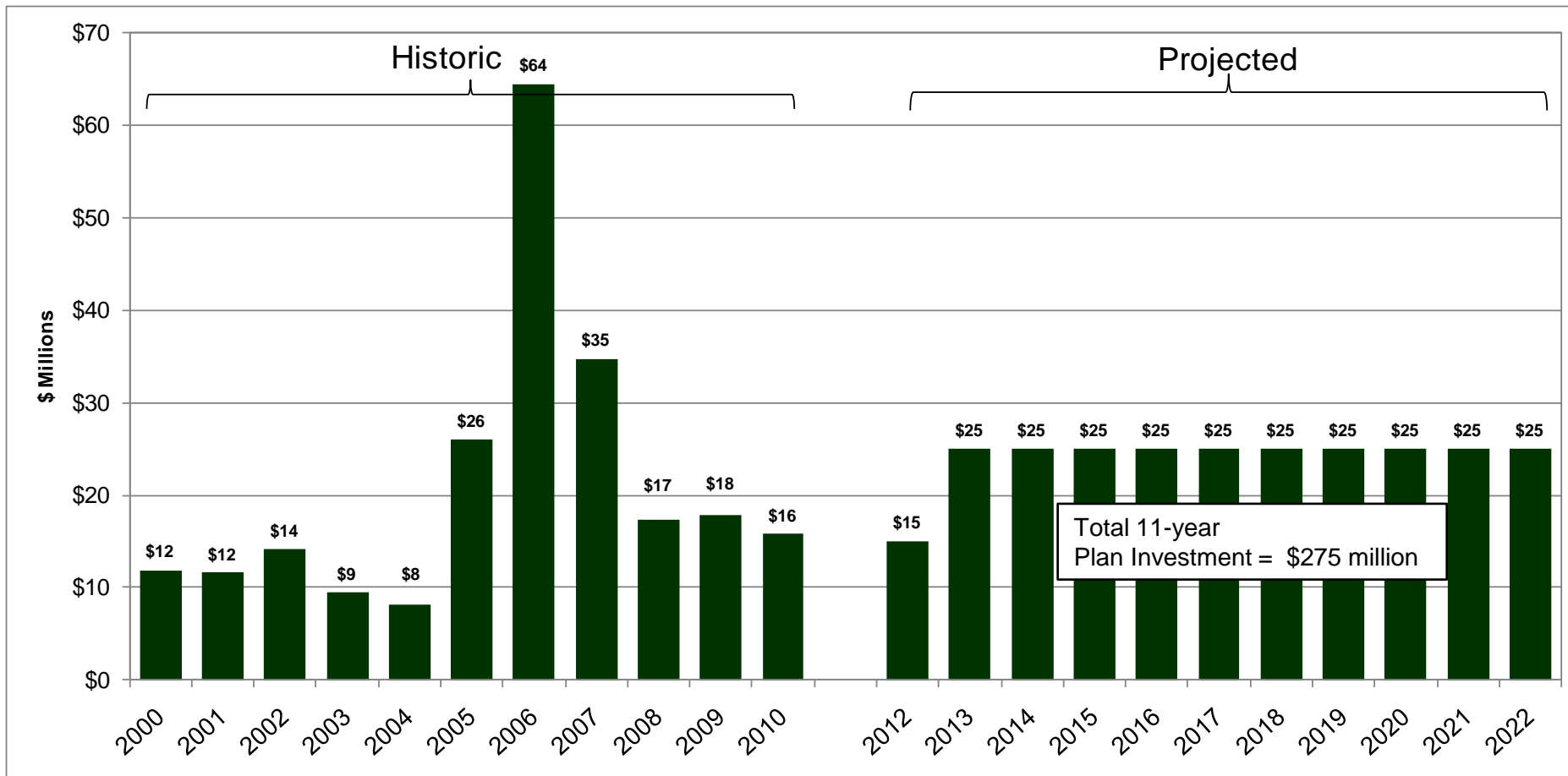
Represent an additional proposal to make a significant modification to a tracker mechanism.

More importantly, this proceeding (like prior rate case) will likely address tracker (replacement) performance issues.

Examples of Tracker Rationales (Gas Industry, Maryland)

Company	Tracker Proposal	Tracker Mechanics	Rationale
Washington Gas Light (WGL, Case 9267)	Accelerated Pipeline Replacement Plan	Would be used to recover incremental capital costs, including actual expenditures and associated interest, resulting from the Company's replacement of unprotected steel and cast iron mains and service lines, also included mechanically coupled mains.	Traditional regulation not "well-suited" to "efficiently and effectively" handle the capital expenditures required for any meaningful accelerated replacement efforts.

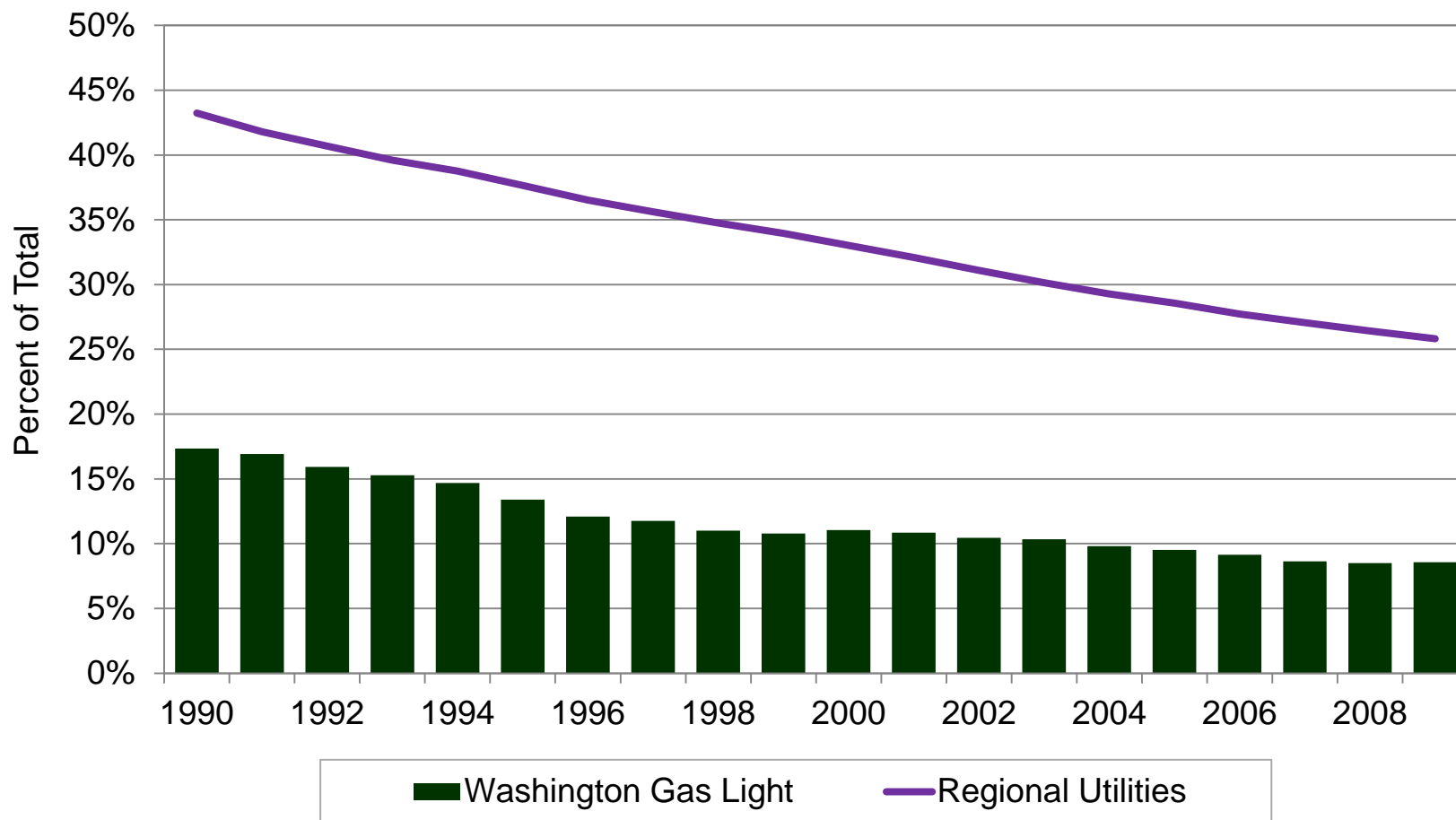
Examples of Tracker Rationales (Gas Industry, Maryland)



Note: For spending in 2017-2022, the 2013-2016 trend was used since in Response to Staff Data Request 1-19, the Company stated , "A year-by-year workplan for the full implementation has not been developed." Unprotected pipe includes unprotected steel pipe and cast iron/wrought iron pipe under 8 inches in diameter.

