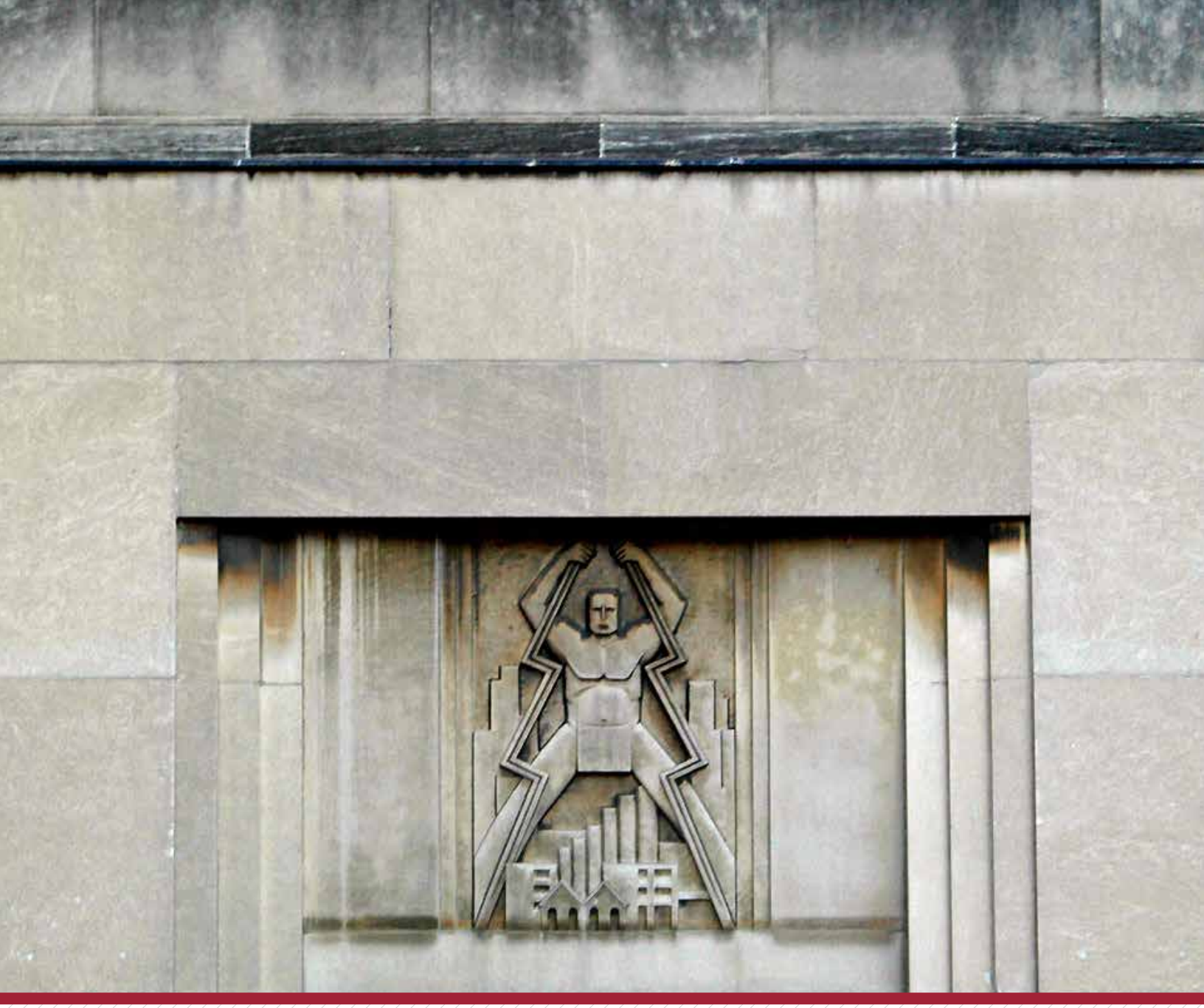

Guaranteed Profits, Broken Promises

How ComEd and Exelon turned utility regulation on its head

Illinois PIRG

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DECEMBER 2020

ACKNOWLEDGMENTS

Illinois PIRG thanks Elizabeth Ridlington, Tony Dutzik and Bryn Huxley-Reicher of Frontier Group for editorial support. Thanks to Energy Action Fund for supporting this report.

The authors bear responsibility for any factual errors. The recommendations are those of Illinois PIRG. The views expressed in this report are those of the authors and do not necessarily reflect the views of our funders or those who provided review.

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Layout: To the Point Collaborative, tothepointcollaborative.com

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Executive summary

COMMONWEALTH EDISON (COMED), Illinois' largest electric utility, first proposed a large capital program to modernize its grid in 2007.[1] Understanding the substantial costs and potential, if uncertain, benefits of so-called "smart grid" investments, state regulators opted to instead launch an innovative statewide process, seeking to ensure "'that consumers are the primary beneficiaries' of the smart grid modernization."[2]

Before this customer-focused process addressed policymaking details,[3] ComEd went to the Illinois General Assembly to pass the Energy Infrastructure Modernization Act (EIMA) in 2011, which paired capital investments with radical, utility-friendly changes to rate-setting and customer protections.[4] ComEd sold EIMA as necessary to move from a grid whose technology had not changed much in the past 100 years and that functioned mainly to dispatch power from centralized power plants to customers, to a modern smart grid capable of integrating power from smaller, clean energy sources, improving efficiency, and empowering customers with more information and control.[5]

We now know that EIMA was passed, in part, through a corrupt and illegal bribery scheme. In a July deferred prosecution agreement with the United States Attorney for the Northern District of Illinois, ComEd admitted to perpetrating this scheme in an attempt to influence Illinois House Speaker Michael Madigan and win favorable legislation, starting with EIMA.[6]

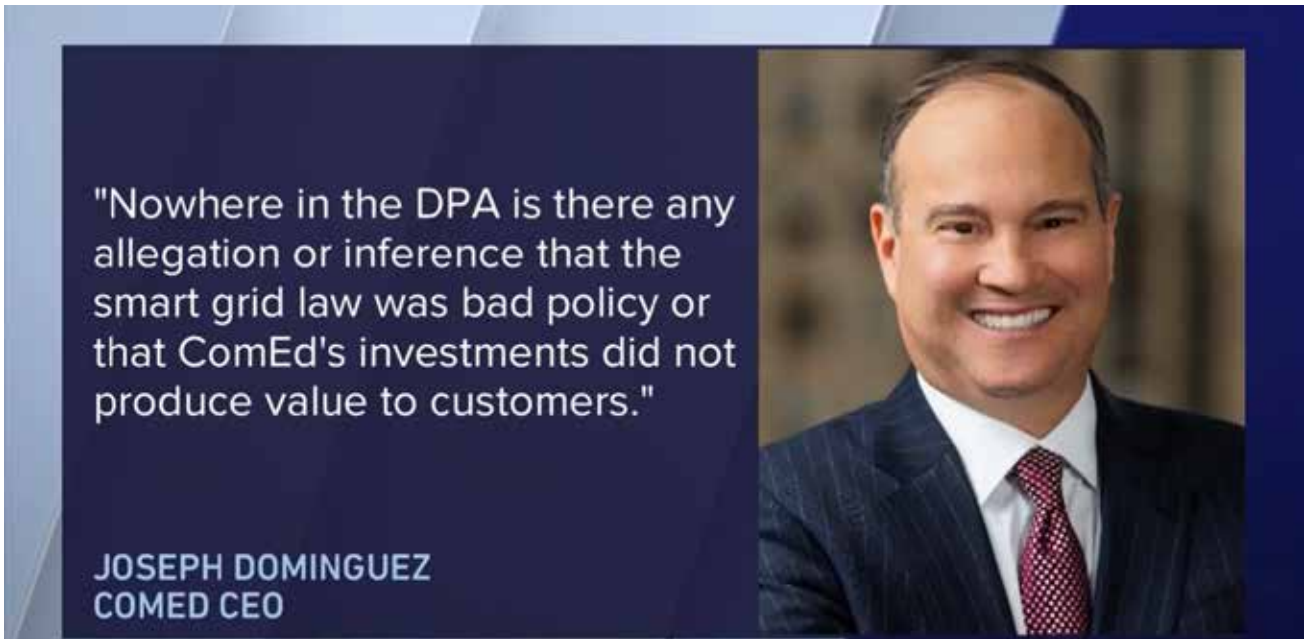
In the wake of the scandal, ComEd has insisted that the "improper conduct described in the deferred prosecution agreement … does not mean that consumers were harmed by the legislation that was passed in Illinois."[7]

Nine years after EIMA's passage, the record is clear: EIMA delivered guaranteed, record profits and other benefits to ComEd and its parent company, Exelon Corporation, while leaving ComEd customers and the public with broken promises.

This report examines EIMA; the claims ComEd made to pass it and makes to defend it; its impact on ComEd and Exelon; on its regulator, the Illinois Commerce Commission; and on ComEd customers and the public interest.

In the language of ComEd,[8] EIMA imposed "obligations" on the utility: $2.6 billion in specified reliability and smart grid investments.[9] In return, EIMA gave the company generous "assurances:" faster and more certain, i.e. guaranteed, revenue and profit with less regulatory oversight through so-called "formula" rate-setting.[10]

ComEd presented these obligations and assurances as a tightly bound, balanced give and take; the company said it "simply can't make investment without the stability and predictability embodied in the regulatory reform section of the bill."[11] But the two have little to do with one another. **EIMA and its formula built ComEd and Exelon a profit machine entirely out of proportion to the law's specified investments.**



ComEd CEO Joe Dominguez defends EIMA. Credit: Screengrab via WGN9

Formula rate setting provided such an advantage over the traditional process that ComEd easily handled its specified investments, deploying smart meters at almost twice the speed as planned,[12] while also increasing profits.[13] This alone demonstrates that EIMA's assurances were overkill.

But further, formula ratemaking allowed ComEd to add significantly more profits than planned in EIMA; while the specified investments are all but completed, ComEd continues to enjoy formula rates and is planning to spend at even higher levels than it did during the height of its EIMA investment.[14] Since the first formula rate case, ComEd has added more than $5.1 billion, almost twice the amount of specified investments, to its rate base, the value of its assets it will earn a profit off of for years to come.[15]

Not only have formula rates provided ComEd guaranteed, record profits, they have shielded the company's investments from meaningful scrutiny. The law's annual rate-setting timeline does not allow time for regulators or other stakeholders to thoroughly examine the company's filings.[16]

Its formula flattens billions of dollars of investment to formula "inputs" taken from one high-level federal form.[17] Not only has this kept the Commission from reviewing all of ComEd's massive spending but it has reduced the Commission to a rubber stamp. Compared to the more than $5 billion added to ComEd's rate base through annual formula rate updates, the Commission has disallowed only $23 million.[18] While ComEd spends unprecedented billions, customers bear all the risks that the company wastes money through inefficient or unnecessary spending or that customers would have benefited more from alternative investments.

For customers, the result of the law has been a 37 percent increase in the delivery portion of their bills,[19] without which, because of declines in power supply prices, customer bills would have decreased significantly.[20]

ComEd did *not need formula rates* to improve reliability after decades of poor performance or to improve service through new technology. Rather, ComEd *used promises* of achieving adequate service and a

sparkling, customer-centered vision of the future to win itself guaranteed profits with less accountability.

ComEd promised customers smart grid-enabled cost savings from increased operational efficiency; rapid advances in clean, distributed energy and energy efficiency; and an exciting new world of information, choice and control.[21] It promised customers a fundamental shift in how they interact with their utility: robust data at their fingertips and a market full of innovative smart meter-enabled products and services to choose from.[22]

It remains an open question whether ComEd is capable of meeting the customer benefit expectations it set. At the same time ComEd leadership was promoting its vision of empowered consumers through its campaign to pass EIMA, then-Exelon Chairman and CEO John Rowe commented "We have looked at most of the elements of smart grid for 20 years and we have never been able to come up with estimates that make it pay."[23] Rowe further stated that he thought customers would benefit more if, instead of investing in the smart grid, utilities invested in replacing more old cable.[24]

Regardless of whether ComEd oversold the potential benefits of the smart grid, the smart grid does enable direct customer benefits, primarily through energy and cost savings, outcomes that directly threaten Exelon's revenues. Current Exelon CEO Chris Crane has acknowledged that officials within the company viewed smart meters as representing "value destruction to the generating company."[25]

Despite large changes to Illinois' energy laws and the corporate structure of the relevant companies, there remains a fundamental and unaddressed conflict of interest in Exelon's ownership of ComEd: Exelon's business interests, generally as a power generator and specifically as an owner of high cost nuclear plants, are at odds with ComEd's service obligations.

EIMA was carefully drafted so that ComEd could easily avoid delivering on all of its promises,[26] and has notably failed to deliver the promised customer benefits most threatening to Exelon.[27] Instead, ComEd withheld these promised benefits, providing leverage to win even further windfalls for itself and Exelon.[28]

Even the benefits the law has delivered have not been properly analyzed, leaving regulators and the public without the ability to judge whether or not they were "worth" customers paying 37 percent more for delivery service.[29]

EIMA was a radical and unwelcome inversion of traditional utility regulation, which aims to ensure and maximize the public good through the creation of the opportunity for private profit. EIMA, on the other hand, guaranteed ComEd and Exelon's private profit while failing to adequately ensure the public good.

Findings

EIMA has been an unquestionable success for ComEd and Exelon, while the benefits to customers and the public have fallen woefully short.

EIMA CREATED A PROFIT MACHINE, BENEFITING COMED WELL AND ABOVE WHAT WAS "NECESSARY"

- EIMA was a profit machine for ComEd and Exelon
  - Between 2013 and 2019 ComEd earned more than $4.7 billion more than what it would have had its revenue requirement from its 2011 formula rate case been in place over the same time period.[30]
  - Over eight years, ComEd's authorized profits grew by 47 percent and its rate base, the value of its assets it will

earn a profit off of for years to come, increased by 84 percent.[31]

- If EIMA's weak regulatory regime is allowed to continue, and if ComEd spends as Exelon has told investors it plans to, ComEd's authorized profits will reach almost $1 billion per year by 2023.[32]
- In 2019 ComEd customers paid 37 percent more for delivery service than they did in 2011.[33]
- EIMA's "customer protection policy" did not protect customers, by design. The single mandated report on rate impacts was deliberately timed to obscure EIMA rate increases, not reveal or protect against them.[34]

- EIMA delivered revenue and profits to ComEd far beyond what was "necessary" to fund infrastructure upgrades
  - Instead of a ten year smart meter deployment peaking at 500,000 smart meters per year, ComEd completed this deployment in six years, peaking at over 1 million meters per year.[35] The accelerated deployment, requiring more financial resources than planned, demonstrates EIMA gave ComEd more resources than necessary to complete the specified upgrades.[36]
  - Rather than help ComEd keep its financial position relatively steady over the period of increased investment, EIMA allowed ComEd to significantly improve its own financial position while also sending hundreds of millions of dollars to Exelon.[37]
  - Formula rates were supposedly just for the $2.6 billion specified EIMA spending, but, pending the current rate case, they will have facilitated the addition of more than twice that amount in rate base since 2011.[38] ComEd added more than one billion dollars to its rate base in 2018, more than in any other year under formula rates.[39] This was not due to specified EIMA investments, however; of the $2.6 billion in EIMA specified investments, the company made only $81 million, or 3.2 percent, that year.[40]
  - Even though ComEd has largely completed the investments specified by EIMA, the utility is still enjoying the law's major financial incentives. ComEd is planning to spend more in coming years than it did during the peak of EIMA investments.[41] EIMA's profit guarantee strengthens ComEd's problematic incentive to "make money by spending money."

EIMA BENEFITED COMED BEYOND THE IMMEDIATE AND DIRECT FINANCIAL BENEFITS

- EIMA's profit machine has been vital to Exelon
  - Over the six years after ComEd won follow-up legislation to EIMA (2014-2019), ComEd has produced $1 billion more in profits than over each of the two previous six year periods going back to when Exelon was created.[42] This was vital to Exelon, as historically robust profits from its generation division fell significantly in 2011 and 2012.[43]
  - ComEd's profits, as a percentage of Exelon's overall profits, grew from 6 percent (2007-2011) to 15 percent (2017-2019), even as Exelon secured a large bailout for its nuclear generation.[44]

- EIMA turned the Commission into a rubber stamp, shielding ComEd and its profits from accountability
  - Regarding ComEd's rate base, the value of its assets it will earn a profit off of for years to come: since the first formula rate case ComEd has added more than $5.1 billion.[45] Over the same

time period, the Commission only disallowed (determined should not be charged to customers) $23 million.[46] Almost all of these amounts were not capital investments but capitalized expenses, such as incentive compensation or awards.[47]

- Regarding ComEd's overall authorized revenues, including both rate base and operating expenses: over three rate cases between 2005 and 2011, the Commission granted 47 percent of the requested increases to customer's bills.[48] In the five years since EIMA and its 2013 follow up legislation passed, the Commission has granted 92 percent of the company's rate requests.[49]
- The penalties ComEd faces for not meeting EIMA's performance metrics are so inconsequential as to not provide ComEd meaningful incentive, especially within the context of EIMA's revenue guarantee.[50] The performance metrics were set at levels ComEd has easily met.[51]

COMED PROMISED CUSTOMER BENEFITS FROM SMART METERS, WHILE AVOIDING RESPONSIBILITY FOR ENSURING THEM

- ComEd promised customers would enjoy smart meter benefits beyond cost savings from utility operational benefits
  - ComEd promised that customers would be able "to take advantage of Smart Grid functions beginning at the time an account has billed successfully on the [smart grid] network."[52]
  - Then-ComEd COO and President Anne Pramaggiore promised "a smart meter in every home opening a world of consumer information and pricing options that provide opportunities for customers to save money."[53]
- ComEd carefully and effectively avoided responsibility for delivering the beneficial customer applications it promised. ComEd avoided responsibility by:
  - Using the text of EIMA to limit its legal responsibility to ensuring its infrastructure was technically capable of delivering benefits,[54]
  - Using a cost-benefit study on operational benefits to argue the Commission could not force the company to deliver additional benefits,[55]
  - Exploiting laws governing "competitive services" to its advantage,[56] and
  - Opposing efforts to utilize smart meters to offer innovative rates.[57]

EIMA'S BENEFITS ARE LARGELY UNKNOWN OR UNREALIZED

- ComEd's claim that the value of reliability and operational benefits are worth its massive investment is based on few metrics and insufficient analysis
  - What reporting and analysis ComEd provides fails to evaluate the efficiency of its investment to achieve reliability and operational outcomes, nor does this reporting and analysis compare ComEd's investment to alternatives that could potentially have achieved the same or better outcome at lower cost.[58]
  - These improvements, especially providing reliable service, are among ComEd's fundamental service obligations[59] and should not earn the company the financial and regulatory benefits the company has enjoyed since passing EIMA.
- ComEd caused beneficial customer applications to be delayed, not enabled, or drastically underutilized
  - ComEd customers will not broadly be able to enjoy a key benefit, time-of-use

rates, until at least 2024 or 2025, well over a decade after EIMA's passage.[60]

  - Though EIMA was passed in 2011 and significant smart meter installations began in 2014, rules and protocols for third party data access, a building block for competitive services, were not finalized until 2017, and only as a voluntary framework for utilities.[61]
  - Highly touted programs such as a smart grid "Test Bed" to allow third parties to test new services on the smart grid and "Green Button Connect," which allows customers to easily share smart meter data with third parties, have been outright failures.[62]

- By neglecting or withholding important customer and public benefits, ComEd was able to leverage them again in subsequent legislation that won ComEd and Exelon further windfalls
  - ComEd delayed benefits such as increased distributed solar, time-of-use rates, and voltage optimization, using their withholding as leverage to accrue further windfalls in the Future Energy Jobs Act in 2016.[63]

Recommendations

To specifically address the harm caused by EIMA and prevent future abuses of political power that enabled ComEd to win EIMA's passage, Illinois policy makers should:

Restore effective regulation of ComEd's assets: Illinois should end the overly utility-friendly ratemaking process created by EIMA. Regulators should perform a top to bottom audit of ComEd's grid to better establish its value and prevent over-payment by customers. Finally, Illinois should move critical grid planning decision-making into a public and transparent process, known as "integrated grid planning."

Ensure the actual delivery of promised smart grid benefits: ComEd should be forced to immediately offer key smart grid benefits such as "time-of-use" rates, which allow customers to save money by shifting when they use electricity. The Illinois Commerce Commission should also ensure that ComEd facilitates a viable market for innovative third party smart grid-enabled services or face adjustments to the financial windfalls the company has gained since passing EIMA.

Address the conflict of interest inherent in Exelon's ownership of ComEd: Exelon should be forced to divest from ComEd or, alternatively from Exelon Generation. Exelon has begun publicly discussing this latter possibility,[64] and decision makers should remain vigilant to ensure the companies do not leverage such action for legislative windfalls. Short of divestment, policymakers should take action to investigate and actively mitigate the inherent conflict between Exelon's business interests and ComEd's service obligations to Illinois.