Source: Company Response to OPC Data Request 3-114; Exhibit TLT-1, p. 26.

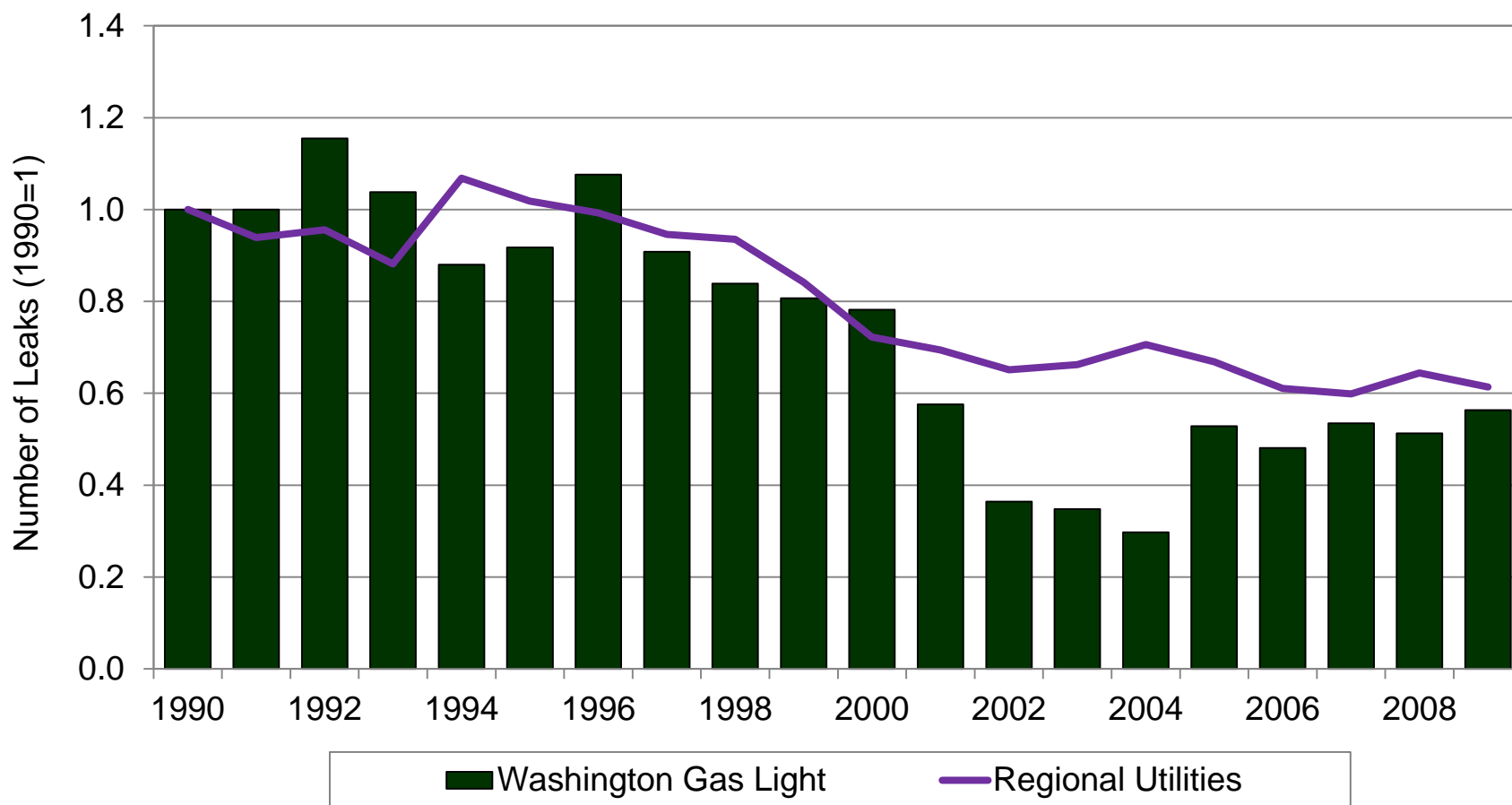
Examples of Tracker Rationales (Gas Industry, Maryland)



Note: Unprotected pipe includes unprotected steel pipe and cast iron/wrought iron pipe.

Source: U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, Office of Pipeline Safety.

Examples of Tracker Rationales (Gas Industry, Maryland)

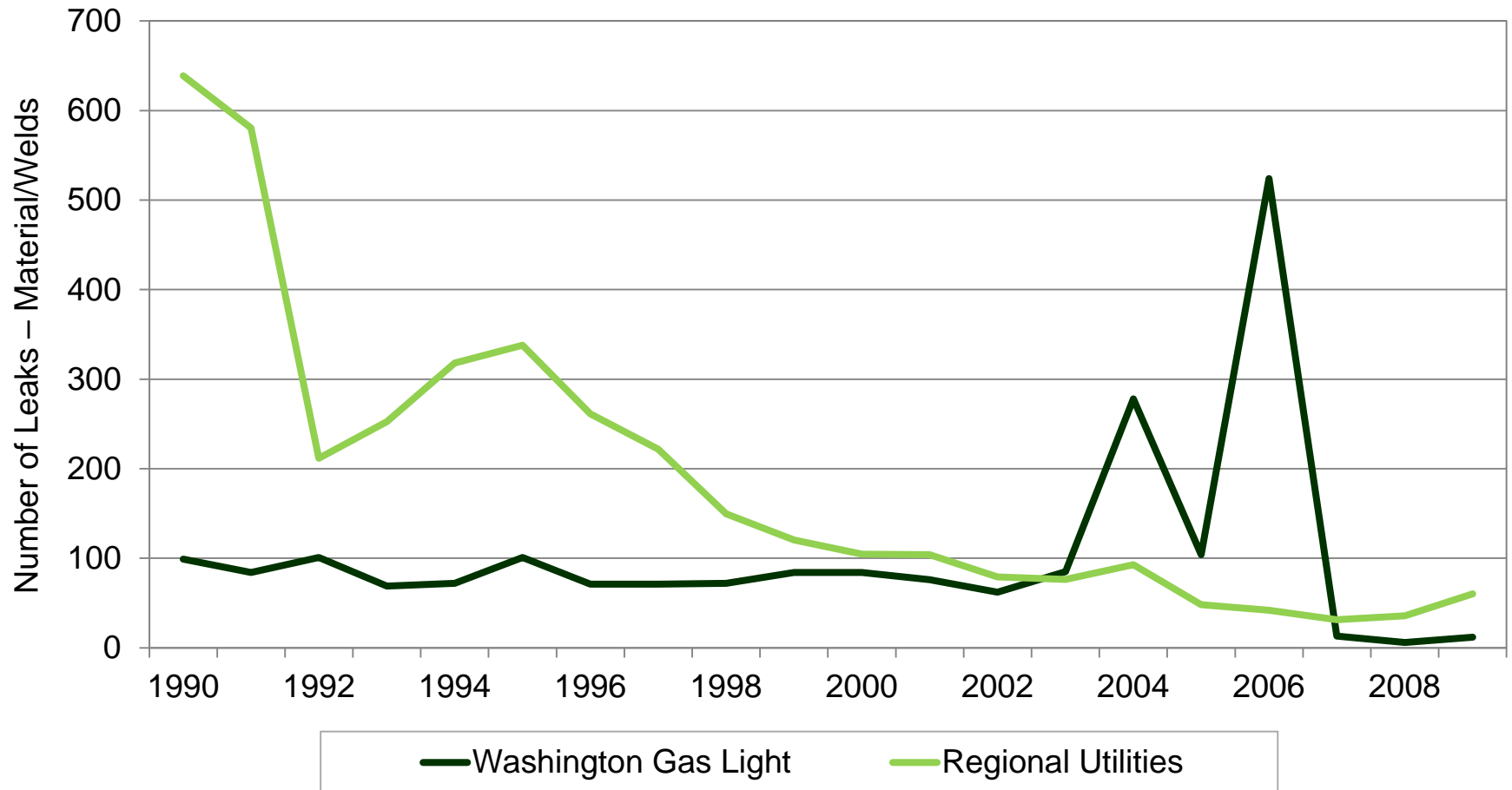


Note: Leaks are defined as corrosion-related only.

Source: U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, Office of Pipeline Safety.



Examples of Tracker Rationales (Gas Industry, Maryland)



Note: Leaks shown from 1990 through 2003 are a combination of leaks defined as “construction defect” and “material defect”. Leaks shown from 2004 through 2009 are defined as “material or welds”.

Source: U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, Office of Pipeline Safety.

Maryland PSC Decision

The Maryland Commission rejected the surcharge recovery proposed by Washington Gas Light for its Accelerated Pipe Replacement Plan (“APRP”):

- “We do not view more frequent rate cases as a bad thing, however. As costs and market conditions change, rate cases at reasonable intervals allows the Company’s rates to be calibrated appropriately and avoids the inevitable mismatches that come from delay.”
- “...[W]e would rather consider changed circumstances more frequently, and in smaller increments, than to wait too long and face bigger, and potentially more shocking, rate adjustments.”

Recent Maryland Legislation**Strategic Infrastructure Development and Enhancement Program (“STRIDE”)**

Allows for a process wherein a gas company may file a request with the PSC a plan to invest in infrastructure improvements to improve public safety and reduce greenhouse gas emissions, and do not result in increased revenues for the company by connecting directly to new customers.

Surcharge must be a fixed annual surcharge, and must not exceed \$2 each month for residential customer. The rate for nonresidential customers must not be less than that approved for residential customers, and must be proportional to total distribution revenues.

Finally, surcharge will only be in effect for 5 years from the date of initial implementation, with the Company required to file a base rate case application within this time frame.



Infrastructure Riders – Electricity

Electric Infrastructure Investments: Reliability and “Modernization”



Smart Grid/Metering

Electric distribution utilities making wide range of increased capital investments to either “increase reliability” and/or “modernize” their aging systems.



Substation Upgrades

**Feeder
Upgrades and
Asset
Replacements**



**Distribution
Automation**



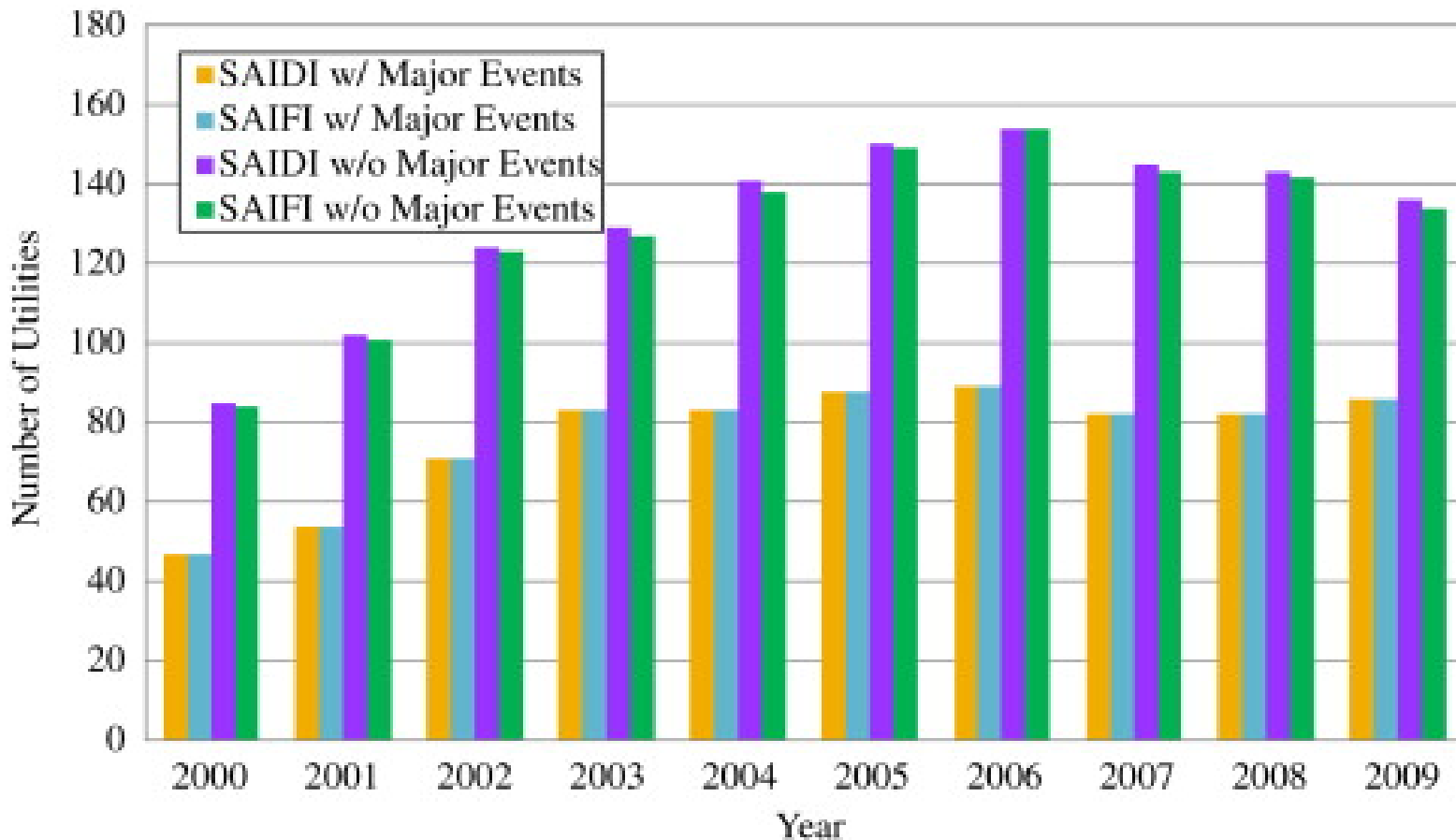
**Selected
Undergrounding
/Hardening**





Reliability Trends: SAIDI/SAIFI

Argument that increased investment will improve deteriorating reliability trends as measured by SAIDI and SAIFI.





Definitions: Resiliency & Reliability

Emerging distinctions being made between “reliability” and “resiliency.”

Reliability: the ability of the bulk power and distribution systems to deliver electricity to customers during normal ‘blue sky’ operations.”

Resiliency: the “ability of the distribution system to absorb stresses without experiencing a sustained outage where these stresses are defined as events that can include hurricanes, high winds, snow, and high load days.



Recent Severe Weather Activity & Resiliency

There have been numerous well-publicized storms and **weather-related events** over the past two years that has increased the attention on issues of “**resiliency.**”

Increasing call for accelerated infrastructure investment to “**modernize,**” “**harden,**” and “**upgrade**” the electric power grid and its supporting systems.