Establish more effective checks to utility political power and influence: as providers of essential services heavily regulated by the state, investor-owned utilities should have a voice in policymaking, but never be allowed to dominate it as ComEd has over the past decade. To provide more effective checks of utility political power, the Illinois General Assembly should ban political contributions by investor-owned utilities; end the practice of utilities using ratepayer, rather than shareholder, money to make charitable contributions; and make ethics rules included in ComEd's deferred prosecution agreement permanent and applicable to all Illinois investor-owned utilities. The Illinois Commerce Commission should be re-empowered and given more resources, authority, and staff, including staff with information technology and smart grid expertise.

Chapter 1: Context and history

IN ORDER TO ASSESS EIMA and its impact on ComEd, its customers, and the public interest, it is critical to understand the political and regulatory context in which the law was passed and implemented. This chapter provides a brief explanation of ComEd, its recent history, corporate structure and business model, as well as the "smart grid," traditional utility regulation and the regulatory changes enacted through EIMA.

While EIMA governs both ComEd and Ameren Illinois, the electric distribution utility serving much of central and southern Illinois, this report limits its focus to ComEd. The authors made this choice because, generally speaking, ComEd "drove" the enactment and implementation of the law, while Ameren has been "along for the ride."[65] The most significant way in which ComEd bears primary responsibility for the law is the fact that ComEd was instrumental in shaping the law and advocating for it.[66] When assessing whether or not the law has lived up to claims made to pass it, the report evaluates claims made by ComEd.

Transmission lines. Credit: Ian Britton

1.1 ComEd, Exelon and conflicts of interest

1.1.1 THE BASICS OF COMMONWEALTH EDISON AND EXELON CORPORATION

Commonwealth Edison is a large investor-owned electric utility with a long history. Since the late nineties, it has been a "wires-only" distribution utility, meaning the company does not generate electricity, but instead only delivers electricity. The company serves residential, commercial, and industrial customers in northern Illinois.[67]

Currently, ComEd provides service to more than 4 million customers and 70 percent of the state's population, in a territory that stretches 11,400 square miles across northern Illinois from Lake Michigan to the Mississippi River.[68]

The company maintains 90,000 miles of power lines,[69] including 35,385 miles of overhead distribution lines, 31,799 miles of underground distribution lines, roughly 5,000 miles of transmission lines,[70] roughly 4 million smart meters,[71] approximately 1.5 million wood poles,[72] and 1300 substations.[73] In 2018, the company delivered 27 billion, and 60 billion kilowatt hours of electricity at delivery prices of 5.7 cents and 1.9 cents per kilowatt hour to residential and non-residential customers (excluding lighting), respectively.[74] As of September 2020, ComEd charged residential customers supply charges of 6.5 cents per kilowatt hour.[75]

To pay for the distribution system and ComEd programs, in 2020 ComEd is authorized to recover roughly $2.7 billion in revenue from customers through their monthly bills.[76]

Formed in 1907 out of the merger of multiple power companies, ComEd pioneered the regulated monopoly business model that dominated electric utilities in the 20th century, under the leadership of electric utility innovator Samuel Insull.[77] For generations, ComEd was vertically integrated, owning and operating all of the assets responsible for making and bringing electric power to customers: power plants, transmission lines, and distribution grid. ComEd largely built, owned and operated the power plants that generated electricity, the high voltage transmission lines that brought it from more rural areas to customers in residential areas, the substations that stepped down the power to lower voltage, the distribution system and small transformers spread throughout the city, and the electric meters at customers' homes and businesses.[78]

TABLE 1: COMED'S NUCLEAR EXPANSION FINISHED FAR OVER BUDGET AND BEHIND SCHEDULE[82]

Unit	Planned Completion	Actual Completion	Planned Cost $M	Actual Cost $M
LaSalle 1	1975	1982	567	2,490
LaSalle 2	1976	1984		
Byron 1	1979	1985	437 (est)	4,180
Byron 2	1980	1987	546	1,884
Braidwood 1	1979	1988	506	3,268
Braidwood 2	1980	1988	450	1,863
Carroll Co. 1 & 2	1992 & 1993	Deferred	-	-
Total			**2,506**	**13,685**

Between 1967 and 1992 ComEd constructed all but one of Illinois' nuclear power plants.[79] In the 1980s, ComEd's nuclear power plant construction was beset by delays and skyrocketing costs — 13 times what ComEd had spent on plants completed in the 1970s.[80] Due to the cost overruns, ComEd customers paid the highest electrical rates in the country.[81]

ComEd's vertical integration changed when the Illinois General Assembly passed the Electric Service Customer Choice and Rate Relief Law of 1997, restructuring electricity markets.[83] The law, part of a national trend often referred to as "deregulation" or "restructuring," introduced competition to electricity generation, requiring vertically integrated utilities to break up into separate generation and distribution companies.[84] ComEd maintained ownership of the distribution grid and transmission assets. Most of its generation assets, including its nuclear power plants, were spun off to a new company, which in 2000 became Exelon Corporation.[85] Non-nuclear power plants were sold to other companies.[86]

Exelon is now a complex, Fortune 100[87] energy holding company which, through over one hundred subsidiary affiliates spread across the U.S., engages in many different regulated and non-regulated utility-related business models.[88] It owns power plants through Exelon Generation's subsidiaries, Constellation, which conducts direct to consumer energy sales, and six fully-regulated distribution utilities, including ComEd.[89] Notably, Exelon is the largest nuclear power producer in the country.[90] In 1999 after restructuring, Exelon was formed through a merger of Unicom Corp — a holding company ComEd created shortly before restructuring — and PECO Energy Company of Philadelphia.[91]

While restructuring endeavored to break up the vertically integrated utility model, Exelon, through its various separate operating divisions, continues to own all of the "upstream" to "downstream" assets from generation to delivery under one entity's control,[92] as if restructuring had not happened. Exelon owns 99.985% of ComEd's shares and there is no market for ComEd shares.[93]

As Scott Hempling, a national utility expert hired by the Citizens Utility Board in a Commission proceeding testified "ComEd's parent, Exelon, ultimately controls ComEd's finances and business plans. Exelon has the power to overrule, or direct, ComEd decisions — about spending, borrowing and dividend-paying, and about new products and services."[94] Hempling continued, referring to a merger case in Maryland wherein Exelon documented that the potential subsidiary utility's capital investments would be subject to review and overruling,

"ComEd might respond that there is no Exelon interference in ComEd affairs, that ComEd operates independently, that these concerns are 'speculative.' Such a response would be non-factual. Exelon legally owns and controls ComEd. The record in the Maryland case made clear that Exelon could use its power over business strategy and capital availability to restrict [its utility's] activities. That is what ownership means."

– National utility expert Scott Hempling

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1.1.2 THE CONFLICT BETWEEN COMED'S SERVICE OBLIGATIONS AND EXELON'S BUSINESS INTERESTS

Conflicts of interest between ComEd and its parent company, Exelon, are important to this report because they help explain why ComEd's smart grid has so far failed to deliver its promised customer and public benefits.

As a provider of utility service vital to the "health, welfare and prosperity of all Illinois citizens,"[96] ComEd is bound by Illinois law to provide "service and facilities which are in all respects adequate, efficient, reliable and environmentally safe and which, consistent with these obligations, constitute the least-cost means of meeting the utility's service obligations."[97] Whatever ComEd's business and legal obligations to its shareholders (i.e. Exelon), it must, by law, meet its service obligations.

ComEd's business model is relatively straightforward according to the theory behind its regulation: it makes investments in its infrastructure to meet its service obli-

Exelon nuclear power plant. Credit: Michael Kappel

gations and, so long as it can demonstrate those investments were prudently incurred and the resulting assets are in use, it is allowed to recover those costs, along with a profit, from its customers.[98] As explained in section 1.5.2, this basic dynamic of "spending money to make money" was not changed by EIMA. Safeguards to protect customers and the public from the utility overinvestment that can stem from these incentives, on the other hand, were reduced.

As a neutral distributor of power, ignoring the interests of its parent company, ComEd should have no business interest in how the power is generated or who generates it, that is, if power comes from nuclear power plants or wind farms, or whether the price of that power, which ComEd passes directly on to its customers, is high or low.

ComEd also has no business interest in the volume of power that passes through its wires, thanks to the formula rate update mechanism that acts as a "volume balancing adjustment" (VBA), commonly referred to in regulation as "decoupling."[99] Without a VBA, ComEd's cost recovery and profits would be dependent on the volume of consumption, because its costs are largely recovered through volumetric rates — charges based on the total volume, in kilowatt-hours, its customers consume. A VBA allows ComEd to still recover what it expected to even if consumption goes down, through increasing subsequent volumetric charges.[100] The opposite is also true: ComEd's revenues are reduced to offset when prior consumption is higher than expected.[101]

Exelon's business model, on the other hand, very much depends on where the power comes from and the volume of power consumed. Exelon owns generation assets all over the country, including the largest nuclear fleet in the world, which has provided the vast majority of its profits.[102] Because, in restructured states such as Illinois, generation operates in competitive markets, higher demand, among other conditions, gives generators like Exelon higher revenue, often through higher energy prices, and larger sales volume.[103] In recent years, competition from gas and renewable generation combined with flat or declining overall usage have driven the price of power down, to the point that Exelon has repeatedly threatened to shut down higher cost nuclear power plants in multiple states if it does not obtain generous state subsidies.[104] After winning a ten-year, $2.35 billion ratepayer subsidy in the form of Zero Emission Credits (ZECs) for two of its nuclear power plants in the Future Energy Jobs Act in 2016, Exelon CEO Chris Crane has made multiple threats to shut down three other power plants, which are not receiving ZECs, if the state does not intervene again on Exelon's behalf.[105]

Many of the potential customer and public benefits, and even some operational savings like voltage optimization and consumption on inactive meters, from the smart grid stem from reduced power consumption and lower customer bills[106] — outcomes that, for ComEd, are positive to its service obligations and neutral to its business interests. On the other hand, these outcomes threaten Exelon's business interests. Exelon CEO Chris Crane acknowledged this in a regulatory proceeding in Maryland, saying that Exelon officials viewed smart meters as "value destruction to the generating company,"[107] and agreeing this was because smart meters help "customers manage their consumption more efficiently."[108]

As this report will document, ComEd has acted in its parent company's interest by failing to produce the promised customer and public benefits from the smart grid.

1.1.3 REGULATING THE RELATIONSHIP BETWEEN COMED AND EXELON

Illinois' policy mechanism for regulating the relationship between ComEd and Exelon has failed to address the conflicts of interest therein.

Exelon not only owns and controls ComEd, it also provides ComEd centralized professional services, as Exelon does for all of the regulated utilities it owns. This relationship is rife with potential conflicts: a parent company provides hundreds of millions of dollars of services to a subsidiary it controls, a subsidiary which can fully recover those costs from its captured customers.

Under Illinois law, all contracts between ComEd and Exelon have to be filed with and approved by the Commission, unless a waiver is obtained. The law states "every contract or arrangement not consented to or excepted by the Commission [...] is void."[109] To comply, the services Exelon provides to ComEd are managed through a General Services Agreement (GSA) contract between ComEd and Exelon subsidiary Exelon Business Services Company.[110] The GSA serves as a general "umbrella" agreement, creating a safe harbor for other, more specific agreements.[111] So long as the more specific agreements fall under the umbrella created by the GSA, the utility does not need to seek Commission approval.

These agreements include contracts for business functions critical to the utility's ability to operate, and could include services forced onto the utility by its parent company.[112] Through this GSA, in 2018, "ComEd receive[d] a variety of corporate support services from Exelon Business Services Company including legal, human resources, financial, information technology and supply management services" totaling approximately $400 million, including $280 million in indirectly billed services.[113]

The Commission has only twice approved ComEd's complete GSA with its parent company, and both approvals occurred before Exelon Business Services Company and Exelon itself existed.[114] The first was when a parent company was first established in 1995 and the second was when the Commission approved the merger that created Exelon in 2001. After that 2001 approval, the GSA was not formally updated or amended until Commission staff identified problems with it during the 2014 formula rate update.[115] The Commission approved an Illinois-specific amendment to the GSA in 2017 over the objections of Commissioner Miguel del Valle, who argued in his dissent that the agreement failed to adequately protect ComEd customers and the public interest from various conflicts of interest inherent in the relationship between the utility and its parent company, the same conflicts Scott Hempling warned about.[116]

Arguing that the approved updated GSA did little more than require services are billed "at cost," Commissioner del Valle wrote:

> the Commission must not reduce the public interest review to just a simple accounting exercise—as the majority does. Doing so ignores very real risks and operational implications to the public utility, and thus public interest, reflected in the corporate structure and governance which affects the services provided under the GSA. Some of these risks grow with complexity and are inherent in the significant increase in the size and intricacies of Exelon's corporate structure, for example: the increased diversity and tensions in business models, activities, motivations, geographies, responsibilities, and regulatory obligations; the diminished amount of attention and priority able to be paid

> to ComEd's obligations by the holding company's executive leadership due to the growth in the holding company system; as well as the loss of transparency reflected in the Commission's limited ability or capacity to scrutinize the large volume and aggregate value of affiliate transactions as well as all of the affiliates involved. Amidst the complexity exist simpler risks: e.g., the tension between Exelon's motivations and responsibilities and those of the public utility—i.e., the parent company's complete control over ComEd and [Exelon Business Services Company] coupled with its substantial economic interests in generation assets and a competitive energy supplier whose interest in high generation prices and market volatility conflicts with ComEd's obligations to provide a least-cost essential service. Further, as more decisions about and for the utility are made by decisionmakers outside of the public utility and implemented through the GSA or other avenues, this limits the ability of the Commission to know what decisions are being made and why.[117]

These unaddressed conflicts help explain why ComEd's smart grid has so far failed to deliver its promised customer and public benefits. As this report documents, not only has ComEd failed to pursue these benefits, it has actively frustrated their arrival, possibly because those same benefits threaten Exelon's business interests.

1.2 ComEd was in crisis over the decade leading up to EIMA

In recent years, ComEd has been known for its unparalleled political power, for being highly profitable, and for marked improvements in service reliability. Its position in the years leading up to EIMA's passage was decidedly different.

1.2.1 COMED'S DISTRIBUTION SYSTEM WAS FAILING TO MEET ITS RELIABILITY OBLIGATION

After the restructuring law passed in 1997, during the summers of 1998 and 1999 ComEd found itself in a reliability crisis. A particularly hot summer in 1999 placed demands on ComEd's grid it could not handle, leading to multiple prolonged blackouts impacting more than one hundred thousand ComEd customers.[118] ComEd fired seven executives between August and November.[119] An internal company assessment described the summer of 1999 as a "do-or-die"[120] wake up call and judged that "ComEd had become an organization that could not be counted on to fulfill its basic charge to keep the lights on in Chicago."[121]

Reliability is typically measured in the frequency of power outages, the duration of outages, and the number of customers impacted by outages.[122] Reliability problems can occur when a utility fails to maintain its infrastructure, or to appropriately plan for future changes in energy usage.[123] Beyond

These unaddressed conflicts help explain why ComEd's smart grid has so far failed to deliver its promised customer and public benefits. As this report documents, not only has ComEd failed to pursue these benefits, it has actively frustrated their arrival, possibly because those same benefits threaten Exelon's business interests.

An internal company assessment described the summer of 1999 as a "do-or-die" wake up call and judged that "ComEd had become an organization that could not be counted on to fulfill its basic charge to keep the lights on in Chicago."

customer dissatisfaction and the economic harms caused by outages, a utility's failure to properly maintain its infrastructure can lead to severe public safety threats, such as the northern California fires that destroyed thousands of homes and businesses and killed dozens of people in 2017 and 2018.[124]

While a utility may fail to invest in its infrastructure for a number of reasons, a common reason is cost-saving. ComEd's internal assessment after the crisis in 1999 identified this as a reason for underinvestment during the 1980s. At the time, ComEd was struggling financially due to cost overruns and delays in constructing multiple, possibly redundant and unneeded nuclear power plants and widespread opposition to its efforts to increase rates to pay for the over budget plants.[125]

In order to deal with this financial pressure, ComEd, according to its own assessment, embarked on "one of the most extensive austerity programs since the great [sic] Depression,"[126] which "particularly hurt the [transmission and distribution] side of the company."[127] Problems caused by the expensive nuclear power plants harmed ComEd's distribution system, ComEd's customers, and the Illinois public. As this report highlights, this harmful dynamic between Illinois' generation and distribution systems has been ongoing and continues to the present.

An outside auditor found similar company practices in the 1990s.[128] After the 1999 outages, the Commission hired The Liberty Consulting Group to perform an audit of ComEd's transmission and distribution management systems. Summarizing its findings, Liberty wrote:

> A common theme that runs through the chapters of this report is that ComEd possessed good standards, policies, procedures, and practices, and good people to carry them out, but often failed to meets [sic] its own standards or follow its own procedures because it failed to budget enough money for necessary capital improvements and maintenance. Even ComEd's failures in the areas of load forecasting and planning can be traced to a corporate desire to minimize the money spent to improve the transmission and distribution system. In many aspects, ComEd was in a reactive mode of operation, often waiting for parts of it[s] [transmission and distribution] systems to fail before taking any action and only attempting to improve the worst parts of its [transmission and distribution] systems.[129]

While ComEd made attempts to rectify its decades of underinvestment in the late 1990s and 2000s, it continued to experience reliability problems through the 2000s. In 2007, citing reliability problems, the village of Hinsdale threatened to abandon ComEd and municipalize local utility service — a move neighboring communities with similar complaints monitored closely.[130] In 2008, another village, Deerfield, sued ComEd for millions in damages for reliability failures between 2000 and 2007.[131]

In 2011, while ComEd was attempting to pass EIMA over the veto of Governor Pat Quinn, a July storm knocked out power for almost one million ComEd customers, highlighting ComEd's ongoing poor reliability performance.[132] While some power outages are inevitable in cases of extreme weather, ComEd also performed poorly that year in terms of the length of outages — a measure less impacted by the weather. A Commission report released before the July storm questioned ComEd's storm-readiness, finding the utility had significantly reduced staffing over the past decade.[133]

1.2.2 COMED ALSO FACED FINANCIAL AND POLITICAL PROBLEMS

2007 marked the end of a ten-year transition period after restructuring that included, among other things, a rate freeze for ComEd's customers.[134] This time period was defined by serious issues stemming from a supply auction pushed by ComEd and Exelon that resulted in large bill hikes.[135] The Illinois General Assembly, in a heavily negotiated compromise, responded in 2007 by partially retooling Illinois' electricity markets, creating the Illinois Power Agency to procure energy from the wholesale markets on behalf of distribution utilities.[136] As part of the deal, ComEd and Exelon paid over $800 million in customer rebates.[137]

It was in this environment that ComEd for the first time proposed a large capital program combining its need to significantly invest to improve reliability with new "smart grid" technology investments.[138]

At the time, ComEd was in a precarious financial and political position. ComEd suffered financial losses in 2006. An executive justified its proposed 2007 rate hike by referring to the utility's "weak financial position," claiming "our revenues are not high enough to cover our cash needs."[139] Exelon Generation was enjoying strong earnings in competitive markets, and ComEd's share of Exelon's operating earnings was dwindling, from more than one third in 2004 to less than four percent in 2007.[140] Exelon actively considered spinning ComEd off into an independent company, negotiating an eased regulatory process to be able to do so as part of the 2007 legislative compromise.[141] ComEd threatened bankruptcy.[142]

The company was facing another hardship: a downward trend in usage patterns.[143] Across much of the 20th century, increasing grid and supply costs were significantly absorbed by growth, as both the number of customers served by electric utilities and the overall amount of power those customers used, or "load," steadily increased.[144] Even while the cost of the overall system increased, costs for customers remained relatively stable because the increasing costs were spread out and covered by more customers using more energy. Under traditional rate making, in which the per customer and per kilowatt hour charges in monthly bills are set and do not change until the utility initiates another rate case, the utility earns extra money any time customers use more energy than forecasted or the number of customers grows more than forecasted. This dynamic has changed in recent years, as changes to the economy and advances in energy efficiency as well as other new technologies have kept load relatively flat.[145] At the time, for ComEd, this meant that revenues would stay flat, making it harder to finance additional investments.

ComEd's political position was also precarious. In a recent interview, John Rowe, the Exelon CEO at the time, described the powerful House Speaker Mike Madigan as a "foe" at the time.[146] The 2007 legislative compromise was won "only because Emil Jones, the Senate president at the time, was a staunch ComEd backer and wouldn't allow Madigan to call all the shots."[147] Fighting to survive, and with its key Springfield backer Senate President Jones about to

retire, ComEd set in motion a campaign to build political power and win over Speaker Madigan, a campaign that led to the passage of EIMA in 2011.[148] We now know that one reason this campaign was successful was because it involved an illegal and corrupt bribery scheme to attempt to influence the Speaker and his associates.[149]

TIMELINE OF KEY ENERGY LEGISLATION REFERENCED IN THIS REPORT

THE FOLLOWING DESCRIPTIONS are not intended to be complete summaries, as many were large bills with many different policies included, but rather to serve as a basic reference for readers of this report.