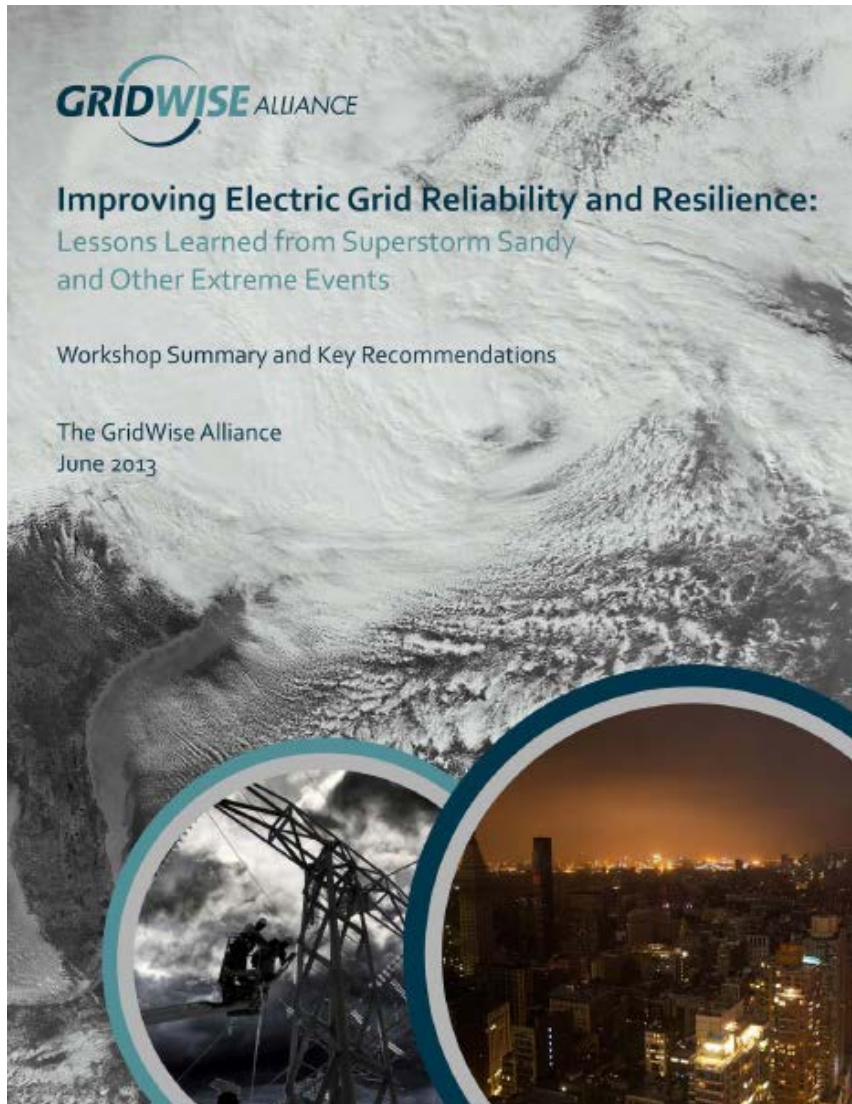
Concurrent call to **change utility regulation to facilitate resiliency-related investments.**



Recent Weather Related Resiliency Challenges

Event	Date	Region	Customer Affected
Superstorm Sandy	October 2012	Northeast	8,100,000
Derecho	July 2012	Middle Atlantic	4,200,000
Early Season Snow	October 2011	New England	3,000,000
Tropical Storm Irene	August 2011	Middle Atlantic	3,200,000
Wildfires	July 2012	California, Colorado	2,000,000
Windstorm	November 2011	Southern California	400,000

Gridwise Alliance Report Recommendations



GridWise Alliance represents stakeholders that design, build and operate the electric grid, including electric utilities, and Regional Transmission Organization, to name a few.

The June 2013 GridWise report found that smart grid technologies alone cannot adequately improve and sustain the reliability of the electric system during Very Large System Events (“VLSE”). Instead, solutions must integrate processes to maximize the effectiveness of response efforts.



Recommendation 1: Grid Modernization Technologies

- Leverage technologies to facility reliability and resilience
- Integrated modernization and hardening.
- Develop technology roadmaps
- Identify policy and regulatory models
- Consider societal benefits in cost effectiveness analysis

Recommendation 2: Enhanced Emergency Response Planning

- Develop enhanced (weather) prediction models.
- Standardize inter-operability guidelines, processes and technologies.
- Conduct joint exercises and increase coordination with govt agencies/first responders.
- Institutionalize streamlined emergency response.



Recommendation 3: Information/Communications Technology

What are VLSE?

Event	Date	Region	Customer Affected
Superstorm Sandy	October 2012	Northeast	8,100,000
Derecho	July 2012	Middle Atlantic	4,200,000
Early Season Snow	October 2011	New England	3,000,000
Tropical Storm Irene	August 2011	Middle Atlantic	3,200,000
Wildfires	July 2012	California, Colorado	2,000,000
Windstorm	November 2011	Southern California	400,000

- Plan and test primary and backup systems and increase resiliency for VLSEs.
- Grant utilities “first responder” status.



Recommendation 4: Systems Capabilities

- Integrated new “field intelligence processes” to increase response accuracy
- Fully leverage AMI
- Deploy/utilize remote sensing
- Line information from AMI to business processes and training
- Use AMI/modernization to increase accuracy and reduce restoration time

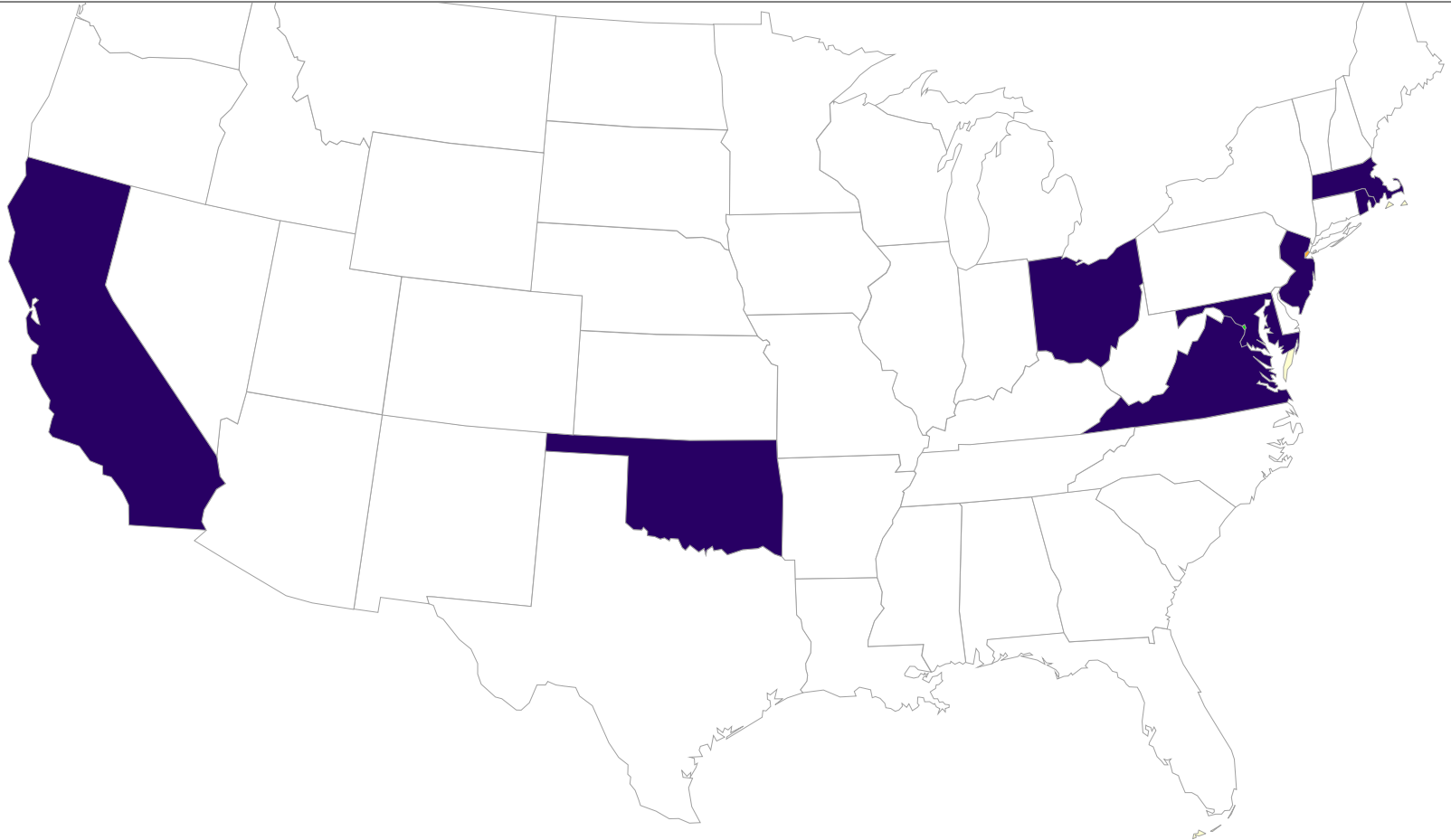


Recommendation 5: Distributed Generation

- Define and update existing and emerging critical load requirements
- Enhance control capabilities to remotely dispatch DER
- Identify policy and regulatory issues
- Establish emergency operational agreements with DER owners with critical loads
- Identify solutions to regulatory, policy, and operational barriers to microgrids.

Capital Cost Recovery Mechanisms (Electric)

At least 8 states with electric capital trackers, primarily associated with reliability investments.



Infrastructure Cost Recovery Mechanisms

State	Company	Recovery Mechanism - Gas/ Electric	Date of Decision	Decision Type	Mechanism	Term/ Period	Limited Recovery / Revenue Cap	Expenditures Limited / Capped	Carrying Charges on Investment	Carrying Charges on Deferrals	Deferral-Based Cost Recovery	O&M Offset	Reduced Rate of Return	Reliability Benchmarks
Electric/Gas Utilities														
CA	Pacific Gas and Electric Company	Electric	6/24/2010	Order	Cornerstone Improvement Project	2010-2013		XXX						
NJ	Public Service Electric & Gas	Electric/Gas	4/28/2009 & 7/14/2011	Settlement	Capital Infrastructure Investment Program	2009-2012			XXX	XXX			XXX	
OK	Oklahoma Gas and Electric	Electric	5/13/2009 & 7/9/2012	Settlement	System Hardening Program Rider	2009-2013		XXX						
RI	National Grid	Electric	12/12/2011	Order	Infrastructure, Safety, and Reliability Provision	Annually								
Electric-Only Utilities														
CA	Southern California Edison Company (CA)	Electric	5/11/2006 & 3/17/2009 & 11/29/2012	Order	Reliability Investment Incentive Mechanism	2006-2014		XXX						XXX
MA	National Grid	Electric	11/30/2009	Order	Net Distribution Capital Expenditure Adjustment	2010-2012	XXX	XXX	XXX		XXX			XXX
MD	Potomac Electric Power Company (PEPCO)	Electric	7/12/2013	Order	Grid Resiliency Charge Rider	2014-2016	XXX			XXX				XXX
OH	FirstEnergy ¹	Electric	3/25/2009	Settlement	Delivery Service Improvement Rider	2009-2014								
OH	FirstEnergy ¹	Electric	8/25/2010	Settlement	Delivery Capital Recovery Rider	2012-2014	XXX			XXX				
OH	AEP Ohio ²	Electric	12/14/2011	Settlement	Distribution Investment Rider	2012-2015	XXX			XXX				
VA	Appalachian Power Company	Electric	12/20/2011	Order	Environmental & Reliability Cost Recovery Surcharge	2012-2013	XXX			XXX				

¹Includes Ohio Edison Company, The Cleveland Electric Illuminating Company and The Toledo Edison Company.

²Includes Columbus Southern Power Company and Ohio Power Company.

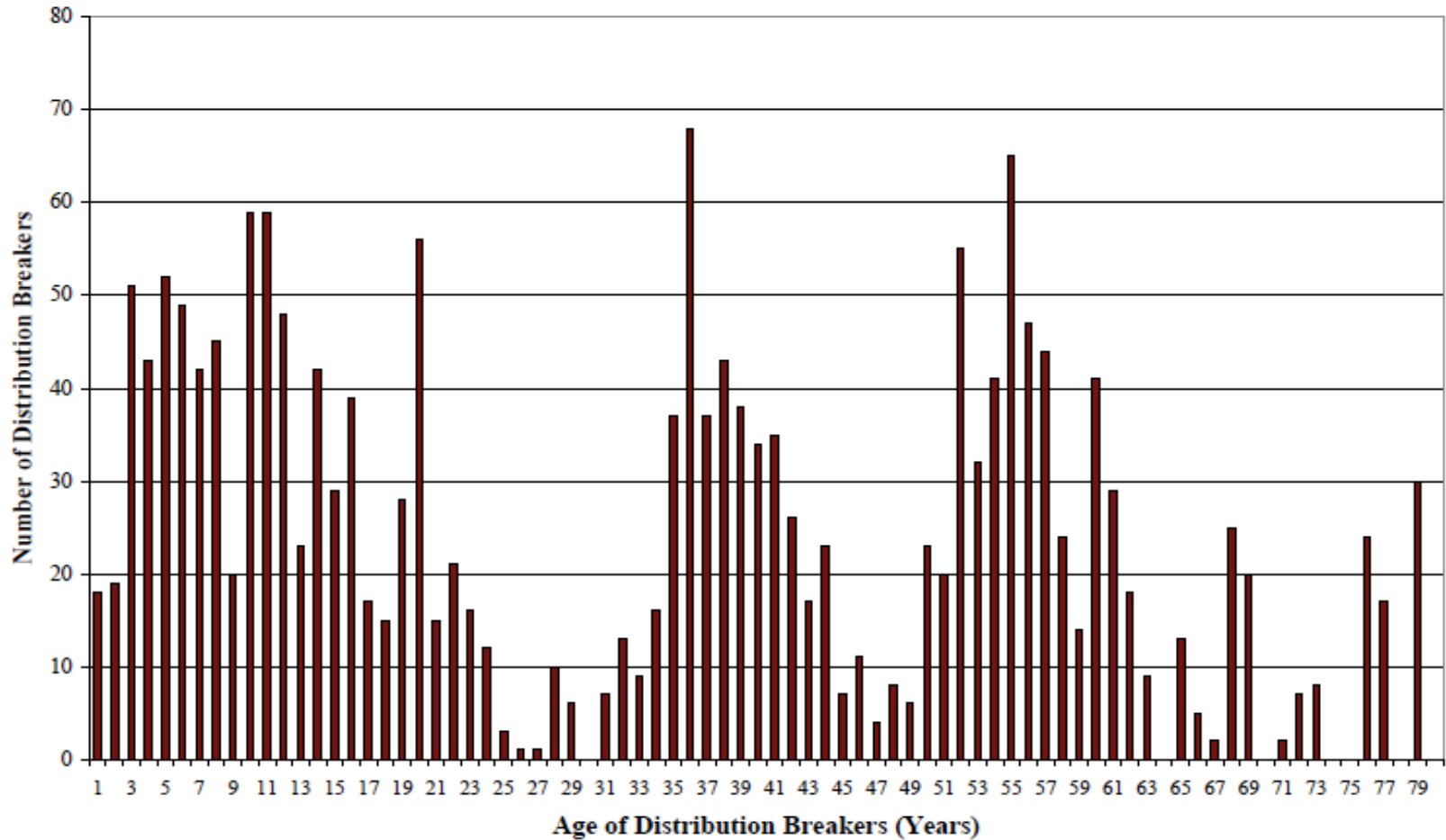
**Infrastructure Riders:
Case Studies (Electricity)**

Examples of Tracker Rationales (Electric, Massachusetts)

Company	Tracker Proposal	Tracker Mechanics	Rationale
National Grid (Docket 09-39)	Component of “Revenue Decoupling Ratemaking Plan (“RDR Plan”) (CapEx Adjustment)	Would be used to adjust revenue requirement - decoupling removes revenues from increasing sales which is a traditional source of revenue to fund capital investment between rate cases.	Needed to replace “aged” assets; and costs for electric power distribution capital projects have increased rapidly in recent years.