- **1997: The Electric Service Customer Choice and Rate Relief Law of 1997, Public Act 90-0561,** restructured Illinois electrical utility regulation such that delivery services were separated from electrical supply, or generation. ComEd's existing generation facilities, including its nuclear plants, were moved into the utility's holding company, Unicom (what became Exelon in 2001), or sold.
- **2007: The Illinois Power Agency Act, Public Act 95-0481,** established the Illinois Power Agency to procure power on behalf of Illinois' major electric distribution utilities.
- **2011: The Energy Infrastructure Modernization Act, Public Acts 97-0616 & 97-0646** allowed ComEd and Ameren to commit to reliability and smart grid investments, and implemented formula ratemaking.
- **2012: House Resolution 1157 & Senate Resolution 821** called on the Commission to reverse its position and side with ComEd on an accounting dispute worth hundreds of millions of dollars in profits.
- **2013: The EIMA "trailer bill," Public Act 98-0015** overruled the Commission on the three accounting decisions, delivering ComEd hundreds of millions of dollars in additional profits.
- **2014: House Resolution 1146** directed four executive agencies to submit a report detailing the potential impacts of the premature closure of existing nuclear power plants. The report was used by ComEd and Exelon in their push for nuclear subsidies.
- **2016: The Future Energy Jobs Act, Public Act 99-0906,** legislation championed by ComEd, Exelon, and coalition of environmental and consumer advocates, provided a $2.35 billion subsidy for two Exelon nuclear power plants, put more resources into renewable energy development, and consolidated energy efficiency programs under utility control while also expanding them and adding incentives to the utilities to achieve energy efficiency savings.
- **2019: HB3152 & SB2080** would have extended formula ratemaking for an additional ten years. The legislation passed out of legislative committees in both chambers without receiving a single no vote in March and April. In May, federal investigators raided the homes of three close associates of House Speaker Madigan.[150]

1.3 The smart grid and its potential benefits

As information technology has grown smaller, faster, cheaper, and more powerful, it has transformed society and countless industries, including utilities and the electrical grid. The opportunities presented by new technology, along with significant changes required to transition to a low-carbon economy, are transforming the way we produce, consume, and store energy. The transformation has clear benefits for utilities, customers, and the public, but achieving these benefits is not guaranteed.

1.3.1 THE "SMART GRID"

There is no single definition of "smart grid." At its most basic, a smart grid is one capable of granular and time-based data collection; real-time and two-way communication; as well as secure, digital remote operations.[151] The core technologies are advanced metering infrastructure (AMI) also known as "smart meters;"[152] similar measurement, communications, and operations improvements at other key nodes of the distribution grid such as automatic reclosers that allow the grid to heal itself;[153] and "behind-the-meter" customer applications.[154] These beneficial customer applications include everything from smart thermostats to electric vehicles to smart home appliances, for example water heaters, that interact with the distribution grid or other utility information, such as variable time-based price signals.[155] All of these new offerings are an opportunity for innovation, conservation, customer savings, and competition.

In 2011, the year EIMA was passed, the National Regulatory Research Institute identified seven distinct "missions" for smart grid investments:

1. Increase efficiency in utility operations;
2. Increase system reliability;
3. Reduce fossil fuel use and emissions;
4. Enhance customer choices;
5. Induce customers to produce system benefits by modifying usage patterns;
6. Improve utility planning; and
7. Develop the economy and grow jobs.[156]

EIMA similarly uses the desired outcomes of smart grid investments to define the smart grid. It defines a smart grid as one that includes:

(1) Increased use of digital information and controls technology to improve reliability, security, and efficiency of the electric grid.

(2) Dynamic optimization of grid operations and resources, with full cyber security.

(3) Deployment and integration of distributed resources and generation, including renewable resources.

(4) Development and incorporation of demand-response, demand-side resources, and energy efficiency resources.

(5) Deployment of "smart" technologies (real-time, automated, interactive technologies that optimize the physical operation of appliances and consumer devices) for metering, communications concerning grid operations and status, and distribution automation.

(6) Integration of "smart" appliances and consumer devices.

(7) Deployment and integration of advanced electricity storage and peak-shaving technologies, including plug-in electric and hybrid electric vehicles,

thermal-storage air conditioning and renewable energy generation.

(8) Provision to consumers of timely information and control options.

(9) Development of open access standards for communication and interoperability of appliances and equipment connected to the electric grid, including the infrastructure serving the grid.

(10) Identification and lowering of unreasonable or unnecessary barriers to adoption of Smart Grid technologies, practices, services, and business models that support energy efficiency, demand-response, and distributed generation.[157]

As one can see, the smart grid has many components, but the main focus of smart grid deployments in Illinois has been on AMI, the advanced metering infrastructure, also known as smart meters. A January 2020 report from the American Council for an Energy-Efficient Economy (ACEEE) introduces AMI:

> The Energy Information Administration defines AMI this way: Meters that have the capability to measure and record usage data at hourly or shorter intervals, and provide usage data to energy companies and may also provide the data to customers at least once daily. Data are used for billing and other purposes. Advanced meters include basic hourly interval meters and extend to realtime meters with built-in two-way communication capable of recording and transmitting instantaneous data.[158]
>
> The Advanced Energy Economy offers a broader term than AMI, advanced metering functionality. AMF includes the following capabilities, many of which align with the energy efficiency use cases described in this paper, but it is agnostic as to which technologies are used and who deploys them.

- Collection of customers' usage data, in near real time, usable for settlement in relevant retail and wholesale markets for energy and ancillary services
- Automated outage and restoration notification
- Two-way communication between customers and the electric distribution company
- With customers' permission, communication with and control of smart devices
- Large-scale conservation voltage reduction programs or volt-VAR optimization
- Remote connection and disconnection of customers' electric service (while maintaining consumer protections)
- Measurement of customers' power quality and voltage[159] [citations removed]

AMI is also the costliest component of the smart grid investments, more than $900 million of the $1.3 billion in EIMA-specified smart grid investment.[160]

1.3.2 BENEFITS OF THE SMART GRID

When ComEd first proposed a large capital program combining necessary reliability improvements with smart grid investments in 2007, the Commission was skeptical. The Commission wanted to ensure '"that consumers are the primary beneficiaries' of the smart grid modernization."[161] Therefore, rather than allowing the utilities to control the scope and planning of smart grid investment, the Commission launched an innovative statewide process, the Illinois Statewide Smart Grid Collaborative (ISSGC), as well as a smart meter pilot, to explore this new technology and ensure customer value.[162]

Among other topics, the ISSGC report released in 2010 explored and identified potential benefits of the smart grid for different stakeholders: customers, distribution utilities, and society:[163]

- "For customers, the potential benefits realized by individual electricity consumers in Illinois, include reductions in customer costs for electric delivery service and energy supply service, and decreases in outages and improved power quality
- For distribution and transmission utilities, value is recognized in benefits that would work to reduce costs, improve system reliability, increase levels of customer satisfaction, optimize assets, and/or mitigate risk […]
- Societal value is realized by society as a whole, not necessarily Illinois electricity consumers (e.g., environmental benefits, improvements to public health and safety, economic development, and improvements to or the expansion of broadband communications networks)."[164]

The ISSGC report provided greater detail for each category of beneficiary. For customers, for example, it listed: reduced energy usage due to efficiency, reduced energy usage due to conservation, improved information access, increased ability to manage energy costs, enhanced services provided by the utility or third parties, facilitated integration of rooftop solar, improved system reliability, and improved power quality.[165]

This report refers to these customer benefits as "beneficial customer applications," to mirror language used by the company, and to reinforce that in order to take advantage of them, customers must *apply* the technology to benefit — whether, for example, accessing usage data, opting in to a time-variable rate, connecting a smart appliance, or putting solar on their rooftop.

Many of these benefits involve modifying energy usage, that is, using less energy or using it at a time when it is less expensive, to lower customer bills. These benefits aid customers, but harm generators', like Exelon, bottom line.

ACEEE described the list of ways that AMI can enable and support customer savings through energy efficiency:

These strategic uses include:

- Enhancing the quality of insights on energy use from near-real-time feedback
- Providing time-varying pricing that reflects fluctuating energy costs at different times of day and year. Near-real-time feedback, combined with communications and possible automation, can better inform and motivate customers to respond to pricing signals and change their energy use accordingly.
- Targeting customers for programs best suited to their energy use profiles.
- Promoting grid-interactive efficient buildings that extract more grid value from customer programs by providing more flexible demand.
- Supporting energy procurement and meter-based pay-for-performance (P4P).
- Producing granular data needed for advanced measurement and verification of customer energy and demand savings (M&V 2.0.)
- Enabling conservation voltage reduction (CVR) on electricity distribution networks to reduce demand and energy use[166]

The main utility benefits, which are often called "operational benefits," facilitate the utility running its business cheaper or easier and which can lead to higher profits for the company. The ACEEE report includes some examples:

> [The Department of Energy's] 2016 review of the Smart Grid Investment Grant program in [the American Recovery and Reinvestment Act of 2009] identifies four main operational benefits of AMI: reduced costs for

metering and billing, reduced outage costs and less customer inconvenience, enhanced safety, and lower utility capital expenditures.[167]

1.3.3 UTILITIES CAN EASILY REALIZE SMART GRID BENEFITS WHILE CUSTOMERS FACE BARRIERS

Unlike customers, utilities clearly understand the potential smart grid benefits and how to take advantage of them. A utility can also serve as a gatekeeper to others enjoying those benefits. To exert its influence as gatekeeper the utility does not need to actively block development of a healthy market providing customer savings. Insufficient care and lack of attention to facilitating market access — while focusing on maximizing utility benefit — is enough.

The potential operational benefits of smart grid investments to a utility are almost certain to be realized — the utility understands the new technology and its potential applications, has unfettered access to the data created by the investments and would not, one assumes, invest almost a billion dollars in new technology and not take advantage of it.

The potential consumer benefits of the smart grid, on the other hand, are not certain to be realized. This dynamic is a large part of the reason the Commission originally required the statewide collaborative process and did not want ComEd to have the level of autonomy it ultimately achieved in deploying AMI and smart grid technology. The recent ACEEE report concludes:

> Providing customers with AMI data alone generally does not result in energy savings. AMI data need to be paired with customer engagement tools; pricing strategies; and programs with incentives and services that enable, motivate, and support customers to take actions and make changes to modify their energy use.[168]

One large barrier to customer savings is customer engagement: unlike the utility, the vast majority of consumers do not understand the new technology, its potential benefits, and how to take advantage of those benefits.[169] For this reason, EIMA included significant money for education,[170] ComEd's AMI plans included an entire section on customer education and outreach, and the Commission remarked, not for the first time, in 2014: "We agree with all of the parties that unless customers understand how they can take advantage of "Smart Grid Functions" the full benefit of this program will not be realized."[171] EIMA created a utility-funded foundation to fund nonprofits, universities, and local governments to do this educational work.[172]

The second potential barrier is the utility's position as "gatekeeper." Many of the potential beneficial customer applications of the smart grid can best be provided not by the utility itself, but by competitive third parties. In fact, as explored in greater detail in section 4.2, ComEd took the position after passing EIMA that the company was not itself obliged to deliver beneficial customer applications. Rather, ComEd argued, its obligation ended with enabling technological functions such that competitive third parties could offer those applications.[173]

These products and services, however, often depend on data collected, processed, and stored by the utility. At a minimum, they depend on data access with the AMI the utility maintains. If a utility blocks, delays, or otherwise impedes access to the smart grid or data from it, it can significantly limit the market for competitive products or services. The utility expert Hempling explained "[the smart grid] requires decisions on design, construction and operation. If the incumbent utility controls these decisions, it can use that control to disadvantage new entrants seeking to offer consumers benefits like data analy-

sis, demand response, and load shedding appliances."[174]

The risk that ComEd would act as a gatekeeper, limiting the growth of a market of new products and services empowering consumers to realize the potential benefits of the smart grid, is exacerbated by the fact that the primary benefits of smart grid enabled customer applications — reduced costs thanks to efficiency, conservation, and rooftop solar — represent direct business threats, or "value destruction" to Exelon.

Even if barriers for customers are removed, it remains an open question whether the potential for customer benefits through AMI is anywhere near what has been touted by ComEd and other utilities, no matter how much customers are educated or engaged. At the same time ComEd leadership was promoting its vision of empowered consumers through its campaign to pass EIMA, then-Exelon Chairman and CEO John Rowe asked "are we doing the customers more good by putting money into more advanced electronics or would we do them more good by putting the same money into replacing more old cable? To me that's an unknown answer. If I had to choose, I'd bet on the cable."[175] The recent ACEEE report, which was funded in part by ComEd, concluded that "many utilities are underexploiting AMI capabilities and attendant benefits, thus missing a key tool to deliver value to their customers and systems."[176]

This report demonstrates that ComEd's implementation of EIMA shows, at bare minimum, a lack of sufficient care to facilitate a market capable of delivering the AMI-enabled beneficial customer applications it touted in order to pass EIMA.

1.4 Traditional utility regulation and the role of regulators

In order to understand EIMA's formula rates and their impact on the Company, one must understand the traditional rate regulation that preceded it and the rationale for why that imperfect but enduring system has been used for decades.

ComEd provides an essential service for the public good. As a natural monopoly — it is infeasible to have duplicative, competing electric distribution systems — the company enjoys captive customers and, in exchange, it is regulated and its prices are set by regulators.

ComEd operates within a robust and long-running regulatory structure overseen at the state level by the Illinois Commerce Commission. The Public Utilities Act grants the Commission broad powers and authority to govern, among other things, utility operations, cost recovery, and profit.[177]

Some see this important relationship as a job of dispassionate and knowledgeable judges balancing competing interests by

"Are we doing the customers more good by putting money into more advanced electronics or would we do them more good by putting the same money into replacing more old cable? To me that's an unknown answer. If I had to choose, I'd bet on the cable."

– John Rowe, then-Exelon Corporation Chairman and CEO, March 9, 2011

deciding outcomes based on the record built before them by opposing lawyers.[178] These interests include, for example: the company, its parent company, shareholders, and investors; company employees and vendors; utility customers, from small to large; other residents and businesses; the Illinois General Assembly and other state officials; municipalities and other local governments; and the public interest in Illinois more broadly.

This view of regulators as dispassionate judges rather than proactive regulators, as the experience of EIMA clearly shows, is wrong. While a benefit in one party's interest can often cause harm to another's, requiring some balancing of interests, the public interest of Illinois remains paramount and requires active regulators who do not simply accept what evidence and arguments parties present to them. As then-New York Governor Franklin D. Roosevelt said in 1932:

> When I became Governor, I found that the Public Service Commission of the State of New York had adopted the unwarranted and unsound view that its sole function was to act as an arbitrator or a court of some kind between the public on the one side and the utility corporations on the other. I thereupon laid down a principle which created horror and havoc among the Insulls and other magnates of that type.
>
> I declared that the Public Service Commission is not a mere judicial body to act solely as umpire between complaining consumer or the complaining investor on the one hand, and the great public utility system on the other hand. I declared that, as the agent of the Legislature, the Public Service Commission had, and has, a definitely delegated authority and duty to act as the agent of the public themselves; that it is not a mere arbitrator as between the people and the public utilities, but was created for the purpose of seeing that the public utilities do two things: first, give adequate service; second, charge reasonable rates; that, in performing this function, it must act as agent of the public, upon its own initiative as well as upon petition, to investigate the acts of public utilities relative to service and rates, and to enforce adequate service and reasonable rates.[179]

1.4.1 TRADITIONAL COST RECOVERY, PROFIT INCENTIVES, AND RISK MANAGEMENT

State and federal law and commission regulations profoundly shape company incentives and operations. One of the most important considerations is how the utility recovers its costs for the services it provides. Under traditional, so called "cost plus" or "cost of service" rate setting, a utility is allowed to recover all reasonable operating expenses as well as, over time, all prudently incurred capital investments along with a return, or profit, based off the remaining value of that investment.[180] The process in which a regulatory commission determines how much a utility aims to recover through ratepayers' bills (the "revenue requirement") as well as how the revenue requirement is split up ("cost allocation") among different classes of customers (e.g., residential, business, industrial) is known as a rate case. As part of a traditional rate case, the fixed and volumetric charges that appear on customers' bills are set ("rate design") until the company elects to return to the commission for another rate case.[181]

Under this incentive structure, there are two ways to directly increase the company's profits. Regulators can 1) increase the company's Return on Equity (ROE) — which could be thought of as the company's profit margin, or 2) increase the company's rate base (the value amount the ROE is multiplied against).

Return on Equity

As part of the traditional rate case process, the commission sets the Return on Equity (ROE) after highly-contested litigation argued among the participants in the case. The ROE is one portion of a larger equation to determine a utility's overall Rate of Return, or the return on the utility's investment.[182]

While the ROE is one portion of this return calculation, it is the focus of regulators, utilities, and stakeholders for two reasons: first, it represents the owner's profits, and second, the return levels for the other portion of investment dollars, debt, are set by borrowing costs.

The ROE, also referred to as the "Cost of Common Equity," is the portion of the overall return that represents the amount of profits that shareholders would expect to receive for their ownership stake, if the utility were a competitive company, rather than a monopoly with captive customers. The ROE, as with most elements of traditional regulation, is a proxy for the profit that a company of similar risk could be expected to make in a competitive market. It is applied in a way, as a margin on asset values, to incentivize a reliable grid through investment levels that keep those asset values high.

The second portion of the return equation comes from the costs of borrowing money through short and long-term debt, the other ways a utility can raise money to finance investment. These costs are the inputs into the equation, called the "Weighted Average Cost of Capital" (WACC), used to determine a utility's overall Rate of Return.

Because utility regulation generally attempts to set levels of profits and revenue as if the company were competitive, the WACC equation is an exercise in determining the "cost" of raising each type of capital, and applying a weight to represent the ratio in which each type of capital was used. The weighted costs are then added together to arrive at the company's total WACC or Rate of Return. This is the percentage applied to the Rate Base, or the total value of the company's investments, to determine the authorized return levels for the utility.

EIMA uses the same overall WACC framework (while setting the ROE level in a different manner) so its WACC table illustrates the concept perfectly. Below is a simplified reproduction of the calculation for ComEd in the 2019 Formula Rate Update to illustrate how this works in practice. The cost of Common Equity, or ROE, is 8.91 percent. The weighted cost of capital, or overall Rate of Return, is 6.51 percent.

TABLE 2: SAMPLE WEIGHTED AVERAGE COST OF CAPITAL CALCULATION[183]

	Weight	Cost	Weighted Cost
Common Equity	47.97%	8.91%	4.27%
Long-Term Debt	52.03%	4.28%	2.23%
Short-Term Debt	0.0%	2.14%	0.0%
Total Weighted Average Cost of Capital	**100%**		**6.51%**

Again, the overall Rate of Return is a *proxy* for the cost to the company to finance investment by borrowing (long- or short-term debt) or raising capital from shareholders (the ROE), in ComEd's case, Exelon, ComEd's 99.985 percent shareholder. As a proxy, the overall Rate of Return is not what Exelon actually pays to finance ComEd's investments, but rather what returns a generic investor would seek were they to invest in a competitive company with ComEd's risk attributes. If ComEd represented more risk, investors would want a larger return.

Rate Base

The company makes a profit on the value of the assets it uses to provide service, or "rate base." Therefore, the company makes more profits as it builds the overall value of its assets, by investing to accumulate value faster than the rate of depreciation. This incentive structure attempts to align the private profit motive of utility managers and shareholders with the public interest of safe, reliable service. Regulators want to avoid the reliability and safety problems that arise from underinvestment — the type of underinvestment ComEd's distribution system suffered from in the 1980s and 1990s.

One of the risks of an incentive structure wherein the utility spends money to make money is that it incentivizes utility managers to over-invest in, or "gold-plate," the system. Because utilities' revenues are collected through customer rates, overinvestment leads directly to customers overpaying.

This dynamic is one reason that regulators, in theory, examined all expenses the company sought to recover through rates and used traditional regulatory mechanisms to manage utility incentives and control costs:[184]

- First, regulators wait to sign off on the recovery of capital expenses until after the new assets are put into service, or are reasonably assumed to be imminently in service.
- Second, regulators only sign off on the recovery of capital expenses if the investments are deemed prudent, reasonable, and least cost.[185] At times, investments must pass a cost-benefit analysis. The utility has the burden of proof to demonstrate its investment meets these standards.
- Third, when the rates customers pay on their monthly bills are set, they represent an *opportunity*, not a *guarantee*, for the company to earn its authorized revenues and return.

Mechanisms one and two seek to ensure that utilities conduct capital programs with a purpose and prove investments useful and costs reasonable before customers start paying for them. Under the "used and useful" test, utilities should bear the risk of a failed investment. No matter the cost of an investment, if the resulting asset is not used to provide service, or was not necessary to provide adequate service in the first place, the utility cannot recoup the cost from customers. Challengers invoked this principle when fighting ComEd's rate hikes in the 1980s and early 1990s: not only were the nuclear power plants grossly over budget, ComEd had constructed more generating capacity than needed.[186] Under prudence and reasonableness tests, utilities bear the risk that regulators deem an investment imprudent or unreasonable. Bearing these risks gives utility managers incentive to be more conservative in their investments. In practice, this also means that utilities typically present plans for large,

non-routine investments to regulators for thorough investigation before spending significant amounts on them.

Mechanism three seeks to reward utilities for operating efficiently and controlling costs, and to punish them for not doing so. Static authorized rates, which may last for years, are set using the estimates of the revenue the company needs to collect combined with the weather and usage forecasts for a normal year. Actual customer usage will vary year to year — the company makes more in a hot summer and less in a cool one, for example. These effects should balance out in the long run, but in this system, the company is not guaranteed that all of the expected revenue will arrive in any given year.[187] This provides utility managers the incentive to remain efficient and keeps costs in line since revenue is uncertain. This static revenue goal also creates headroom for the company to earn additional profits from higher than expected efficiencies. The utility keeps some control over this process as it chooses when to come back to the commission to request new rates. During periods of economic growth the utility will often receive increased revenues and increased profits without changing customer rates.