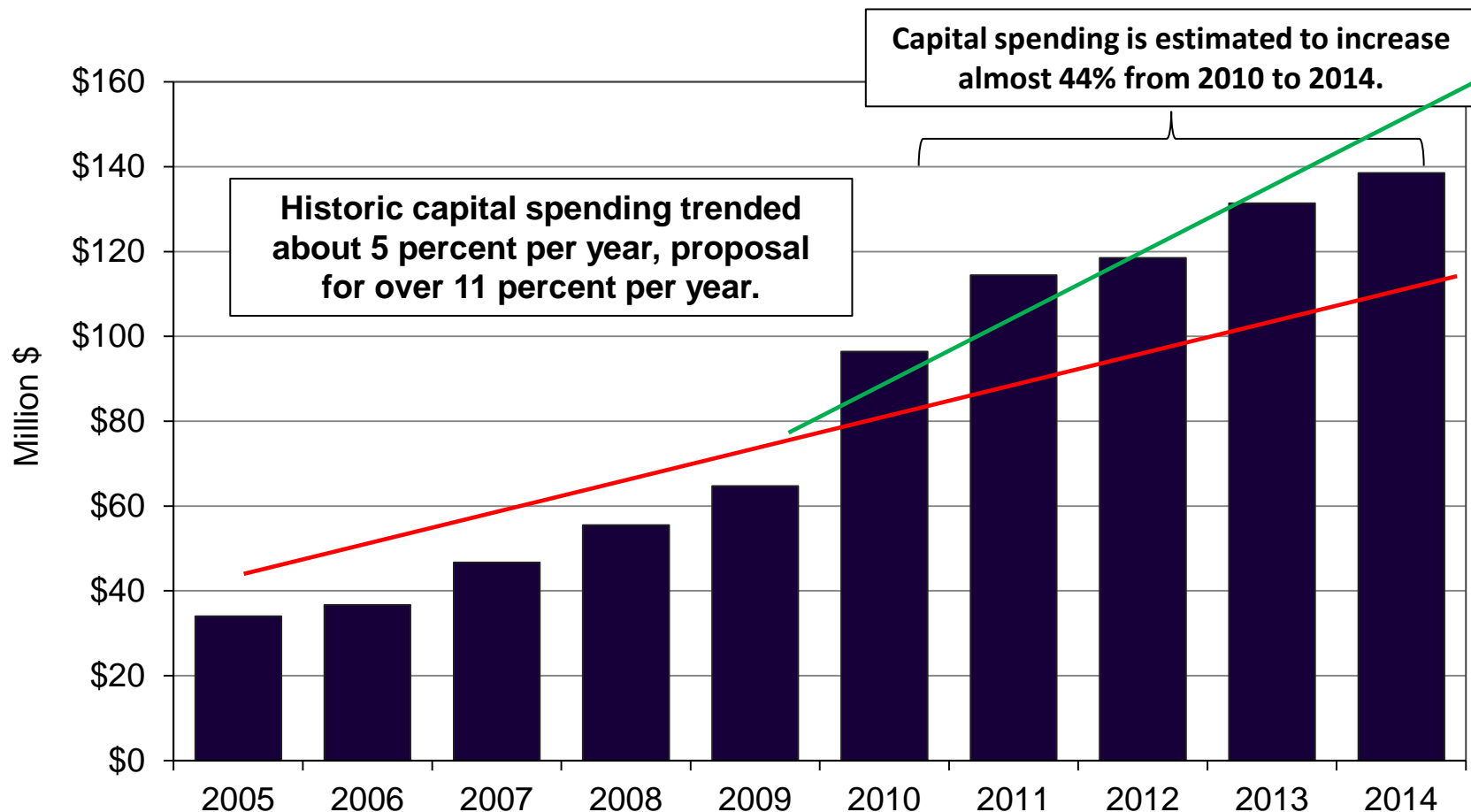
National Grid, Distribution Breakers by Age

Premise of National Grid’s proposal was that its assets were “old.”



National Grid, Asset Replacement and Reliability, Capital Spending

Important to review these proposals within historic context.



National Grid, Average Remaining Life Relative to Peers

Important to compare asset ages with comparable utilities. In Grid's case, their asset ages were comparable (in some instances younger) than peer utilities.

Results, interestingly, were in direct contrast to their depreciation study which were finding (requesting) longer asset lives, not shorter ones.

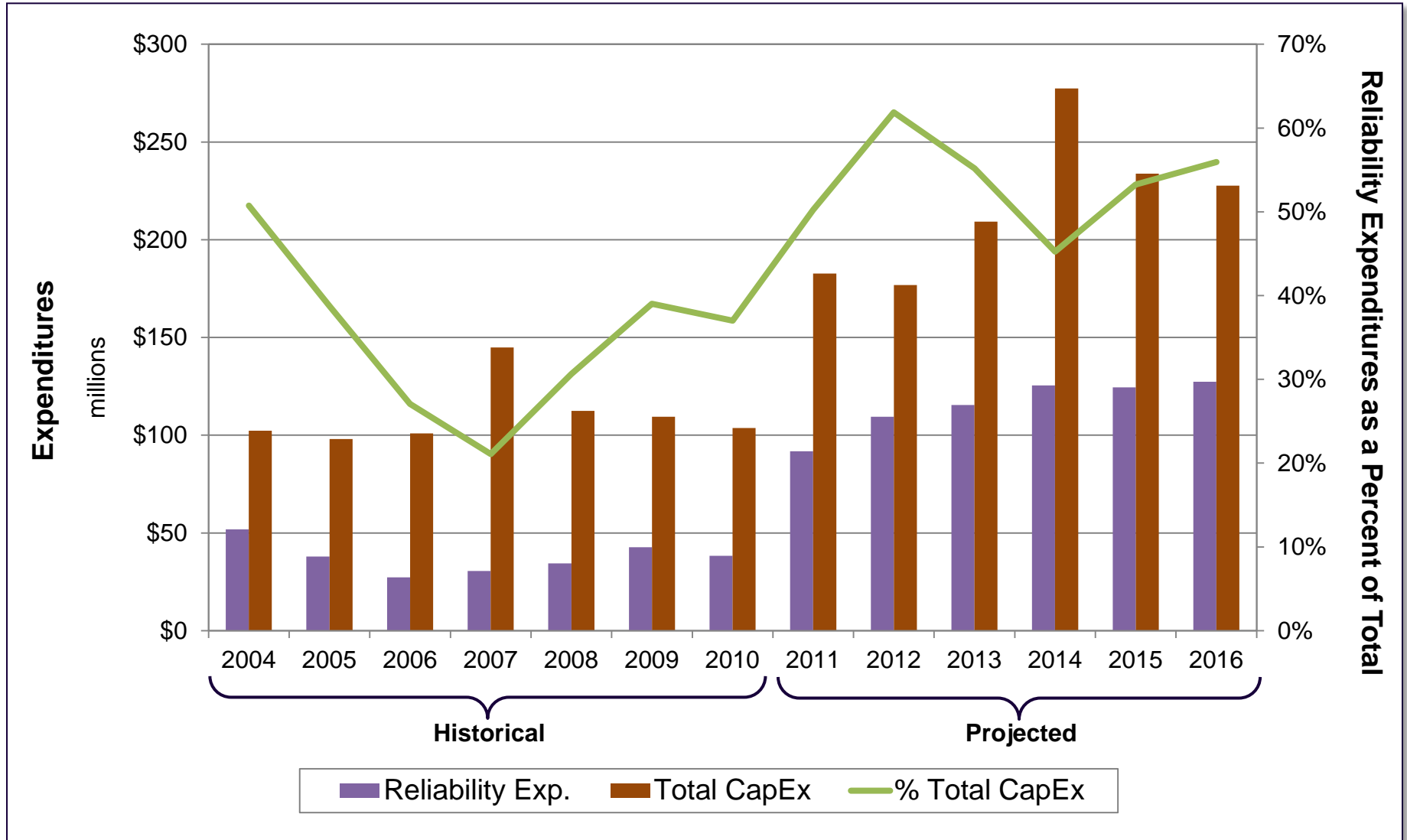
Account:	361 Structures and Improvements	362 Station Equipment	364 Poles, Towers, and Fixtures	365 Overhead Conductors and Devices	366 Underground Conduit	367 Underground Conductors and Devices	368 Line Transformers	369 Services	370 Meters	Total Composite
Average Remaining Life (years):										
Massachusetts Electric:										
Proposed Remaining Life from Depreciation Study	36.57	54.99	26.87	29.58	33.78	35.04	20.11	30.27	15.77	31.65
Current Remaining Life from Depreciation Study	34.80	37.88	22.80	23.87	34.87	34.08	19.62	21.97	20.68	26.94
FERC Form 1	30.82	38.37	19.49	20.48	33.71	34.14	17.16	19.58	19.46	25.02
Boston Edison (NSTAR)	41.00	32.90	38.00	42.10	41.90	35.90	26.80	46.17	19.10	36.03
Central Hudson	63.90	36.09	40.70	42.50	47.00	38.90	26.40	36.44	15.70	36.72
Central Maine	62.42	31.08	33.67	46.14	37.17	38.94	23.97	37.05	10.93	33.88
Central Vermont	40.30	31.60	23.40	26.40	34.90	28.30	22.10	25.40	19.50	25.88
Green Mountain	25.60	26.70	25.20	24.80	29.90	21.60	35.80	30.20	23.00	27.71
Maine Public Service	17.49	33.52	29.64	32.70	44.15	30.14	25.75	26.51	28.44	30.02
Orange & Rockland	55.00	23.00	40.00	48.41	18.00	50.00	33.00	38.04	18.00	37.56
Average (excluding Mass Electric)	43.67	30.70	32.94	37.58	36.15	34.83	27.69	34.26	19.24	32.54