Through these tools, regulators seek to guarantee the public good is served while creating the opportunity for private profit. This is not to say that regulators always pursue these goals zealously or effectively but that, at a minimum, this principle underlies the operative regulatory theory. One of the most significant changes EIMA made through formula rates, as described in section 1.5.2, was to turn this arrangement on its head: to guarantee utility cost recovery and profit while reducing the service of a public good to an opportunity, not guarantee.

1.5 The Energy Infrastructure Modernization Act

The Illinois General Assembly overrode a veto by Governor Pat Quinn to pass Public Act 97-0616, on October 26th, 2011.[188] That act along with Public Act 97-0646, which passed the same day, comprise the Energy Infrastructure Modernization Act.[189] Along with the Governor, the Attorney General, customer advocates, and the Commission were all vocal in their opposition.[190]

The law, a sprawling rewrite of Illinois' electric utility regulation, is unusually prescriptive, granular, and complex. In one of the first Commission proceedings to implement the law, a ComEd witness provided an eleven page "whitepaper"[191] describing the various filings and reports the company would submit in the first year and update each year going forward.

EIMA short-circuited the established and Commission-controlled and customer-focused smart grid planning process, which was measured, thorough, and ongoing. This process was not placing regulatory barriers before ComEd's pursuit of smart grid investments. The Commission approved a smart grid pilot[192] and a favorable cost recovery mechanism proposed by ComEd to more quickly recover smart grid investments.[193] The cost recovery mechanism, however, was thrown out by the courts,[194] and ComEd's response was to go to the General Assembly to completely upend its regulation through formula rates. By moving critical smart grid policy decisions to the legislative forum, ComEd also was able to avoid consideration of proposals to make ComEd's profits from smart grid investments contingent on actually delivering customer and public benefits, as consumer and environmental parties sought.[195]

The law allowed ComEd and Ameren to opt to become "participating utilities." Doing so required of them certain smart grid and

reliability investments, and gave them a new way of setting rates, "formula rates," that guaranteed revenue and profits.

ComEd described the law as a trade-off of obligations to remedy chronic reliability problems and make additional AMI investments on the one hand, and of revenue and profit certainty on the other: "EIMA balances obligations utilities assume with assurances utilities are given."[196]

This report focuses on the two principal aspects of the law: capital investments and planning, and cost recovery. EIMA separates the formal process for smart grid investment planning and most implementation metrics from the formal cost recovery process. This significant narrowing of commission oversight and authority over cost recovery serves to make the process as routine, automatic, and as "certain" as possible.

1.5.1 EIMA'S "OBLIGATIONS:" RELIABILITY AND SMART GRID INVESTMENTS

EIMA mandated that ComEd, upon opting to become a "participating utility," invest at least $2.6 billion, and allowed the company to invest up to $3 billion without additional authorization. These specified investments were on top of ComEd's baseline of roughly $1 billion per year of infrastructure spending.[197] If ComEd wanted to spend less, it was required to petition the Commission for permission.[198] These capital investments were split evenly into two categories: reliability and smart grid.[199]

Table 3 outlines the categories of spending, estimated costs, and timelines for investment included in EIMA. Some categories were included without a corresponding estimate.

TABLE 3: COMED'S INVESTMENT OBLIGATIONS UNDER EIMA[200]

Program	Estimated investments by law ($M)	Period of investment
Distribution infrastructure improvements	$1,000	
Training facility construction or upgrade projects	$10	
Wood pole inspection, treatment, and replacement programs		
Reducing the susceptibility of certain circuits to storm-related damage	$200	
Total Reliability-Related Investments	**$1,300**	**5 years**
Smart meters - AMI		
Distribution automation		
Cyber secure data communication network - AMI		
Substation micro-processor relay upgrades		
Total Smart Grid-Related Investments	**$1,300**	**10 years**
Total Plan Investments	**$2,600**	

The law required ComEd to submit backward-looking annual reports on all of its investment spending (in both categories),[201] but only required a forward-looking investment plan and formal approval process for ComEd's roughly $1 billion AMI investment, which accounted for only 38 percent of the EIMA investments.[202]

When considering ComEd's AMI plan, EIMA required the Commission to perform a cost-benefit analysis and further investigate the utility's plan for AMI deployment, back-end information technology, public education, and communication.[203] The Commission also compared the utility's plan to an "informational" checklist in the law.[204]

After the Commission approved this original AMI plan, ComEd submits annual reports and updates on its progress in implementing the plan. Each year, the Commission has a short window to choose to investigate the annual AMI reports by opening an accelerated docket. If it does nothing, the updates are "approved" by default. Every year since 2015 the reports have been approved by default.[205]

Table 4, a reproduction from ComEd's 2020 annual infrastructure update, outlines the total cumulative EIMA investment that ComEd plans to have spent by the end of 2020. One can see the reliability category on top consisting of things like cable programs and storm hardening, and

TABLE 4: COMED SUMMARY OF ESTIMATED CUMULATIVE EIMA CAPITAL SPENDING BY THE END OF 2020[206]

Program	Spending ($M)
URD Injection and Replacement Program	$545
Mainline Cable System Refurbishment and Replacement	$392
Ridgeland 69Kv Cable Program	$31
Training Facilities Program	$10
Wood Pole Program	$81
Storm Hardening Program	$202
Total Reliability-Related Investments	$1,261
Distribution Automation Program	$242
Substation Micro-Processor Relay Upgrade Program	$134
AMI Plan	$905
Total Smart Grid-Related Investments	**$1,281**
Total Plan Investments	**$2,542**

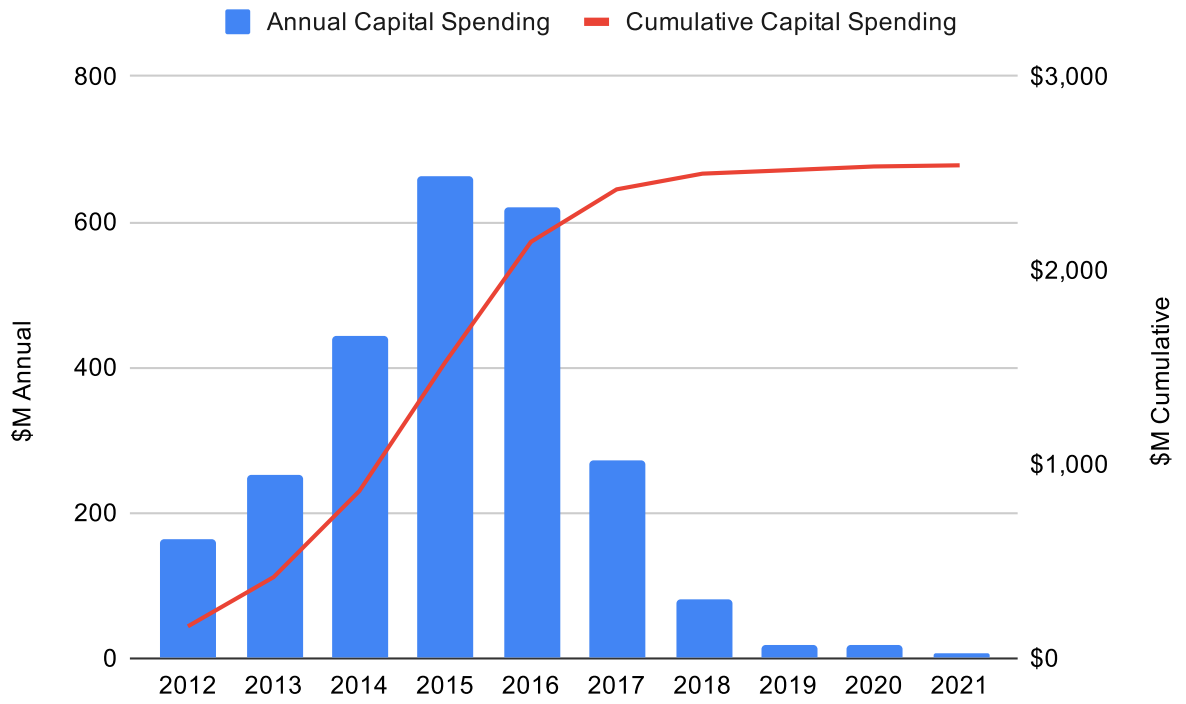

Figure 1: 10-year capital cost by year[207]

the smart grid category on the bottom with investments in automation and AMI.

Figure 1 demonstrates the total investments, which are close to the total specified by the law, made by ComEd through the end of 2018.

As discussed in chapter five, given that these large capital expenditure amounts were set by the General Assembly with no record or rationale to justify the amounts, there is no reason to believe they were the "right" amounts to best achieve reliability and smart grid outcomes in the company's, customers', and the public interest.[208] There is also currently no way to know if ComEd has invested these amounts efficiently or effectively.

1.5.2 EIMA'S "ASSURANCES:" FORMULA RATES

In agreeing to EIMA's "obligations," making the specified investments and associated planning and reporting, ComEd is entitled to EIMA's "assurances," enjoying certainty in cost recovery through formula rates.

As described in section 1.4.1, under traditional rate setting, a utility petitions regulators at a time of its choosing, initiating a roughly year-long "rate case" process that uses adjusted costs and estimated usage forecasts to set the rates the utility is authorized to use in billing its customers. While some smaller bill elements may fluctuate between rate cases, the primary portions of a customer's bill — the fixed customer charge and volumetric usage rate — do not typically change until the utility elects to petition the regulator again.

Importantly, under this system the utility could conduct a significant amount of large capital investment before returning to the Commission to add the increased asset value to rate base, potentially years later, thus missing out on potential profits due to the regulatory time-lag. While the utility may miss out on potential profits or have them delayed, this process served to

protect customers from rapid and improperly justified rate increases. Formula rates replaced this potential time-lag with an annual process.

Also, because actual costs and customer usage amounts, and thus revenue, will vary from year to year, the authorized rates in traditional rate regulation present the utility with the opportunity, but not guarantee, to recover these costs and make its profits. Formula rates, on the other hand, replace this opportunity with certainty, as ComEd repeatedly highlighted when advocating for EIMA. The annual formula rate process involves a two-tiered process using actual company expenses, as reported to state and federal regulators, to look both forward and backward one year.[209]

The forward-look would be recognizable to anyone familiar with a traditional rate-setting process, in that it utilizes estimates to modify the most current utility costs to set the authorized rates for the following year. The backward-look, or "reconciliation," however, is critically different, as it uses the company's actual expenses to calculate what revenue it *should have* collected and compares that with what the company actually collected. If the company under-collected for the year, it is able to make those revenues up, with interest, through an adjustment to future customer bills. If it over-collected for the year, it similarly credits money back to its customers. This reconciliation process allows the company to annually "true-up," eliminating the uncertainty purposefully embedded in the traditional rate setting process and in the process changing the utility's opportunity for profits into a guarantee.

This complicated forward- and backward-looking structure transforms what was once an occasional, eleven-month-long traditional rate case process with opportunity for meaningful stakeholder input into a streamlined annual process in which "inputs," ComEd's accounting information, are run through a settled and formal formula whose output is the utility's rates for the following year.

Unlike the traditional process, the burden of proof is no longer with the utility to demonstrate the prudence and reasonableness of its investments. Rather, the burden is now, in practice, with the Commission and other parties to demonstrate specific investments were imprudent or unreasonable — a task made more challenging by the fact that the Commission and others rely on the utility for the information they would need to make such a demonstration. It is not as if, as a practical matter, they can audit the company every year. If the Commission, the office of the Attorney General, or other interveners are able to show any "inputs" are imprudent or unreasonable, the Commission can disallow them.[210]

If this Commission examination reduces any inputs, the impact on the company would automatically be shown by the outputs of the formula. If the Commission or intervenors want to change the actual formula they must open a separate formal docket.[211]

As part of the traditional rate case process, the Commission would set the return on equity, the profit margin applied to the rate base, after evaluating the risk profile of the company. Under EIMA's formula rates, the Commission has no such authority. Instead, the ROE is also set by formula, by adding 580 basis points (or 5.8 percentage points) to the 12 month average of 30-year US Treasury Bill prices.[212] For example, if the average is 3 percent, then ComEd's ROE would be 8.8 percent; if it is 5 percent, then 10.8 percent.

The two separate portions of the law, the obligated investments and the assured rates, do interact in one significant, but limited, way. The law creates nine performance metrics which, if the utility fails to meet them, lower the company's ROE, or profit. For each metric that ComEd does not meet the company loses between 5 and 7 basis points of return,[213] or between 0.58 percent and 0.81 percent of the 2016 profit used below for illustration. These penalties are capped at 38 basis points,[214] meaning the overall potential impact of these penalties is small compared to the company's profits. Commissioner del Valle illustrated the limited impacts of these penalties in his dissent when the Commission approved ComEd's General Service Agreement with Exelon Business Services:

> ComEd has only been challenged by one metric and the overall penalties are small. Taking its 2016 rate case as an example, if ComEd failed to meet every one of the eight performance metrics, ComEd's profit would only be reduced by 4.4%—a 38 basis point penalty on ComEd's 8.64% return, or $26 million out of a net operating income of almost $600 million.[215]

While these performance incentives do potentially impact ComEd's profits, it is important to note that their effect is not great enough to alter the utility's incentive to "spend money to make money," as some "performance based" regulation does. Any moderating effect these incentives may provide is easily outweighed by the value of EIMA guaranteeing the profits. Given that formula rates guarantee ComEd's revenues, the utility has an even stronger incentive to increase its rate base by spending large amounts of money rapidly. The performance metrics were also set at levels ComEd has easily met.[216]

The combination of annual forward- and backward-looking rate setting, rate setting by formula, and ROE setting by formula strips the Commission of the tools and mechanisms traditionally used to investigate and hold utilities accountable in an effort to promote the public interest. This lack of Commission discretion and authority is what gives ComEd its "certainty," and why, as the next chapter explains, formula rates have been so valuable to ComEd and Exelon.

Chapter 2: EIMA created a profit machine, benefiting ComEd well and above what was "necessary"

ROUGHLY HALF of the capital spending specified by EIMA was allocated to achieve adequate system reliability fundamental to ComEd's service obligations. Because of chronic reliability failures, and because the smart meter roll-out was a large, new expense, one can make a reasonable case for measured, additional incentives and support for ComEd to upgrade its grid and improve its quality of service, especially if coupled with ongoing, independent, customer-friendly cost-benefit analysis.

One can also make a reasonable case against any additional incentives and support. ComEd has a statutory obligation to provide reliable service. Its failure to do so over decades is well documented, for example by a 2002 audit of reliability and the company's attempt at the time to improve performance.[217] Increasing investment to maintain reliability standards should not warrant special incentives. Similarly, ComEd argued that AMI and other smart grid investments were so critical to the grid of the future and

Then-City Club of Chicago President Jay Doherty and then-ComEd President and COO Anne Pramaggiore. Both have been implicated in the federal investigation.. Credit: Screengrab from City Club of Chicago

would deliver such abundant operational benefits — not to mention the potential for significant non-operational customer benefits — that the decision of the utility to invest in them was easy and obvious.[218] If the case for making smart grid investments is so easy and obvious, then ComEd is obliged to make them, however slowly, even without special financial incentives.

ComEd argued, in pushing for EIMA's passage and in regulatory hearings implementing EIMA, that the law's upending of traditional regulation to guarantee revenues was *necessary* in order for ComEd to make the proposed reliability and modernization investments. As then-ComEd COO and President Anne Pramaggiore testified before a legislative committee, "ComEd simply can't make investment without the stability and predictability embodied in the regulatory reform section of the bill."[219]

Now that ComEd's EIMA reliability and smart grid investments are essentially complete — of the $2.6 billion investment only an estimated $18 million remains to be spent in 2020 and $6 million in 2021[220] — one can review ComEd's actions and financial statements throughout the period to evaluate both what the utility and its owner gained and whether those guarantees were necessary.

The record shows that the record profits EIMA delivered cannot reasonably be considered to have only been what was necessary for the company to execute the capital spending specified by the law. The company gained much, much more.

As shown in this chapter, as a tool to ensure ComEd made investments to meet basic reliability obligations and implemented new smart grid investments, EIMA has been like using a sledgehammer to drive in a tack. As structured, EIMA is a profit-machine, churning out automatic customer bill increases and guaranteed profits for ComEd and Exelon.

This chapter demonstrates EIMA's advantages and benefits for ComEd and Exelon:

- EIMA was a profit machine for ComEd and Exelon
- EIMA's profit machine went far beyond what was "necessary"

2.1 EIMA is a profit machine for ComEd and Exelon

As covered in section 1.4.1, the two primary ways a regulated utility can increase profits are: increase the profit percentage (the return on equity or overall return) or increase the value of assets the profit percentage is applied to (the rate base). EIMA was written to do both. While external factors have kept the return on equity lower than what was expected when EIMA was passed,[221] ComEd's rate base has skyrocketed.[222] As a result, EIMA has reliably churned out ComEd authorized profits, now almost 50% higher than when EIMA started.[223] Before the recent scandal, ComEd and Exelon were planning on using EIMA to automatically and easily increase ComEd's authorized profits by another $200 million a year before the formula rates sunset.[224]

As remarkable as the financial outcomes have been, the law was designed and expected to deliver even more financial benefits to ComEd and Exelon. It did not because EIMA's formula ties ComEd's profit margins to the annual average of monthly yields of 30-year Treasury bonds.[225] At the time of EIMA's passage, observers expected the formula would push ComEd's return on equity to over ten percent. Then-Attorney General Lisa Madigan claimed the legislation would "lock in double-digit profits for the next decade."[226] Part of the compromise that facilitated final passage of EIMA over Governor Quinn's veto was a reduction in the formula used to set ComEd's return,[227] to respond to concerns that ComEd's return

on equity would be too high. Since the 30-year Treasury Bond rates have remained lower than expected, ComEd's actual return on equity has been 8.84 percent on average.[228]

Even though the company likely would be enjoying a higher return on equity, and higher profits, all else being equal, under traditional regulation,[229] ComEd appears more than happy with this outcome. The company began pushing for a permanent extension of formula ratemaking in 2019,[230] without proposing changes to the formula which sets its return on equity.[231]

EIMA was also structured to build ComEd's rate base. It not only required a significant amount of capital spending, it automatically and quickly reflected those investments in its authorized revenues. By mandating $2.6 to $3 billion in spending, EIMA guaranteed an equally large increase to ComEd's rate base and thus increases to the company's net annual operating income, or profits. The growth in these amounts, shown below, is significant, but does not capture the full value to the company. As covered in section 1.4.1, before EIMA, annual revenue amounts and profits were not guaranteed. By eliminating that risk and guaranteeing revenue and profits, EIMA creates even more value for ComEd than the significantly increased rate base and annual profit amounts indicate.

Table 5 shows that over 8 years, the company's authorized profits have increased by close to 50 percent, increases made even more valuable by their certainty. More importantly, the company's rate base, which is what profits will be calculated based on for decades to come, has increased an astounding 84 percent. Increases in rate base give profits for years and years — only disappearing after the assets have been fully depreciated, usually decades later. ComEd is positioned to enjoy heightened profits due to EIMA for decades.

While EIMA specified $2.6 billion of investment, ComEd's increased capital spending over 8 years (including non-EIMA spending and other asset-building regulatory treatments) outpaced depreciation such that the company added more than $5 billion to its rate base, from $6.2 billion in 2011 to $11.4 billion in 2019.[233] Thanks to EIMA and further legislative interventions since, ComEd is on track to double its rate base within ten years, and earn authorized profits of almost a billion dollars a year.

A longer view gives more context to this increase in rate base. Starting in the mid-2000s, one can see that ComEd's rate base held relatively steady in a range around $6 billion over the seven years before EIMA went into effect (2006-2011). EIMA spending, starting in

TABLE 5: COMED RATE BASE AND REVENUE INCREASE SINCE 2011[232]

	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total Change
ICC Docket No.	11-0721	12-0321	13-0318	14-0312	15-0287	16-0259	17-0196	18-0808	19-0387	
Rate Base $M	$6,187	$6,367	$6,702	$7,344	$8,277	$8,827	$9,662	$10,675	$11,355	84%
YoY increase in rate base		3%	5%	10%	13%	7%	10%	10%	6%	
Net annual operating income $M	$505	$480	$465	$518	$584	$592	$625	$696	$739	46%
YoY increase in operating income		-5%	-3%	11%	13%	2%	6%	11%	6%	

2012, helped drive ComEd's rate base steadily higher, almost doubling from 2012 to 2019.[234]

This is in large part why ComEd's authorized profits have increased by almost 50% since EIMA went into effect. If 30-year US Treasury Bill rates had increased as anticipated when EIMA went into effect, ComEd's profits would have increased even more.

While Governor Pritzker has recently called for an earlier sunset,[236] EIMA's formula rate is currently set to expire in 2023.[237] According to plans Exelon has presented to investors, between the four years from 2020 through 2023, ComEd will make average annual investments of $1.91 billion in its distribution system, higher than the 2015 and 2016 peak of EIMA investment, for a net $2.7 billion addition automatically added to rate base.[238] According to the presentation, ComEd is also adding, by 2023, more than $1 billion in "other" rate base.[239] Similar Exelon plans were public in early 2019 when ComEd pushed for the formula rate extension, but unlike when advocating for EIMA, ComEd presented only vague reasons for the need for such significant ongoing investment.[240]

If these plans come to pass, ComEd will have increased its non-transmission rate base by 155 percent since EIMA passed.

Using the current profit rates, this level of increase in rate base would more than double ComEd's authorized profits since the 2013 trailer bill, to almost one billion dollars per year.[242]

2.1.1 EIMA PROVIDED COMED RECORD PROFITS, AND INCREASED THE DISTRIBUTION PORTION OF CUSTOMER BILLS BY 37 PERCENT

EIMA has been an unquestionable boon to ComEd: the utility has enjoyed record profits and customer bills, instead of falling, have increased significantly compared to where they would be without EIMA.

Over the past six years, since the passage of the EIMA trailer bill in 2013, ComEd has made $3.131 billion in profits. ComEd's profits did not exceed $2 billion over either of the two previous six year periods of its existence as a distribution-only utility, 2001-2006 and 2007-2012.[243]

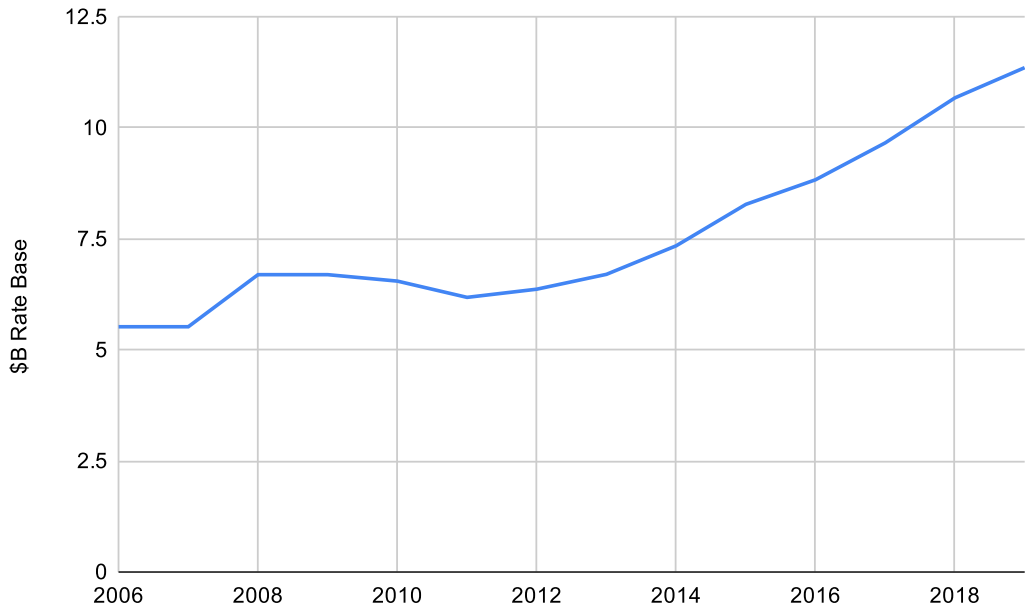

Figure 2: ComEd's rate base increase[235]

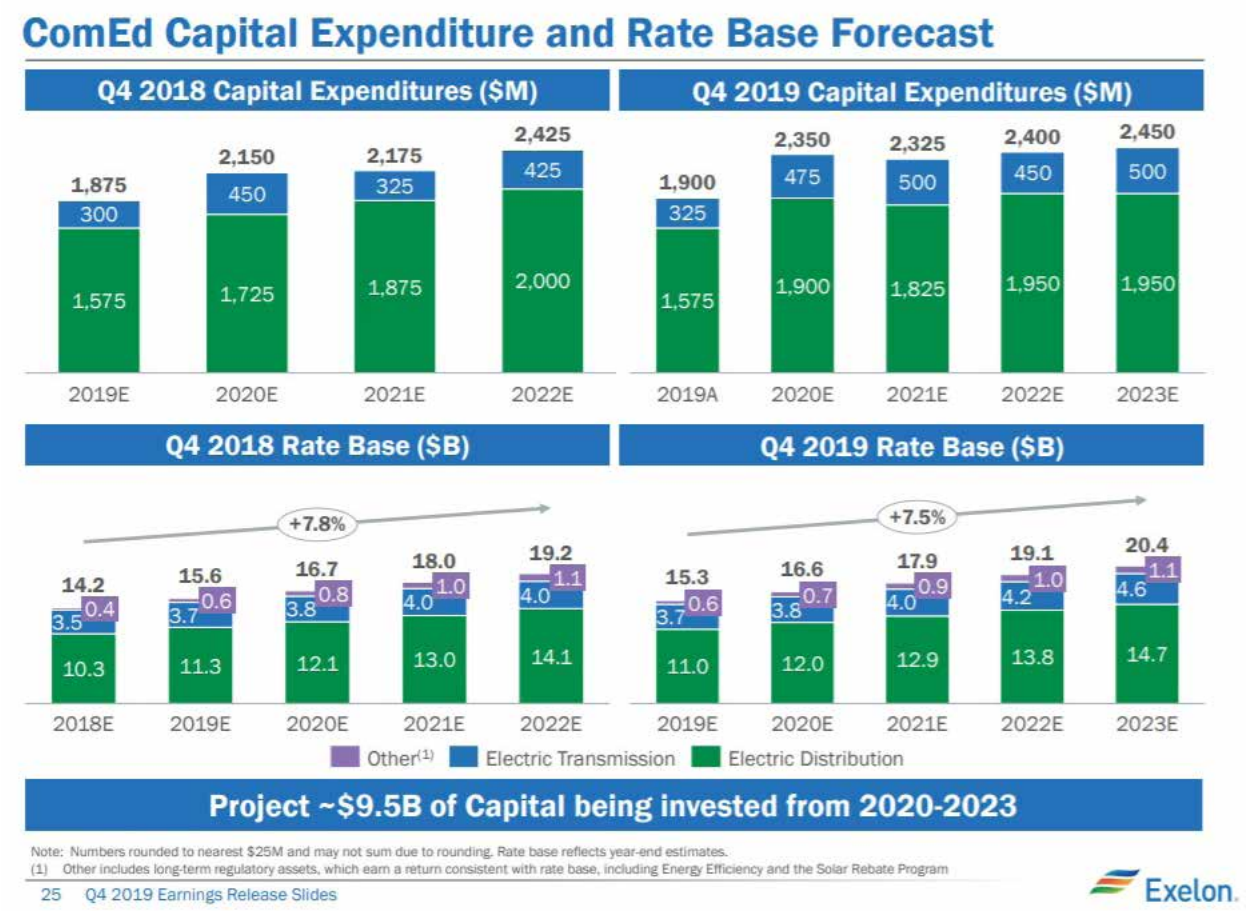

Figure 3: ComEd's 2019-2023 capital plan, as Exelon presented to investors[241]

Between 2013 and 2019 ComEd earned more than $4.7 billion more than what it would have had its actual revenue requirement from 2011 been in place over the same time period.[245]

These increases are even more valuable to ComEd because, unlike the traditional regulatory system, EIMA guarantees ComEd will collect: if full authorized revenues are not recovered in a given year, additional revenues are later recovered after a reconciliation review, with interest.

Increases in profits come from higher bills paid by customers.

Annual revenues authorized by the Commission through formula rate updates, the total amount ComEd is supposed to be collecting through the distribution portion of its bills, increased by just over $729 million between 2011 and 2019, from $1,950,664,000 to $2,679,860,000, an increase of 37 percent.[246]

As covered in section 1.2.2, customer bills have remained relatively flat because of drops in power supply prices. This does not mean consumers have not suffered from increases in the distribution portion of their bills — without those increases, or with smaller increases, ComEd customers would have enjoyed declining bills.

A report by the Power Bureau found that residential customers paid $423 million more in distributions costs in 2018 than in 2013, and that residential customers paid roughly $1.6 billion more for distribution service over that time period.[247]

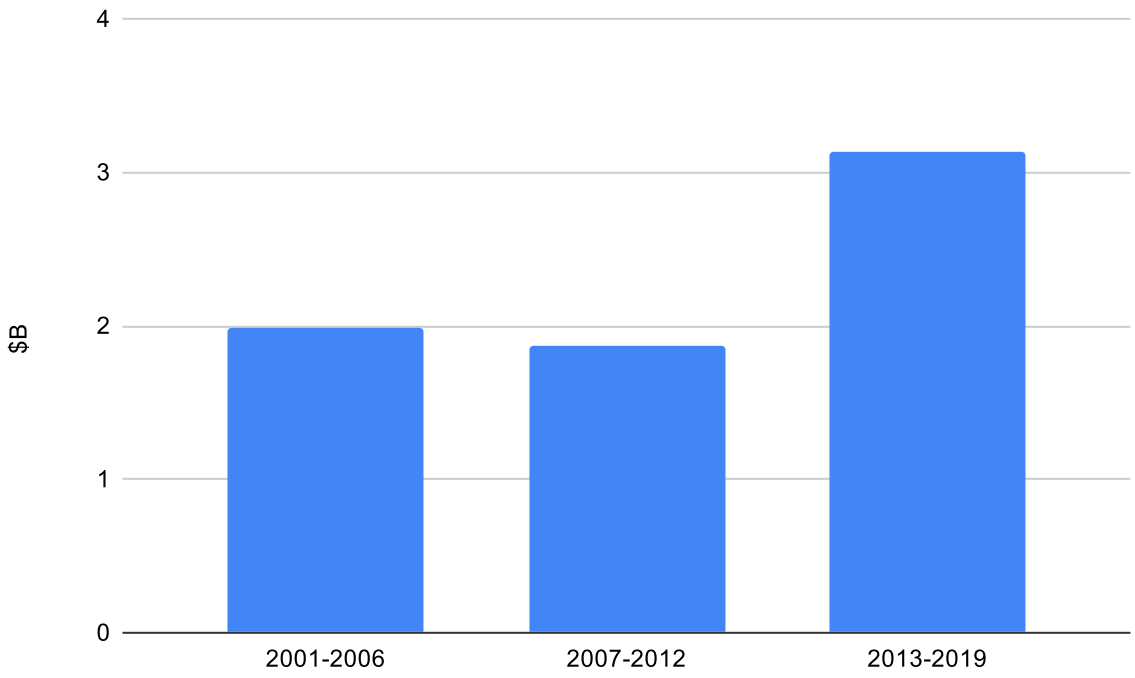

Figure 4: ComEd profits over 6-year periods[244]

2.1.2 EIMA'S "CUSTOMER PROTECTION POLICY" DID NOT PROTECT CUSTOMERS, BY DESIGN

Understanding that rate hikes are politically unpopular, ComEd touted a customer protection report in its efforts to pass EIMA.[248] The report, however, offered only a brief glimpse into early EIMA spending. Ultimately, the report obscured EIMA rate increases, instead of revealing or protecting against them.

The supposed consumer protection was a study due by July 31, 2014, comparing the average amount paid per kilowatt hour for residential customers for the three 12-month periods ending May 31, 2012, May 31, 2013 and May 31, 2014. If the study found that ComEd bills had risen more than 2.5 percent, the company would forfeit its ability to participate in formula ratemaking.[249]

While this policy sounds like a strong customer protection, it is not, by design.

At the time of EIMA's creation and passage, ComEd expected power supply prices, what consumers pay generators for making electricity, would be decreasing.[250] This allowed increases in the distribution portion of bills to be hidden by decreases in the generation portion of bills.

Because of this anticipated drop in power prices, and because the study looked at EIMA's impact on total bills, not the distribution portion of bills, this "test" did little to protect customer interests. EIMA further ensured this expected result by only conducting the study for the first few years after formula rates began, while its cumulative impacts on delivery rates were low. The company spent $863 million from 2012 through 2014 (keep in mind that, of the $444 million spent in 2014, only the spending from the first five months of the year would be counted because the 12 month period in the study ended May 31, 2014); in the next three years the company spent almost double that.[251]

COMED'S MISLEADING RATE DECREASE TALKING POINTS

SINCE THE ANNOUNCEMENT of ComEd's deferred prosecution agreement, the company has worked diligently to defend EIMA against charges that ComEd customers were harmed by the law: "They were not," wrote ComEd CEO Joe Dominguez in an August 20 letter to Chicago Mayor Lori Lightfoot.[252]

Among ComEd's defenses are that customer bills "are less than they were a decade ago,"[253] and that delivery rates have decreased in five of the ten years covered by formula rates, if one includes the pending 2020 rate case, which will determine rates to be used in 2021.[254]

These talking points are misleading and hide the plain facts that delivery rates have increased by 37 percent under EIMA and that customer bills are higher than they would have been absent this substantial increase.

ComEd's authorized annual revenue, the amount it collects through the delivery portion of customer bills, increased 37 percent between 2012 and 2020, from an annualized rate of $1.95 to $2.68 billion, or more than $700 million, as can be seen in figure 5.

This 37 percent increase has unquestionably had, and will continue to have, a significant effect on customer bills.

As covered in section 3.1.1, customers' overall bills have not remained flat or fallen *because* of but *in spite* of EIMA. Shortly after EIMA's passage, ComEd's supply rates dropped significantly, reflecting broader market conditions, primarily cheap gas.[256] These decreases in power prices (the supply portion of customer bills) would have driven overall customer bills down had EIMA not facilitated ComEd raising distribution rates (the delivery portion of customer bills) by 37 percent.

ComEd talking point 1: Bills are lower than a decade ago

When ComEd filed its formula rate update this April, it put out a press release stating that "If approved, the average total monthly residential bill would be about $82 beginning in January of next year, which would be lower than customer bills in 2008."[257]

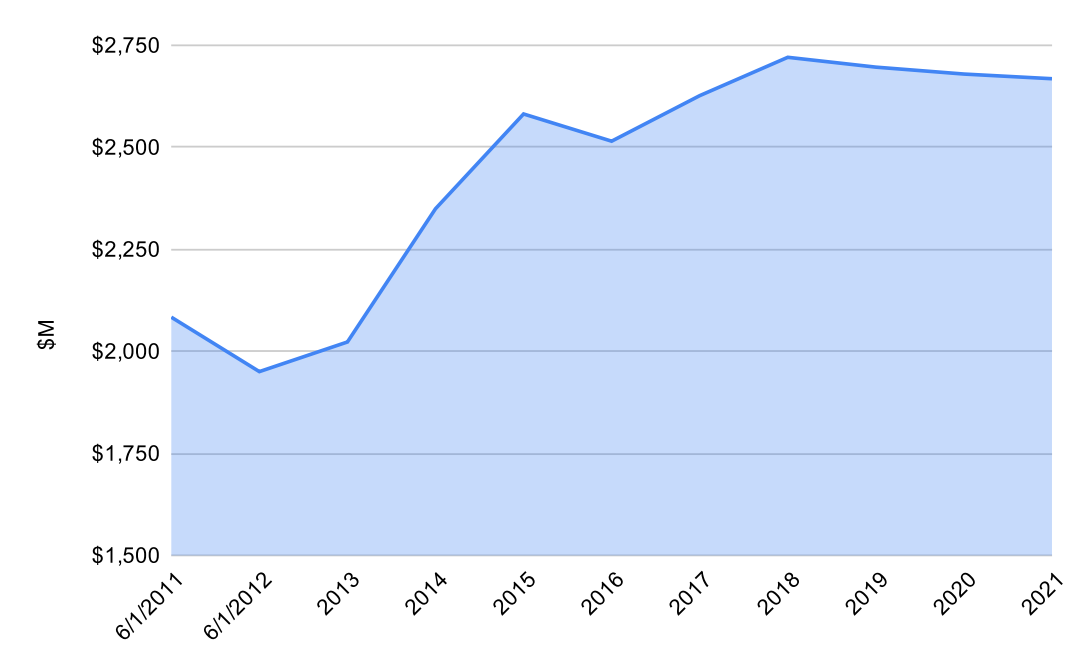

Figure 5: ComEd's authorized annual revenue[255]

ComEd's estimated authorized revenue requirement for distribution rates in 2008 was $1,735,494,250.[258] ComEd's proposed revenue requirement for 2021 is $2,668,395,000.[259] **If approved, ComEd will be authorized to collect more than $900 million more from customers through delivery rates in 2021 than it was in 2008, yet its statement attempts to give the impression that the rates set through EIMA's formula have declined.[260]**

Again, customer bills may be down, but for reasons outside of ComEd's control and having nothing to do with the company or its formula rates: power supply prices. ComEd somewhat acknowledged this in the next line of its press release: "Total bills include energy supply charges, which account for at least half of the monthly bill, and ComEd passes these costs along to customers without profit or markup."[261] EIMA is not responsible for customer bill savings; supply prices are. In fact, our savings should be higher. EIMA took most of those savings away from customers through higher delivery rates. Importantly, as Exelon profits declined with those falling power supply prices,[262] EIMA's subsequent delivery rate increases transferred consumer savings to ComEd, with resulting profits to the same company.

TABLE 6: YEAR TO YEAR CHANGES IN AUTHORIZED REVENUE [264]

Year rates are collected	$ thousands	Percentage
2012	(133,408)	-6.4%
2013	72,605	3.7%
2014	326,473	16.1%
2015	232,272	9.9%
2016	(66,677)	-2.6%
2017	111,587	4.4%
2018	93,960	3.6%
2019	(24,085)	-0.9%
2020	(16,939)	-0.6%
2021(pending)	(11,465)	-0.4%

ComEd talking point 2: Rates have decreased in five of the ten years

In his August 20 letter to Mayor Lightford, Mr. Dominguez wrote:

> "The formula created by EIMA did not increase customer rates, and in fact has resulted in rate decreases in five of the ten years since passage of the law, including for three straight years now… "[263]

This statement is only true if "rate" has two different meanings. The first reference is to overall customer bills, as already discussed. The second "rate" reference is to the delivery portion of bills, which is what the formula actually sets.

The same fact, that delivery rates have increased by 37 percent, clearly demonstrates how five instances of a year-to-year rate decrease mean little to customers. Rates could have decreased *nine out of ten* years, but customers would be no better off if the one year of increase was greater than the years of decreases.

This is the case for ComEd; the amount of the increases from the five years that increased far outpaces the amount of the decreases from the five years that decreased. The most obvious difference can be seen in the increases in 2014 and 2015, wherein delivery rates increased by 16 percent and 10 percent, respectively, compared to the decreases from 2019 to 2021, which are less than 2 percent *combined*, subject to the pending 2020 formula rate case.

The negative effect on customer's bills is also more severe because the increases happened toward the beginning of the ten year time period. The majority of the more than $700 million jump happened between 2013 and 2016. More than 45 percent of that increase happened in 2014.[265]

Since 2012, ComEd customers have paid $4.7 billion more than they would have had the formula created by EIMA not increased delivery rates over the level in 2012.

2.1.3 EIMA'S PROFIT GUARANTEE MAY BE MORE VALUABLE TO COMED AND EXELON THAN THE PROFIT MARGIN

As ComEd executives argued when advocating for EIMA, increased revenue certainty and corresponding decreased risk are critical financial advantages of EIMA. Put another way, one key advantage of the law is that it guarantees ComEd's profits.

As covered in section 1.4.1, traditional regulation uses proxies or estimates of future expenses to calculate the "revenue requirement." It further uses estimates of future customer consumption to set the fixed and volumetric charges on customers' bills to collect that revenue requirement. Once set, these charges do not change, even if usage, and thus revenue from volumetric bill charges, in any given year is significantly different than anticipated. In a year with a cold summer and therefore lower electricity consumption, ComEd would lose out on revenue and profits. This is meant to encourage caution and efficiencies as profits average out long-term.

EIMA, critically, created an annual, automatic, backwards looking reconciliation process, using actual expenses to "true up" to what the utility *should* have earned. Through the reconciliation process in EIMA, in the same cold-summer scenario, the company is allowed to collect the under-collected amount from customers two years later, with interest.

This effect is different from decoupling, described in section 1.1.2. Decoupling, as it is most commonly implemented, trues up revenue levels to what was expected when revenues based on volumetric charges are higher or lower than expected based on higher or lower usage than expected. EIMA includes this type of decoupling, but in addition to adjusting for usage differences, it also adjusts revenue by using what the company actually spent, rather than a proxy of expected expenses. This is a huge advantage for the company and removes incentives to be efficient with its spending, a concern covered in section 5.1.

While this report does not attempt to quantify the value of this guarantee to ComEd, it is clearly significant. ComEd would likely be enjoying higher authorized profit margins under traditional regulation, but appears to prefer the certainty of EIMA, as evidenced by its 2019 legislative effort to extend EIMA's formula ratemaking indefinitely without seeking to change the profit margin calculation.