Examples of Tracker Rationales (Electric, District of Columbia, Maryland)

Company	Tracker Proposal	Tracker Mechanics	Rationale
PEPCO (Formal Case 1087)	Reliability Investment Recovery Program or “RIM”	Would be used to recover incremental capital costs, including actual expenditures and associated interest, resulting from the Company’s reliability improvement plan.	Needed to replace “aged” assets; meeting the Commission’s “stringent” and new reliability standards.



Pepco's Historical and Projected Reliability and Total Capital Expenditures



PEPCO'S RIM Deficiencies

- Not tied to the Commission's recent reliability standards;
- Is not well-defined and incomplete (as an attrition filing).
- Excludes any form of cost-benefit or value-of-service analysis;
- Is rife with numerous program design problems
- Is based upon projected capital expenditures that presuppose that a forecasted test year is appropriate for ratemaking purposes;
- Excludes any performance-based targets, goals, or success measures;
- Excludes critically-important consumer protection mechanisms; and
- Is virtually silent, by deferring the details to another day, on the specifics regarding the annual filing and review requirements, including annual minimum filing requirements, compliance requirements, and informational and other important matters that are often clearly addressed in infrastructure replacement rider requests.

Recent Rejections (Electric Industry): Maryland PSC

The Maryland Commission rejected Delmarva's Reliability Investment Recovery Mechanism ("RIM"):

- "...[R]egulatory lag can serve positive functions, and leaves with the Company the risk of making prudent investment decisions before recovering costs from rate payers."
- "...[R]ate cases provide an opportunity to look at a public utility company's true and entire financial outlook, and to determine whether to increase or decrease its overall ROE depending upon what is a just and reasonable rate for the public."
- "...[T]he RIM would create a substantial parallel stream of work for all of the parties on a constant, annually renewing basis, and we are not convinced that it would add much value or streamline the traditional rate case process..."



Recent Rejections (Electric Industry): Maryland

The Maryland Commission rejected Pepco's Reliability Investment Recovery Mechanism ("RIM"):

- "...[I]t is difficult to see what new value the process creates beyond accelerating the Company's cost recovery."
- "...[W]e struggle to understand the additional value the parties, the Commission, and ultimately the ratepayers would derive from the RIM."
- "In reality, though, post hoc prudence reviews will be largely ineffectual."
- "...[O]nce these mechanisms are in place, they're difficult to get rid of."

Recent Rejections (Electric Industry): DC PSC

The D.C. Commission rejected Pepco's Reliability Investment Recovery Mechanism ("RIM"):

- "...[T]raditional ratemaking's regulatory lag can serve positive functions...it leaves with the Company the risk of making prudent investment decisions before recovering costs from ratepayers."
- "The proposed RIM review processes would require extensive work, but only for the limited purpose of determining how much more money the Company would receive earlier through this mechanism."
- "...[T]he Company can do the work it needs to do and have a reasonable opportunity to earn its approved return without any nontraditional recovery mechanisms."

Grid Resiliency Charge (“GRC”) – Pepco, MD

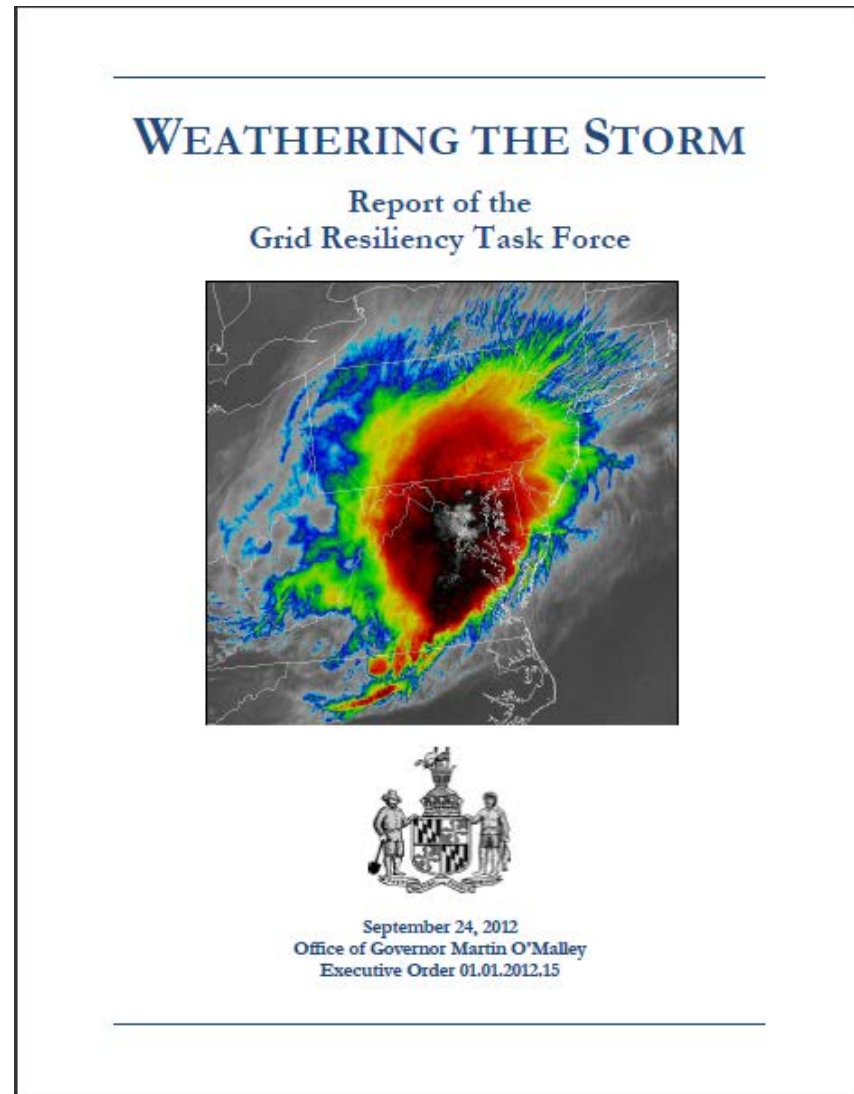
Company	Tracker Proposal	Tracker Mechanics	Rationale
PEPCO (Case No. 9311)	Grid Resiliency Charge (“GRC”)	Would be used to recover incremental capital costs, including actual expenditures and associated interest, resulting from the Company’s five year reliability enhancement plan.	Recent storms demonstrated the need to increase the resiliency of the State’s distribution system.