Guaranteed revenue recovery means ComEd is "betting with someone else's money."[266] While it designs and implements plans to spend billions, any cost overruns or inefficiencies are recovered from customers by default. Utility expert Scott Hempling described this dynamic in an early EIMA proceeding:

> If the investment worked out, it would enter rate base and earn a profit that customers would pay, along with receiving the investment's benefit. If the investment turned out poorly, such as an abandoned plant, it would still enter rate base and earn a profit; the customers would pay for the profit but receive no benefit. Either way, the utility would win.[267]

In fact, ComEd *has* been betting with other people's money. In annual formula rate cases since the 2013 trailer bill, the Commis-

In fact, ComEd has been betting with other people's money. In annual formula rate cases since the 2013 trailer bill, the Commission has not disallowed any EIMA capital spending.

sion has not disallowed *any* EIMA capital spending,[268] nor were any of the amounts subject to challenge.[269] ComEd has recovered all the money it spent, with profits, without close scrutiny. In 2017, there wasn't a single proposed disallowance to rate base by Commission staff or any stakeholder.[270]

In all, during every formula rate case, through which ComEd has added more than $5.1 billion to its rate base, increasing it by 84 percent, the Commission has only disallowed just over $23 million *total*.[271] The vast majority of these amounts that the Commission determined ComEd cannot recover from customers reflect costs like capitalized incentive compensation. None of them were spending on EIMA investments.[272]

Section 3.2 includes more examples of how the annual formula rate updates have become a rubber stamp for the company's profits. **In this context, the example demonstrates the incredible value of EIMA's guarantee to ComEd, shifting the inherent risk in any utility capital investment *entirely* on to utility customers, not only in theory, but in practice.**

2.2 EIMA delivered revenue and profits to ComEd far beyond what was "necessary" to fund infrastructure upgrades

According to ComEd, it could not achieve basic reliability service obligations and modernize its grid without the "stability and predictability embodied in the regulatory reform section of" EIMA,[273] i.e. guaranteed revenue recovery, less scrutiny, and increased profits. With the benefit of hindsight, one can evaluate this claim and conclude it is clearly false.

ComEd would most need the regulatory benefits of EIMA at the peak of its reliability and smart grid investments, originally planned over five and ten-year schedules, respectively. In practice, ComEd was able to easily achieve a much higher investment peak than planned: it completed its AMI investments twice as fast and with a spending peak twice as high as planned — demonstrating that the certainty was well more than necessary.

These regulatory changes did more than simply enable ComEd to finance these investments: they dramatically improved ComEd's financial position both in terms of dividends sent to Exelon and in "retained earnings," profits retained by ComEd for future reinvestment.[274]

While these financial benefits were supposedly needed for EIMA's specific investments, they continue even though those investments are largely finished. ComEd is not only still enjoying these benefits, but it is spending on capital investments at higher rates than the peak of EIMA investments.[275]

2.2.1 EIMA'S GUARANTEED PROFITS WERE GREATER THAN NECESSARY, ENABLING A MUCH FASTER AMI DEPLOYMENT SCHEDULE

The first evidence to review is ComEd's timeline, or schedule, for AMI deployment. ComEd was able to spend money much more quickly than planned, creating a much higher "peak" than planned, demonstrating that EIMA's financial guarantees went well beyond what was necessary. Had EIMA's financial guarantees been only what was necessary, ComEd would have lacked the resources for this accelerated deployment that was faster than planned in EIMA.

ComEd's original, approved deployment schedule ramped-up over two years to roughly 500,000 meters per year followed by a long slow decline, over ten years total. The company claimed this schedule, and the financing necessary to pull it off, "necessitated" EIMA's financial guarantees.

As figure 6 shows, the Company did not follow its planned timeline. Instead of beginning on its approved schedule, ComEd defied the law[276] and a Commission order[277] in order to extract further financial windfalls from the General Assembly, as detailed in the sidebar, *EIMA was the first victory for an unparalleled political influence operation*. ComEd refused to begin deployment without these additional financial windfalls, which concerned accounting decisions that increased the company's profits.[278]

When ComEd did begin its deployment, it did so on a significantly more aggressive timeline, peaking at over 1 million smart meters per year for two years in a row, and largely completing deployment within six years.[279] This helps demonstrate how EIMA's financial benefits were much more substantial than what can reasonably be considered "necessary" for the more reasonable, originally planned schedule.

The two years when ComEd installed more than one million meters per year were the peak years of overall EIMA investment spending. ComEd's EIMA spending peaked in 2015 and 2016 at $663 million and $621 million, respectively. Spending in 2014 was $444 million, 2013 and 2017 were between $250 million and $275 million, 2012 was $165 million, and 2018 was $81 million.[281]

2.2.2 EIMA PROVIDED COMED MUCH GREATER FINANCIAL BENEFITS THAN WERE NECESSARY FOR IT TO MAKE SPECIFIED INVESTMENTS

The second piece of evidence one can review to evaluate ComEd's claim that EIMA's financial guarantees were "necessary" is the company's financials. If EIMA's guarantees were "right-sized" to enable ComEd to complete its investments on its original schedule, its financial position should have remained relatively steady over the period of increased investment. Instead

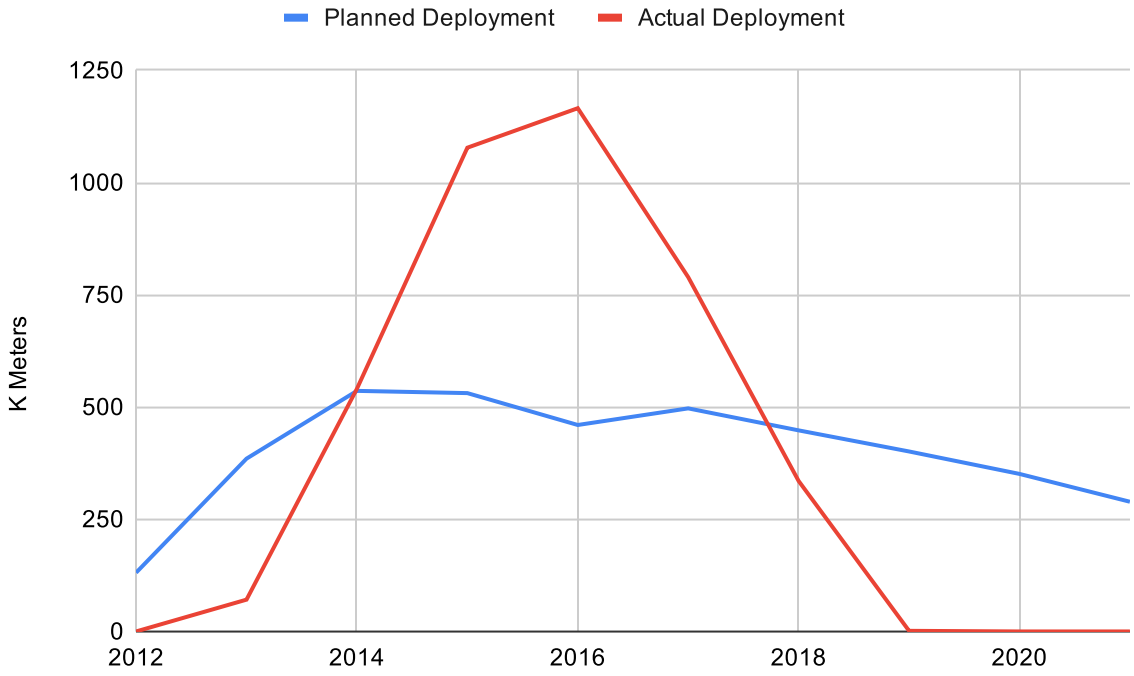

Figure 6: ComEd's planned vs. actual AMI deployment schedule[280]

EIMA allowed ComEd to significantly improve its financial position while sending healthy profits to Exelon.

In early regulatory filings implementing EIMA, Commission staff analyzed forecasts of ComEd's financials to determine whether the company could make the specified investments while still sending profits to Exelon in the form of dividends.

Among other analyses, Commission staff compared ComEd's income available to common shareholders (this can be thought of as its net income or simply, profits) to the forecasted dividends for Exelon and the amount of required capital investments.[282] ComEd's profits are available either to be paid out as dividends to Exelon or kept as retained earnings and reinvested in the company, for example for capital expenditures. As the Commission's staff described it: "It is earnings, not revenues, that represent the 'bottom line' [...of] ComEd's ability to finance [investments]." [283] This analysis attempted to demonstrate that ComEd had enough financial resources to cover EIMA's investments while still sending profits to Exelon. Based on projections, Commission staff found that EIMA gave ComEd enough profits to make the specified investments, grow its financial assets, while paying profits to Exelon.[284]

At the time of the Commission staff analysis, not only did ComEd's forecasted profits suggest ComEd had "ample financial ability to absorb the expenditures," the profits "**far exceed** the amounts it would have expended."[285] (emphasis in original). This analysis, which used ComEd's own forward-looking estimates, suggested ComEd was in a strong enough position to comfortably handle the most aggressive of capital investment schedules while still sending dividends to Exelon. This analysis was also conducted on the original deployment schedule, not the more aggressive one ComEd ultimately used.

Now, the same analysis can be performed with the actual financial information over the years of EIMA investments. As Table 6 and Figure 8 show, ComEd's financial health, as shown by a similar examination, handled the specified EIMA investments with ease, especially during the height of EIMA costs.

ComEd's profits not only remained sufficient in every single year of the EIMA investments to send healthy dividends while also retaining earnings, ComEd's total retained earnings grew every year and almost tripled during the period. Total retained earnings soared from $422 million in 2010 to $1.3 billion in 2018.[286] From the onset of the substantial investments and even during the height of EIMA spending in the years 2015 and 2016 (spending $663 million and $621 million, respectively), ComEd sent profits to Exelon and still grew total retained earnings.[287]

TABLE 7: COMED'S STRONG FINANCIAL PERFORMANCE UNDER EIMA

$ millions	2011	2012	2013	2014	2015	2016	2017	2018
Annual ComEd Profits[288]	$415	$379	$249	$408	$426	$378	$567	$664
Annual Profits sent to Exelon[289]	$300	$105	$220	$307	$299	$369	$422	$459
Annual EIMA spending[290]	0	$165	$253	$444	$663	$621	$271	$81
Accumulated Profits Accounted as Retained by ComEd[291]	$442	$714	$741	$838	$962	$968	$1,109	$1,309

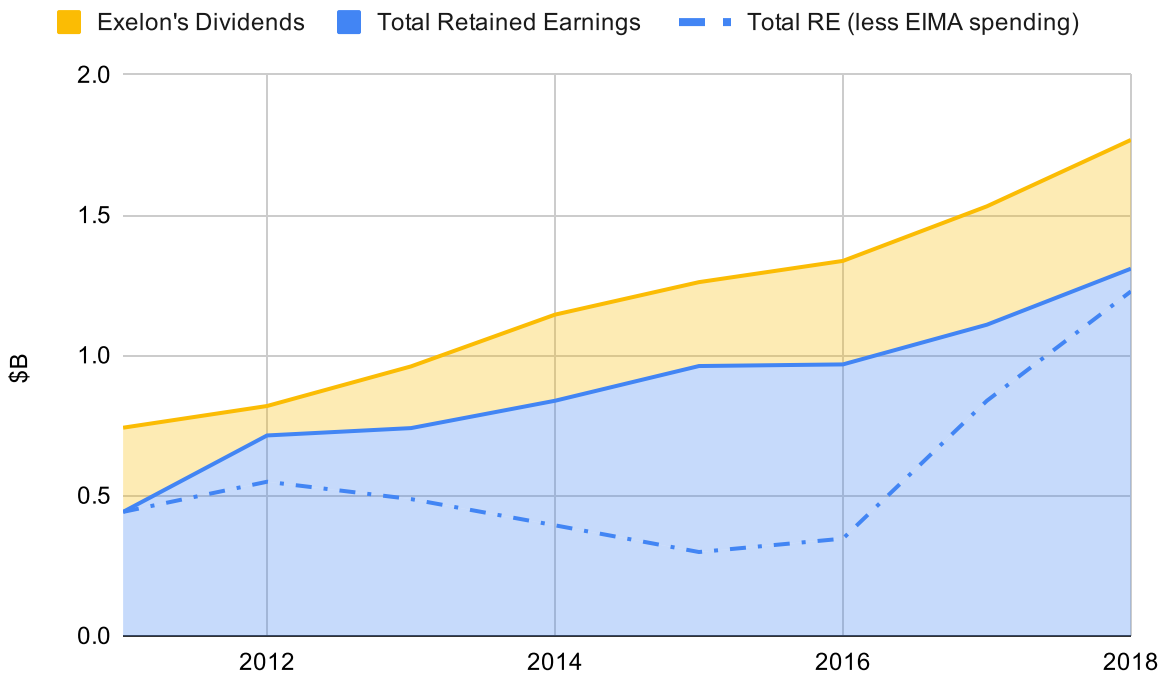

Figure 7: Total retained earnings (with EIMA spending) and Exelon's dividends

Figure 7 shows the accumulated effect on total retained earnings (solid blue line), of ComEd's profits in any given year and the actual dividends sent to Exelon (shown on top in yellow), with reference to the annual EIMA investments (dotted blue line).[292] The annual cumulative effect of the two, profits coming in and dividends going out, is ComEd's accumulating total retained earnings (the total blue area). This is the money that ComEd "keeps" and "reinvests in the company." Thus, the blue shows the growth of earnings after Exelon dividends have been paid out.

Within the blue area, the area between the dotted blue line and the solid blue line represents the amounts of EIMA spending in the years it was spent. The amount below the dotted blue line therefore represents what the amounts booked to total available retained earnings *would have been* if EIMA investments were paid out in full in cash in the year they were made. To be clear: this is not what happened; ComEd financed the investments. This comparison, while not entirely accurate because it overlays capital expenditures over a different accounting treatment, nonetheless demonstrates how EIMA's assurances were far more than what was necessary.

Instead, the revenue certainty and increased profits of formula rates made possible a *much larger increase in capital spending* than what EIMA specified, *not only* for the planned AMI deployment over ten years, *but also* for what ComEd actually did, wherein the vast majority of the deployment happened in five years.

Far from being just what was necessary to make the obligated investments, EIMA created a profit machine for ComEd and Exelon. In a recent column regarding a dispute over how quickly ComEd would repay customers because of recent tax cuts, Crain's Columnist Joe Cahill commented on how strong ComEd and Exelon's financial health is today:

> Together with Chicago-based parent Exelon, [ComEd] has more than $1.5 billion in unrestricted cash, $9 billion in credit lines and vast borrowing capacity in bond markets. Exelon pays about $1.3 billion in annual dividends, more than triple the $385 million in excess tax collections at issue.[293]

2.2.3 EIMA'S PROFIT MACHINE CONTINUES AFTER EIMA INVESTMENTS HAVE BASICALLY ENDED

EIMA's benefits for ComEd continue even after the EIMA investments are largely done. These ample financial benefits for ComEd, the law's assurances, were supposedly needed for EIMA's specific investments. Now that those obligations are finished, however, ComEd is not only still enjoying the assurances but is spending amounts for capital investments at higher rates than at the peak of EIMA investments. This aggressive capital spending is evidence that EIMA's regulatory changes have strengthened ComEd's incentive to "spend money to make money," as described in section 1.5.2.

ComEd's AMI spending peaked at $663 million and $621 million in 2015 and 2016, respectively. Now, Exelon and ComEd forecast that between 2020 and 2023 ComEd will spend roughly $300 million more each year than at the peak of EIMA investment spending.[294]

Since EIMA's formula rate structure was implemented the distribution portion of customer's bills are 37 percent higher. Three distinct elements make up the vast majority of that increase and the accompanying increase in profits for ComEd. First, EIMA investments account for a large portion.[295] Second, a portion was added through the 2016 FEJA law.[296]

This third portion is simply ComEd now spending at much higher levels. For example, ComEd added more than one billion dollars to its rate base in 2018, more than in any other year under formula rates. This was not due to specified EIMA investments, however; of the $2.6 billion in EIMA specified investments, the company made only $81 million, or 3.2 percent, that year.

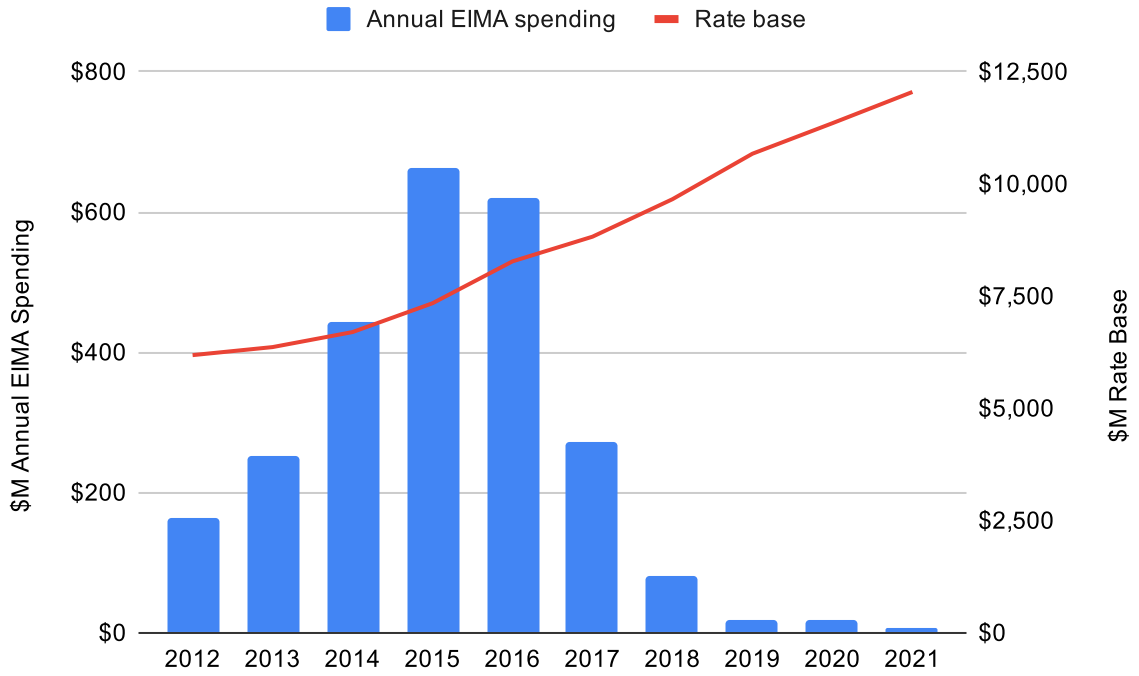

Figure 8: ComEd's annual EIMA spending compared to growth in rate base[297]

There is no law or Commission order mandating, or even allowing, the company to make these investments, which add significantly to customers' bills and ComEd's profits. Nor has ComEd ever made a public case for these investments, even while attempting to pass legislation to make formula ratemaking permanent in 2019. When pressed for an explanation of its planned capital spending by Crain's journalist Steve Daniels, ComEd did not get more specific than "We plan to continue investments in communications networks, IT and other systems to bolster the cybersecurity of the grid,"[298] and

> Our additional planned investments in the coming years will continue to improve system reliability and resiliency, choice and control for customers, and integrate renewable energy, all of which have the potential to deliver continued savings to families and businesses.[299]

Thanks to EIMA the Commission will not have ample time to review these investments for prudence and reasonableness, nor will it have time to review them before they happen, effectively eliminating the risk that any of the spending is not recovered from customers.

This is not what EIMA was justified as for, and the results clearly show that the regulatory change in EIMA was major overkill.

Chapter 3: EIMA benefited ComEd beyond the immediate and direct financial benefits

EIMA DID MORE than deliver unnecessary and unjustified financial benefits and profits to ComEd.

While ComEd did not need EIMA's assurances and the profits they created, Exelon did. Exelon needed the injection in guaranteed profits to make up for decreasing revenues from its generation division, as competition from gas and renewable drove down power prices.[300] By short-circuiting the more consumer-focused Commission smart grid planning process, EIMA also protected Exelon's business interests from threats arising from consumers' realizing the full potential benefits made possible by smart meters.

One of the largest benefits from EIMA, arguably, was that policy making for ComEd's utility regulation was moved from the Commission, where the company could not control the outcome, to the Illinois General Assembly, where the recent scandal shows the company had much greater influence. ComEd was able to reduce the Commission to a rubber stamp, creating a timeline and framework for EIMA that did not ensure customer benefits. The result was a significant and harmful twisting of utility regulation that moved the investment risks from the company to the customers.

- EIMA's profit machine has been vital to Exelon
- EIMA turned the Commission into a rubber stamp, shielding ComEd and its profits from accountability

3.1 EIMA's profit machine has been vital to Exelon

After Illinois restructured the power industry in 1997, Exelon's relationship to ComEd should only be able to be justified on the theory that it benefits the regulated utility, its service obligations, its customers, and the public interest. Exelon's financials are of limited interest to ComEd's regulators and customers. From the perspective of ComEd's

Exelon Corporation Headquarters. Credit: Monika Thorpe

customers and regulators, Exelon's financials only matter in that the parent company's size and expertise should, in theory, make operating and financing ComEd easier and cheaper. However, Exelon's financial pressures and interests appear to have outweighed the interests of ComEd, its customers, and the public interest.[301]

3.1.1 COMED'S GUARANTEED EIMA PROFITS MADE UP FOR SAGGING PROFITS FROM EXELON'S GENERATION DIVISION

During the 2000s, Exelon's primary profit center was Exelon Generation, which benefited from newly competitive power markets and unregulated profits.[302] In 2007, as ComEd's share of Exelon's earnings dwindled, Exelon took steps to position itself to sell off ComEd.[303] However, this dynamic was changing at the time of EIMA, as lower cost gas and renewables, among other factors, started to undercut Exelon's expensive nuclear plants.[304]

ComEd and Exelon saw this trend in lower power prices approaching. In 2010, they floated legislation that offered the financially struggling Illinois government $500 million in exchange for regulatory changes similar to those later incorporated into EIMA along with "a four-year freeze on rates, locking customers into above-market power prices."[305] That is, knowing that power prices were trending down and that some expensive ComEd contracts were ending, Exelon attempted to lock in ComEd's supply prices at their then-current level, higher than what it expected the competitive market would bring.

With power prices dropping, after the attempt to win above-market power prices failed, Exelon adopted a strategy of increasing ownership of regulated utilities and in increasing those utilities' delivery rates as an alternative way to boost Exelon's bottom line. As part of this strategy, Exelon acquired an additional utility holding company and with it three more utilities, greatly increasing its regulated profits from distribution utilities.[306]

Falling power prices meant distribution prices could rise while bills remained flat. Exelon CEO Chris Crane explained this dynamic at a conference in 2016, saying it's "a good thing that energy prices have fallen off and allowed the required capital to be installed and be done without impacting the consumer."[307] Said another way, instead of consumers saving money and Exelon losing revenue from lower power prices on the supply portion of consumers' bills, those savings for consumers and earnings for Exelon and other generators were shifted and captured through the distribution portion of the bill. As ComEd is quick to point out, customer bills overall have remained flat since EIMA.[308] It makes this argument to defend EIMA, assuming most listeners do not understand their bill would have decreased otherwise.

This outcome is an example of how Exelon's approach to restructured energy markets has been "heads I win, tails you lose." The clearest example is its nuclear power plants: early on in the 2000s, restructuring allowed Exelon's nuclear plants to earn massive, unregulated profits.[309] When broader economic forces started to eat away at those profits, Exelon returned to the General Assembly in 2016 for a ten-year, $2.35 billion bailout.[310]

In a similar way, Exelon turned to regulated ComEd in 2011 to maintain parent company profits. Illinois consumers have not enjoyed the full benefits of market-driven lower power prices because Exelon found alternative ways to collect.

Exelon's ownership of ComEd has allowed the parent company to enjoy the benefits of restructuring as well as the benefits of ComEd's revenue "certainty," while the conflicts of interest harming ComEd's service obligations and the public remain.

COMED VS. EXELON GENERATION AS A SHARE OF EXELON'S PROFITS

TABLE 8 COMPARES the percentage of Exelon Generation and ComEd's profits in Exelon's overall net operating income. Table 8 shows how ComEd's position has improved not only in terms of profits but also in the percentage of profits the company contributes to Exelon's operating income. Even after Exelon generation started receiving generous subsidies for its nuclear plants from Illinois ratepayers in 2017, ComEd's heightened profits continue to increase its share of Exelon's bottom line. As covered in section 2.1, these profits are not anticipated to decrease anytime soon, and ComEd and Exelon plan on adding considerably to these profits over the next few years.

TABLE 8: COMED VS. EXELON GENERATION AS A SHARE OF EXELON'S PROFITS[311]

	2007 - 2011	2012 - 2016	2017 - 2019
$M Exelon Generation avg profits	2029.6	905.4	1,486
% of Exelon Co. net operating	42%	26%	34%
$M ComEd avg profits	298.6	368	640
% of Exelon Co. net operating	6%	11%	15%

3.1.2 EIMA PROTECTED EXELON'S BUSINESS INTERESTS FROM THE THREAT POSED BY CUSTOMER REALIZATION OF SMART METER BENEFITS

By moving smart grid policy discussions from the customer-focused Commission smart grid planning process to the Illinois General Assembly, ComEd was able to avoid the more expert, transparent and customer-oriented process at the Commission. As a result, as explored further in the following chapters, EIMA failed to ensure certain customer-friendly policies that would have lowered Exelon's profits.

The Commission's stakeholder process included stakeholder workshops, a 2009 smart meter deployment pilot, a 2010 Illinois Statewide Smart Grid Collaborative Report, and, most relevant here, anticipated a new "Smart Grid Policy Docket."[312] Parties in the process had already begun proposing mechanisms that linked utility profits to the success of customer applications or customer savings, such as those gained through energy efficiency enabled by AMI applications.[313] These accountability mechanisms likely would have had a detrimental effect on Exelon profits, either indirectly, as through energy efficiency, or directly, through a sharing mechanism that seeks to reduce customer costs. As an example of how such a sharing mechanism could work: as the verified customer benefits or savings resulting from the investment increase, ComEd is able to earn a percentage of those benefits back as profit by increasing customer bills.

EIMA short-circuited this ongoing stakeholder process and allowed ComEd and Exelon to avoid meaningful accountability measures that linked smart grid customer benefits to utility profits. EIMA completely fails to ensure beneficial customer applications or meaningfully tie their performance to ComEd's profits. Some powerful customer benefits, which could benefit everyone in ComEd's territory, were actually prohibited from being measured for cost-benefit purposes by the next major energy legislation championed by ComEd and Exelon, the 2016 law, FEJA.[314] These failures in EIMA and FEJA directly protect Exelon's profits.

EIMA WAS THE FIRST VICTORY FOR AN UNPARALLELED POLITICAL INFLUENCE OPERATION

COMED BUILT an unparalleled political influence operation to pass EIMA, and was able to continue using it to gain further windfalls for ComEd and Exelon.[315] ComEd and Exelon used this clout repeatedly, including returning to the Illinois General Assembly for more profits through a 2013 EIMA trailer bill,[316] a 2014 resolution sponsored by House speaker Madigan and Minority Leader Jim Durkin for a report supporting their bid for a nuclear power bailout in their next legislative push,[317] and for that next legislative push, what became the 2016 FEJA.[318]

Exelon leadership also replicated this approach in other states.[319] The approach has worked well: an investor in Exelon common stock on December 31, 2013 who reinvested dividends would have doubled their money by 2018, a growth rate of roughly 14.4 percent per year.[320]

In recent years, ComEd and Exelon's political prowess has been taken for granted. As an article published before ComEd's illegal scheme was revealed stated:

> Few companies depend as heavily on legislative influence, and few have played lawmakers as deftly. Even by the standards of the utility industry, where campaign contributions and rate hikes go hand in hand, Chicago-based Exelon's lobbying prowess stands out … Legislative intercessions eased pressure on Exelon's power generation business, bolstered its bottom line and helped pull its shares out of a multiyear slump. Exelon stock has climbed more than 60 percent since 2015, outpacing the broader stock market and other utility stocks by wide margins."[321]

ComEd and Exelon did not always enjoy this level of political power, and their ability to pass a law as sweeping as EIMA was not a foregone conclusion. As noted in section 1.2.2, ComEd and Exelon struggled to curry favor with powerful House Speaker Madigan, launching a "charm offensive" in 2007, as described by Crain's journalist Steve Daniels: "The years between 2007, when Madigan was at war with Exelon, and 2011, when ComEd triumphed, are the key years in the wooing of the speaker, as well as other pols."[322] Reliability problems over the summer of 2011, as ComEd attempted to muster the votes necessary to overcome a gubernatorial veto of EIMA, complicated matters.[323] Ultimately, even with those issues and while facing opposition from the Governor, Attorney General, Commission, and consumer and environmental advocates, ComEd only needed to make relatively small concessions to overcome the veto and achieve a complete reworking of its regulation through EIMA.[324] We now know this incredible feat was made possible in part through corrupt and illegal means.

Amassing the power to pass EIMA over the opposition and Governor Quinn's veto was a herculean effort, and it was not clear ComEd would succeed, until it did. The act of exercising and demonstrating that power cemented it.

Once cemented, ComEd used its power.

In the first example, ComEd returned to the Illinois General Assembly in 2013 to overrule decisions made by the Commission and its accounting experts in its implementation of EIMA.

This multi-year standoff began when ComEd refused to initiate the investments that the legislation it championed obliged it to do,[325] on its proposed and approved schedule,[326] because it disagreed with Commission accounting decisions which reduced some of the company's future profits.[327]

During this back and forth between the Commission and the company, the Commission "asked for specific proof regarding [...] the Company's finances."[328] Rather than providing such proof, ComEd engaged in extraordinary tactics, including not complying with a Commission order,[329] and manipulating the regulatory process in a

manner that left the Commission with no good options.[330] Two proceedings[331] include detailed commentary from the Commission on the company's failings which Commissioners unanimously criticized, for example calling ComEd's conduct "disappointing,"[332] and "deficient."[333] After first trying to change the Commission's course through resolutions, the Illinois General Assembly ultimately passed a trailer bill to overrule the accounting decisions made by Commission experts, grant ComEd its desired additional profits, and specifically shield the company from the penalties EIMA imposed on ComEd for its noncompliance with investment obligations.[334]

The result was additional profits the company would not have enjoyed otherwise. Thanks to ComEd's fights at the ICC and the Illinois General Assembly's intervention, ComEd, as shown in Table 9, earned more than an additional $400 million between 2013-2019 on just two of the three contentious topics.[335] These changes all directly add to ComEd's profits and raise customer bills, while delivering no additional value to its customers.

A second example of ComEd's political power was the passage of an Illinois House of Representatives resolution[339] in May of 2014 calling on four separate executive branch agencies to produce a report examining the potential effects of premature closure of existing nuclear power plants. This resolution was sponsored by the Speaker of the House and the Minority Leader.[340] The report was released roughly half a year later[341] and was used by Exelon to advocate for legislation to bailout its nuclear plants.[342]

A third example of the political power built and exercised by ComEd and Exelon is the 2016 Future Energy Jobs Act, another sweeping piece of energy legislation. While the legislation was passed in coalition with a large number of environmental, consumer and community organizations and included meaningful positive policy changes those organizations championed,[343] the law included significant windfalls for ComEd and Exelon, most notably a new ten-year $2.35 billion subsidy for two uncompetitive Exelon nuclear power plants and significant profits for increasing customer-friendly energy efficiency programs like those ComEd promised when advocating for EIMA.[344]

Illinois Capitol. Credit: Edward Stojakovic

TABLE 9: ADDITIONAL COMED PROFITS DUE TO GENERAL ASSEMBLY INTERVENTION[336]

$K	2013	2014	2015	2016	2017	2018	2019	Total
Reconciliation Interest[337]	20,872	30,752	10,830	8,486	10,129	14,418	6,134	101,621
Pension funding costs[338]	59,339	53,473	51,984	48,882	40,272	32,714	24,988	311,652
Total	80,211	84,225	62,814	57,368	50,401	47,132	31,122	413,273

3.2 EIMA turned the Commission into a rubber stamp, shielding ComEd and its profits from accountability

A final EIMA benefit for ComEd is reduced oversight by the Commission, allowing its profits to rise unimpeded by regulatory oversight. Though the company would not admit it at the time, EIMA's "certainty" included limitations of Commission discretion and authority. The Commission and others opposed to the bill were clear on this point.

As ComEd has stated, EIMA "called for a very specific statutory filing, review, and approval process."[345] This very specific process imposed frequent filings, required short timelines, set high legal burdens on the Commission and intervening stakeholders, and diminished Commission authority.[346] On top of that, EIMA provided no new resources for the Commission to keep up with the increased workload or new considerations arising from new technology. [347]

The end result is a regulator reduced to a rubber stamp, an additional layer of certainty that ComEd and Exelon would reap the increased profits built into EIMA's structure.

This result is in stark contrast to the cautious and measured process of the ISSGC, which endeavored to ensure that "'customers are the primary beneficiaries' of the Smart Grid."[348] The very specific process created by EIMA leaves out any real and meaningful consideration of customer benefits, the cost-benefit analysis or efficiencies of ComEd's investments, and comparisons to alternative investments.[349] As a result, the Illinois General Assembly, the Commission and the public cannot evaluate whether the billions of dollars ComEd spent and the resulting public and consumer benefits were "worth it."

3.2.1 THE LAW, AND THE TIMELINE, MADE THE COMMISSION'S "REVIEW" OF COMED'S INITIAL AMI PLAN MEANINGLESS

The Commission had little choice but to approve ComEd's initial AMI plan without adequate scrutiny.

First, the law required the Commission to "issue its order approving, or approving with modification, the AMI Plan"[350] so long as the plan contained a set of basic information. That is, the law required Commission approval so long as the plan contained the necessary information,[351] regardless of questions or concerns the Commission may have had about the information presented. During the formal proceeding to approve the company's AMI plan, ComEd wrote "EIMA authorizes and requires the Commission to review and approve plans, and not to order utilities to invest in a particular manner."[352] Not approving the AMI plan was not an option under the law.

Second, while the law subjected the AMI plans to a cost-benefit test purported to protect customer interests, it designed the test such that its analysis was a forgone conclusion that would support ComEd's AMI plan. The law required the Commission give weight to "the results of any Commission-approved pilot designed to examine the benefits and costs of AMI deployment."[353] Two such reports[354], which analyzed the AMI pilot run by ComEd, were finalized in the months leading up to EIMA's passage and both were procured, managed, and paid for by ComEd. On such a schedule, the company must have known the studies' favorable topline conclusions during the spring legislative session in which EIMA initially passed. Armed with these results, ComEd could, and did, argue that AMI would provide ample operational benefits and be cost beneficial without ensuring any customer applications benefits.[355] Because of

that, according to EIMA, customer applications benefits did not need to be guaranteed for EIMA to pass the cost benefit test.

Third, EIMA imposed impossible timelines for approval of AMI plans on the Commission. Commission staff formally concluded that, due to limited time, they were "unable to verify the reasonableness of the assumed costs or benefits."[356] As the Commission stated while approving ComEd's plan:

> The timeframe incorporated in the statute for review of ComEd's AMI Plan does not allow the Commission Staff or Intervenors an opportunity to thoroughly review the assumptions contained in the cost -benefit analysis. [...] The statutory deadline inappropriately limits Commission review of an enormous expenditure of ratepayer dollars.[357]

EIMA directed the Commission to approve ComEd's plan, required pre-determined analysis to ensure approval, and did not provide the Commission adequate time to evaluate the plans.

This is not proper oversight.

3.2.2 THE COMMISSION IS SIMILARLY CONSTRAINED IN REVIEWING ANNUAL AMI PLAN UPDATES

This dynamic continues in EIMA's requirements for ComEd's annual AMI plan updates, a process which presumes plans are automatically approved unless the Commission or a third party intervenor can provide a compelling reason for investigation within 21 days of the plan update's filing.[358] If the Commission or an intervenor successfully opens an investigation, they would then have just 90 days to conduct said investigation of ComEd's plan,[359] a plan to spend a billion dollars on projects as varied as deploying 4 million smart meters and overhauling large portions of the company's information technology infrastructure, and

"The statutory deadline inappropriately limits Commission review of an enormous expenditure of ratepayer dollars."

– Illinois Commerce Commission

to return to the company with recommendations for specific changes to the plan update.

Further, even if an intervenor is successful in raising legitimate concerns with an AMI plan update, as the Citizens Utility Board did in 2015,[360] the law is written in such a manner that those concerns need not be addressed so long as the annual plan update provides a minimum level of basic, general information.[361] Under EIMA, the Commission review of ComEd's annual updates is an exercise of determining whether the company included basic information, not an evaluation of whether that information showed progress, value, or benefit.[362]

3.2.3 ANNUAL FORMULA RATE CASES CREATE NEAR-CONSTANT WORK FOR THE COMMISSION, WHILE ENSURING COMED'S ANNUAL PROFIT INCREASES

Annual formula rate case updates run almost non-stop, nine months out of every year. What had before been occasional 11 month long, highly contested rate cases involving numerous parties, have become near-constant, routine matters that attract little attention and automatically increase company profits.

In traditional rate setting, ComEd would ask for a rate increase, meet a burden of proof to justify its request and win approval from regulators. Under EIMA, this burden is flipped: costs ComEd includes in certain state and federal reports are used as inputs to the formula and essentially presumed justified.

Instead of the company having to prove why costs should be included in recovery, intervenors must prove why specific costs should be excluded. With some exceptions, this has resulted in a process wherein there is little debate[363] and the Commission approves annual increases by plugging company data into the statutory formula. This process makes it very difficult for anyone to identify any hypothetical inefficiencies or improper costs in the inputs even if those costs are in the millions of dollars.

The 2019 formula rate update provides an imperfect but illustrative example. ComEd proposed to recover millions of dollars related to its microgrid investment which, at the time it filed its formula "inputs," was forecast to be put into service that year.[364] During the course of the proceeding, it became known that the microgrid would not, in fact, go into service that year, and would therefore fail the "used and useful" test and should not be included in the year-end rate base.[365] The Office of the Illinois Attorney General proposed to disallow the costs, meaning they would not be recovered from customers.[366]

The Commission's response, rejecting the Attorney General's proposal, shows some of the limitations of the formula rate update process. First, the process is based on what the company knows when it fills out the annual federal form that is the source of the formula's inputs, not what the Commission and parties know before the process is closed. The Commission noted:

> Section 16-108.5(c)(6) requires a utility to submit 'final data based on its most recently filed FERC Form 1, plus projected plant additions … for the calendar year in which the tariff and data are filed' and mandates that data be used to 'populate the performance-based formula rate and set the initial delivery services rates under the formula.' 220 ILCS 5/16-108.5(c)(6).[367]

Thus, any disputes over whether investments are prudent and reasonable center on the information included in the federal form, which is very high-level, that is, organized in large categories of spending that can be hundreds of millions of dollars. This combination of a set formula, a high-level federal form providing the inputs to that formula, and the fact that the burden has been flipped is incredibly advantageous to the Company.

Over the seven years between 2005 and EIMA's passage ComEd had three rate cases. These were the more comprehensive, traditional rate case process, in which ComEd would request increases and try to defend their necessity. During those three rate cases, the Commission granted 47 percent of the requested increases to customer's bills.[368] In the five years since EIMA and its trailer bill passed, ComEd has had annual rate cases and the Commission has granted 92 percent of the company's formula inputs.[369]

As formula rate case updates present little opportunity for the Commission to do more than approve ComEd's proposed inputs, fewer stakeholders now intervene in the proceedings. In traditional rate cases, dozens of stakeholders would intervene, representing a diversity of interests and their perspectives, perspectives that may not otherwise arise in a proceeding, but be vital to the Commission in making decisions in the public interest. As part of a 2005 ComEd rate case, petitions to intervene were filed or appearances were entered on behalf 65 different parties.[370]

In the 2018 case, only three outside parties participated: The Citizens Utility Board, the Illinois Industrial Energy Association and the Office of the Attorney General.[371] In 2019, because the Illinois Industrial Energy Association and CUB appeared jointly, only two outside parties intervened.[372]

Increasing ComEd's "certainty," as EIMA has, decreased the risks born by ComEd, but did not decrease the risks themselves. ComEd's customers and the public have taken on more risk, while at the same time having less ability to understand and evaluate those risks, much less to manage them.

3.2.4 EIMA'S PROFIT MACHINE SHIFTED RISK ONTO CUSTOMERS AND THE PUBLIC

The resulting picture is of a utility that struggled for decades to make adequate investments to meet its reliability service obligation, winning through legal and illegal political influence the extraordinary ability to spend billions of dollars and make unprecedented profits subject to little evaluation or oversight.

With less evaluation and oversight, ComEd management has less incentive to be careful and diligent when making critical decisions about, and massive investments in, vital infrastructure undergoing a generational transformation. EIMA's recovery guarantee allows ComEd management to bet with other peoples' money:[373] they will recover costs and profits regardless of the success or efficiency of their investments. No one is adequately checking their work to account for the normal and significant risks inherent in any large utility capital project, to say nothing of counterbalancing the incentive to spend more on infrastructure to protect parent company profits.

As utility expert Scott Hempling commented in the first formula rate case update, any utility investment engenders multiple risks:

> (1) the project will end up more costly than expected; (2) the project will be completed later than expected, pushing the benefits further into the future (thus reducing its value to those who pay up front); (3) the project will produce fewer benefits than expected; (4) the need for the project will disappear, leaving someone — customers or investors — responsible for the sunk cost; and (5) an alternative solution, ruled out or not known initially, turns out to be more cost-effective than the expenditure.[374]

Increasing ComEd's "certainty," as EIMA has, decreased the risks born by ComEd, but did not decrease the risks themselves. ComEd's customers and the public have taken on more risk, while at the same time having less ability to understand and evaluate those risks, much less to manage them.

After ComEd's last big spending rush to improve reliability, just before the turn of the century, an independent audit found inefficiencies and problems. After customers were overcharged during the transition to the restructured power market in the early 2000s, the Illinois General Assembly passed a law taking power procurement away from ComEd and refunding customers $800 million from ComEd and Exelon.[375]

The risks inherent to large utility infrastructure investments are well documented and understood, but EIMA removes tools to analyze ComEd's performance or hold them accountable for failing to manage these risks.

As the following chapters show, some of these risks have been realized, in the failure of EIMA to deliver promised customer and public benefits.