Grid Resiliency Charge (“GRC”) – Pepco, MD

Grid Resiliency Task Force:

Administrative Task Force created to examine how to improve the resiliency and reliability of Maryland’s electric distribution system. Task Force members included selected officers from various governmental offices, including the Governor’s office, and the PSC.

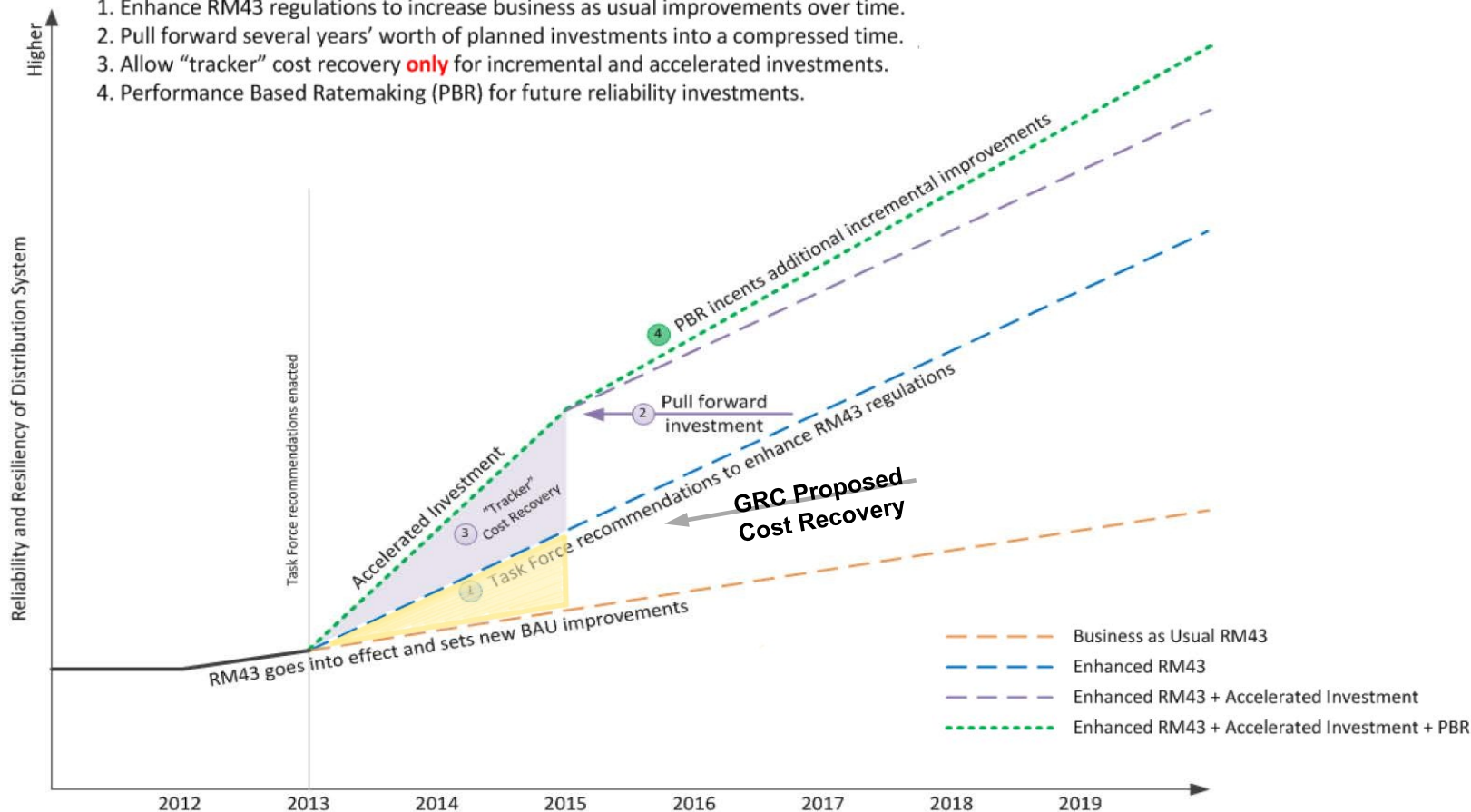
The Task Force produced 11 recommendations, including that the existing PSC reliability requirements be strengthened, and that the PSC allow tracker recovery for investments in excess of PSC requirements.



Grid Resiliency Charge (“GRC”) – Pepco, MD

GRC proposal did not include a provision that the existing PSC reliability standards (RM43) be strengthened per the Task Force Report’s recommendation.

1. Enhance RM43 regulations to increase business as usual improvements over time.
2. Pull forward several years’ worth of planned investments into a compressed time.
3. Allow “tracker” cost recovery **only** for incremental and accelerated investments.
4. Performance Based Ratemaking (PBR) for future reliability investments.



Grid Resiliency Charge (“GRC”) – Pepco, MD

The Maryland Commission conditionally approved Pepco’s GRC limited to Accelerate Priority Feeders:

- “We find that the remediation to the priority feeders will provide cost effective incremental reliability benefits to the end users associated with feeders particularly prone to outages due to major storm events.”
- “...we share the concerns and criticism by several of the parties with respect to the lack of a sunset date and certain other consumer protection measures in the GRC proposal design. To this end, we direct the Company to submit a base rate case petition that aligns with the projected completion date of the qualifying projects, and stipulate that the qualifying projects and GRC revenues are subject to full review in the next base rate case following the completion of these projects.”
- “...we agree with concerns raised by several parties to the case that the Company’s proposal in its current form does not contain assurances that expenditures will be just and reasonable. To this end, we direct the Company to provide an annual report to the Commission and Staff...



Conclusions

Conclusions: Cost Adjustment Mechanisms

- Tracker mechanisms are **common approaches** or dealing with **perceived problems created by regulatory lag**.
- Trackers challenge move the regulatory process away from performance and towards **cost-plus oversight**.
- Two significant shortcomings include:
 - Appropriately accounting for **risk-shifting nature** of the mechanism.
 - Imposing and measuring **performance**.
- No real assessment of whether this increases or reduces regulatory/administrative costs.

Capital Trackers: Summary and Conclusions

- **Focus closely on the definition of tracker and purported need which is often blurred and confused (i.e., replacement versus growth).**
- Proposals with **limited empirical support** should be vigorously questioned.
- Comparative statistics (across time and comparable utilities) can be useful tool in evaluating capital tracker proposals.
- Important to **focus on the outputs** (reduced leakages, increased reliability) as well as the inputs (asset replacement).
What are ratepayers getting for their support?
- No capital tracker should be approved without a **clear asset development plan; timetable, benchmarks, development caps, and accountability.**



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