Chapter 4: ComEd promised customer benefits from smart meters, while avoiding responsibility for ensuring them

> *"[EIMA] does not require the* utility *to itself deliver Smart Grid benefits, nor is it the utility's task to ensure that customers choose to take advantage of them."*
>
> – ComEd Brief on Exceptions, ICC Docket No. 12-0298[376]

BY 2011, THE QUESTIONS of if and how customers may benefit from smart grid investments were not new. As ComEd wrote, "Broad deployment of Smart Grid and AMI in Illinois has been actively studied and considered in the regulatory processes since 2007."[377] Through the smart grid workshop process, AMI pilot, and 2010 ISSGC report, the Commission sought to ensure "'that consumers are the primary beneficiaries' of the smart grid modernization."[378]

Smart meter installation. Credit: Portland General

ComEd promised a smart grid deployment strategy that ensured "customers' ability to take advantage of Smart Grid functions beginning at the time an account has billed successfully on the AMI network."[379] Then-ComEd COO and President Anne Pramaggiorre promised "a smart meter in every home opening a world of consumer information and pricing options that provide opportunities for customers to save money."[380] ComEd promised customers a fundamental shift in how they interact with their utility: robust data at their fingertips and a marketplace full of innovative smart meter-enabled products and services to choose from.

In this vision, previously passive consumers can become active and interactive participants, adapting their energy use to achieve savings. Time-variable and other dynamic rate structures provide informed customers with actionable price signals to change

consumption patterns to save money and benefit the grid and the public by doing so. Smart and energy efficient appliances can be programmed to respond to grid conditions. Customers can generate their own power, can store it with batteries, and can deliver power back to the grid at times of need.

These changes benefit both the individual customers utilizing these new options and the grid itself, for example by avoiding or deferring large grid investments, and in turn the public, through reduced bills and pollution.

When defending EIMA now, however, ComEd highlights improvements in reliability and customer savings from operational efficiencies — not the beneficial applications unlocked by smart meters.[381] Those benefits have fallen terribly short, as the next chapter documents.

While these smart meter-enabled changes promise to benefit customers and the public, they threaten Exelon Generation's business interests. The largest chance for customer savings comes from electrical supply prices. When customers use less energy, they pay less in volumetric charges and Exelon, as a generator, sells less power. When customers modify use to reduce peak system demand, it generally lowers the power and capacity prices paid to generators related to those peaks. All else being equal, wide customer adoption of direct smart grid benefits means power generators will sell less power and at lower prices. This is why Exelon officials have viewed AMI as "value destruction to the generating company."[382]

Given this complex environment, the material threats to Exelon's business interests, and Exelon's ownership of ComEd, policy makers and regulators should have been *especially vigilant* to ensure customers directly and substantially benefited from the massive capital spending proposed in EIMA.

Instead of vigorously defending customers' and the public interest EIMA failed to deliver beneficial customer applications by design. As this chapter shows, while promising beneficial customer applications and, with them, a revolution in how customers interact with electrical service, ComEd failed to acknowledge the work it would take to actually achieve such outcomes, and carefully and skillfully relieved itself of direct responsibility for keeping its promises. Worse, ComEd claimed a competitive market would deliver these benefits while using its position as gatekeeper to frustrate and delay such a market.

EIMA was crafted so that regulators would not have the tools to maximize customer benefits, much less ensure customers were the primary beneficiaries of smart grid investments. This turns traditional utility regulation, which seeks to ensure the public good while creating an opportunity for private profits, on its head. EIMA guaranteed ComEd's profits, while leaving it unaccountable to whether its promises to customers were kept.

This chapter shows:

- ComEd promised customers would enjoy smart meter benefits beyond cost savings from utility operational benefits
- ComEd carefully and effectively avoided responsibility for delivering the beneficial customer applications it promised

4.1 ComEd promised customers would enjoy smart meter benefits beyond cost savings from utility operational benefits

Smart grid technology has potential benefits for both customers and utilities. There is an important distinction between utility operational benefits, which may translate to lower costs for customers, and the benefits that customers can directly take advantage of.

A 2020 report from the American Council for an Energy-Efficient Economy (ACEE) explains:

> Typical benefits of AMI in utility business cases include a combination of operational gains that accrue to the whole system and benefits that customers can directly take advantage of. Operational benefits result in cost savings for utilities and may result in rate decreases for customers, depending on the scale of those benefits relative to the cost of AMI installation. In contrast, customer benefits can include greater control over their energy usage and bills, leading to increased satisfaction and the potential for customer cost savings (and possibly energy savings). Some customer benefits accrue to the system as a whole, such as system capacity and energy benefits, but customer action is required in order to realize those impacts.[383]

As covered in section 1.3.2, this report refers to the customer benefits that customers can take direct advantage of as "beneficial customer applications," to mirror language used by the company, and to reinforce that in order to take advantage of them, customers must *apply* the technology to benefit — whether, for example, accessing usage data, opting in to a time-variable rate, connecting a smart appliance, or putting solar on their rooftop.

The ACEE report repeatedly advises:

> These customer benefits require customer engagement and as a result may require additional back office tools to store and process data. Customer engagement systems and back office tools may raise initial AMI deployment costs, but without them AMI is unlikely to deliver on customer benefits.[384]

While the utility is informed of and empowered to immediately take advantage of the operational benefits made possible by the smart grid, customers are not. In an order addressing the pace of AMI deployment, the Commission acknowledged that "unless customers understand how they can take advantage of 'Smart Grid Functions' the full benefit of this program will not be realized."[385] It remains unclear how successful customer education and engagement programs will be at realizing the full benefits of customer applications. In addressing those issues, the same ACEEE report concluded that "many utilities are underexploiting AMI capabilities and attendant benefits, thus missing a key tool to deliver value to their customers and systems."[386]

4.1.1 COMED AGREED BENEFICIAL CUSTOMER APPLICATIONS ARE A CRITICAL OUTCOME OF THE SMART GRID

ComEd understood the distinction between operational benefits and beneficial customer applications and it promised to deliver both. It touted the planned delivery of Smart Grid benefits that were "broader than operations" including "robust growth of efficient demand response, energy efficiency, and distributed generation using the smart grid."[387]

As part of the approval of the company's initial AMI plan, the Commission added a range of metrics to track beneficial customer applications to ComEd's annual AMI plan updates. ComEd agreed with some of these additions, while others were imposed on the company.[388]

Examples of the categories of metrics added include:[389]

- "Customers enrolled in Peak Time Savings [also called Peak Time Rebate], Real Time Pricing, and other dynamic/time variant prices";

- "Customer-side-of-the-meter devices sending or receiving grid related signals";
- "Customers with net metering" as well as the volume of energy sold back to the grid;
- "Customer premises capable of receiving information from the grid";
- "Peak load reductions enabled by demand response programs"; and
- Distributed generation (e.g. rooftop solar) project metrics, including the time to connect such projects to the grid.[390]

Adopting these metrics, all of which concern beneficial customer applications, demonstrates that these benefits are a critical outcome of smart grid investments. ComEd's 2019 update includes well over 100 pages worth of metrics.[391]

4.1.2 COMED PROMISED IMMEDIATE BENEFICIAL CUSTOMER APPLICATIONS

According to ComEd, achieving these direct customer benefits was not aspirational, nor would customers have to wait to take advantage of them. Customers would be able "to take advantage of Smart Grid functions beginning at the time an account has billed successfully on the AMI network."[392] This was not just ComEd's promise; a strategy to achieve this was required by the law.[393] ComEd's AMI plan promised multiple immediate direct customer benefits including the ability "to participate in any supplier's dynamic rate offerings" and access to third party applications and services through a web portal with one-click or "green button" functionality.[394]

Not only did ComEd promise immediate beneficial customer applications, it proposed a three-stage process to ensure they were realized, as described by Commission staff:

> The three-stage process involves tracking the availability and demand for potential customer applications through customer-centric technology research; conducting a detailed technology market assessment and technology provider analysis for the various customer-side technologies; and facilitating future customer applications as they become required or prove to deliver value.[395]

Further, ComEd committed to "continue to work with key stakeholders both in the energy sector and throughout the communities we serve to boost the ability of our investment to unlock the broader environmental, economic, and consumer benefits that are a key part of the Smart Grid's potential."[396] ComEd continued to tout initiatives geared to promote customer benefits in its recent annual updates, for example in its 2019 Annual Infrastructure Progress Report.[397]

As covered in more detail in section 5.2, customers were not in fact able to take advantage of smart meter applications immediately, and in many examples, still cannot. Delays in delivering benefits concretely harm customers. For example, when ComEd chose to delay initiating its specified EIMA investments,[398] the company testified under oath that delaying the start of AMI deployment from 2012 to 2015, while still completing the deployment by 2022, would destroy 15 percent, or $187 million, of the net present value of the AMI plan.[399]

"THE [Commission's] PROPOSED ORDER WRONGY [sic] CONCLUDES THAT COMED MUST OFFER PROGRAMS RATHER THAN ENABLE FUNCTIONS."

– ComEd Brief On Exceptions, ICC Docket No. 12-0298[400]

4.2 ComEd carefully and effectively avoided responsibility for delivering the customer benefits it promised

While ComEd publicly touted the beneficial customer applications of smart meters and promised customers the ability to take advantage of multiple features and services immediately upon smart meter installation, the company carefully avoided responsibility for the actual delivery of these benefits. ComEd crafted EIMA in a manner that allowed it to skirt such responsibility, and argued vociferously in regulatory proceedings implementing EIMA that its responsibility for direct customer benefits ended with making them technically possible.[401] EIMA limits regulatory oversight to "ticking a box" if technical compliance is met, far short of ensuring customers see any actual value from the new technology.

This section shows that in making its case that it bore no responsibility to ensure direct customer benefits, ComEd argued that:

- the law's only relevant requirements on the utility concerned offering vague opportunities for, but not delivering, beneficial customer applications
- operational benefits to the utility alone sufficiently justified the significant cost of the smart grid and thus ensuring benefits from customer applications was not required, and
- competitive third parties, not under the Commission's jurisdiction nor ComEd's control but nonetheless dependent on the utility for access to customer data, were certain to deliver customer application services and benefits.

Through these arguments, ComEd has successfully avoided responsibility for keeping the promises it made to pass EIMA, allowing it to maximize its profits while minimizing financial threats to its parent company.

4.2.1 EIMA'S TEXT: "ENABLING," NOT DELIVERING

The first tool ComEd used to avoid responsibility for delivering direct customer benefits was the text of EIMA itself, which was crafted to ensure ComEd's responsibility ended when it made smart meter enabled services technically possible. While EIMA did guarantee ComEd's profits, it did not guarantee the customer benefits the company promised.

EIMA required ComEd's smart grid plan to include:

> (2) a statement of Smart Grid AMI strategy that includes a description of how the utility evaluates and prioritizes technology choices to create customer value, including a plan to enhance and enable customers' ability to take advantage of Smart Grid functions beginning at the time an account has billed successfully on the AMI network.[402]

ComEd placed emphasis on the word *"ability"*, and argued:

> that requirement is met by presenting information about how the utility evaluated and prioritized technology choices and how that strategy enhances and enables customers [sic] use of Smart Grid technologies, just as the law's plan [sic] language states. It does not require the *utility* to itself deliver Smart Grid benefits, nor is it the utility's task to ensure that customers choose to take advantage of them.[403] [emphasis in original]

According to the company, ComEd's only obligation to the Commission was information regarding technological choices, by "presenting information" to the commission. According to the company, It was not required to "deliver Smart Grid benefits." Rather, it's only obligation to customers was installation of a smart meter and deployment of IT functionality *technically capable* of delivering benefits. These technical capabilities included "the ability to develop, store, send, and receive digital information... measure or monitor electricity use as a function of time of day... the ability to use digital information to operate functionalities..."[404]

This was reflected in the company's AMI plan, wherein it proposed what milestones to report on. Before stakeholders objected, ComEd proposed to only report on whether or not functions were "enabled," not whether or not customers were actually benefiting from those functions.[405] More metrics were added later by advocates and the Commission.[406]

This opened the door to some jaw-dropping positions from ComEd, covered in more detail in section 5.2. ComEd touted the benefits from the smart grid, like distributed solar generation, while at best avoiding responsibility for delivering those benefits,[407] and at worst actively blocking the development of those benefits.[408] The Commission even remarked on the fact that ComEd's promises didn't seem to line up with what they were planning to deliver: "ComEd's AMI plan claims the benefits for these potential Smart Grid applications, without actually addressing implementation issues or costs."[409]

4.2.2 A PREDETERMINED COST-BENEFIT ANALYSIS THAT FOUND OPERATIONAL BENEFITS ALONE JUSTIFIED THE COST OF THE SMART GRID

The second tool ComEd used that gives the impression of oversight while absolving ComEd of responsibility for delivering direct customer benefits was a requirement in EIMA that the Commission find the company's AMI implementation plan "cost-beneficial." EIMA included a specific definition for the term "cost-beneficial."[410] This cost benefit requirement was presented as a tool to ensure customers would benefit from the smart grid.

The requirement was flawed for several reasons.

First, the cost benefit analysis was only a one-time look at the beginning of the process using company estimates. EIMA did not include any later look at the costs and benefits using actual data.[411]

According to the company, It was not required to "deliver Smart Grid benefits." Rather, it's only obligation to customers was installation of a smart meter and deployment of IT functionality technically capable of delivering benefits.

Second, the analysis failed to protect customer interests because its outcome — that the operational benefits of the smart grid made it cost-beneficial even without any additional direct customer benefits — was already anticipated from studies commissioned and controlled by ComEd.[412]

Finally, the law's implementation timeline did not allow the Commission sufficient time to properly analyze the study.[413] The Commission warned, "The statutory deadline inappropriately limits Commission review of an enormous expenditure of ratepayer dollars."[414]

EIMA even allowed the company to assert the Commission couldn't increase customer benefits. As the company wrote "the Commission cannot morph the statutory requirement that AMI Plans *be* cost beneficial into a requirement that any revised or updated plan be *more* cost-beneficial than the original."[415] (emphasis in original)

This cost benefit analysis was a tool ComEd used to make it appear as if EIMA maintained appropriate Commission oversight over its massive spending, while actually ensuring no such oversight occurred. Traditional utility regulation aims to maximize the public good. Under EIMA, not only was the Commission no longer empowered to maximize the public good, it was forced to settle for the bare minimum, based on analysis controlled by ComEd.

4.2.3 COMED EXPLOITED LAWS GOVERNING "COMPETITIVE SERVICES" TO ITS ADVANTAGE

The third tool ComEd used to avoid responsibility for delivering direct customer benefits was its contention that competitive markets, that is third parties, some outside Commission jurisdiction, not the company, should and would provide those services and benefits. To do so, ComEd relied on existing law intended to promote innovation and competition in energy services beyond basic power delivery.

When Illinois restructured its power markets in 1997, it not only introduced competition into electricity generation but also into retail electricity sales to customers.[416] While distribution utilities like ComEd would, by default, sell the power they delivered to customers, individual customers or entire communities could opt to pay a third party to procure power for them, potentially at a lower price, and potentially bundled with other valuable products or services beyond the power itself.[417]

It was these alternative retail electric suppliers (ARES or RES) that ComEd argued would and should provide to customers immediately available, smart meter-enabled, beneficial customer applications, such as dynamic rates. In addition to ARES, other competitive third parties would, according to ComEd, provide beneficial products and services,[418] for instance, by leveraging a customer's usage data through Green Button Connect, a software platform allowing customers to easily share smart meter data.[419]

ComEd promised that other end-use technologies, like electric vehicles or energy management systems, would be easily utilized by customers thanks to the enabling smart grid.

> [ComEd's AMI plan] was expressly designed to accommodate rapidly evolving offerings in the marketplace and to work with a broad range of technologies and providers, including competitive energy suppliers and suppliers of devices and systems ranging from home automation to electric vehicles. That is exactly what EIMA demands. It does not call on, or authorize, the Commission to thrust ComEd into the competitive marketplace for customer applications.[420]

When ComEd wants to own or provide a new "competitive service," it changes policy to allow itself to. When it does not want to, it claims it cannot "interfere" with the market.

When the Illinois General Assembly passed the 1997 law restructuring electricity markets, it included policies crafted to protect the competitive retail supply market from anti-competitive advantages enjoyed by the incumbent monopoly utility.[421] In order to facilitate the growth of competitive electricity sales offerings, state law prohibited the Commission from mandating that ComEd offer "competitive service[s]" like dynamic rates,[422] and administrative rules prohibited ComEd from promoting or advertising its retail supply rates.[423]

While the full implications of these provisions have been disputed,[424] ComEd and alternative suppliers argued in Commission proceedings that the Commission had no authority to compel the utility to offer new services and rates not expressly prescribed by law.[425] ComEd asserted "the law expressly bars the Commission from requiring ComEd to offer such new services [as dynamic rates]."[426]

ComEd promised customer access to beneficial customer applications immediately upon the connection of smart meters, but left it to competitive third parties to fulfill the promise. ComEd did so, relying on existing law the Commission could not force it to offer a "competitive service."

While enjoying the protection of this framework, ComEd presented itself as fair, "neutral", and evenhanded. As ComEd wrote in its AMI plan's vision statement: "ComEd must remain neutral in the competitive market, and cannot control our customers' choices, or the market for third-party devices and technologies."[427]

But ComEd was not in fact a neutral party. It invokes markets and its supposed neutral position as a shield to avoid offering certain services or products, like time-of-use rates. ComEd has shown no concern entering competitive markets when it is in its interest to do so.

Through EIMA and FEJA, ComEd fought for the right to offer many "competitive services," including but not limited to offering the dynamic rate Peak Time Savings and building, owning, and recovering from customers $250 million in microgrids, solar, and gas generation and new microgrid controlling technology.[428]

After the microgrids were stripped out of FEJA,[429] ComEd went to the Commission and won, without any enabling statutory language, the ability to build and own a $25 million microgrid, including the ability to lease generation and recover the cost from its customers.[430] As an expert hired by the Office of the Attorney General said during the proceeding, ComEd recovering generation costs "undermines at a very fundamental level the existing competitive electric supply policy that has been adopted in Illinois."[431]

This is another example of ComEd and Exelon's "heads I win, tails you lose" approach to competitive markets. When ComEd wants to own or provide a new "competitive service," it changes policy to allow itself to. When it does not want to, it claims it cannot "interfere" with the market. When those competitive products and services threaten Exelon's business interests, it

not only leaves those products and services to the market, it hinders the markets' ability to deliver them, as explained in greater detail in the next chapter.

As a direct result of ComEd's strategies, the Commission repeatedly found that the law did not give it authority to require ComEd to actually deliver on its promises. This was despite repeated efforts by consumer and environmental stakeholders, and despite the Commission often finding that those services would be beneficial and should be provided. These stakeholder proposals included:

- Providing customers the option of time-of-use rates, one of the key beneficial customer application of smart meters,[432]
- Ensuring "Green Button Connect" functionality, a software platform connecting customers with third party service providers, [433]
- Improving interconnection standards, and promoting and enhancing access to distributed generation, like rooftop solar panels.[434]

ComEd promised direct customer services and benefits starting with a customer's first bill using a newly installed smart meter. But it shaped EIMA and argued in regulatory proceedings successfully that it bore no responsibility for actually delivering these benefits beyond the most basic steps to make them technologically feasible. EIMA was not crafted to ensure these direct customer benefits.

Instead of ensuring a public good through creating the opportunity for private profit, EIMA ensured private profit while not adequately requiring a public good. As a result, the company was able to delay and refuse to provide direct customer benefits all while it greatly increased its profits and protected the profits of its parent company. This outcome, which runs diametrically opposite to regulating utilities in the public interest, can only be understood in the context that AMI direct customer benefits are considered "value destruction" by Exelon.[435]

Chapter 5: EIMA's benefits are largely unknown or unrealized

"First, we all can agree that at the center of the grid modernization discussion is the consumer. It is you."

– Anne Pramaggiore, then-ComEd COO and President, October 3, 2011[436]

"The real issue is are we doing the customers more good by putting money into more advanced electronics or would we do them more good by putting the same money into replacing more old cable? To me that's an unknown answer. If I had to choose, I'd bet on the cable."

– John Rowe, then-Exelon Corporation Chairman and CEO, March 9, 2011[437]

CUSTOMERS HAVE BENEFITED from ComEd's EIMA investments — it is almost impossible not to when a utility spends billions of dollars. But compared to the potential benefits of a smart grid, or to the potential benefits of alternative investments, substantial customer value has been "left on the table."

The challenge of understanding the value of the EIMA's investments begins with the fact that the amounts of certain investments were set by the General Assembly with no record or rationale to justify the amounts, and while the company was engaged in an illegal bribery scheme to influence legislative leadership. There is no reason to believe the investment amounts set by the General Assembly were the "right" amounts to best achieve reliability and smart grid outcomes in the company's, customers', and the public interest. While the legislature and the Commission are both ultimately policy-making bodies, the legislature created the Commission specifically to develop expertise to perform utility policy making with a set of tools and

Rooftop solar. Photo: Shutterstock, Olivier-Le-Queinec

mechanisms intended to defend and promote the public interest. These tools and mechanisms are not present, or are much, much weaker in the legislative process, and there is evidence that the legislature is a poor forum to set utility investment levels.[438]

There is also currently no way to know if ComEd has invested these amounts efficiently or effectively. The last time ComEd performed accelerated reliability investments at the turn of the century, a 2002 audit found that ComEd had not been efficient with its spending.[439] Sections 2.2.3 and 3.2 show how EIMA has put the risk of inefficiencies on the spending side completely on the customer. Investments are not adequately scrutinized and capital spending is approved without challenge. As it does on the spending side, EIMA fails when it comes to evaluating the outcomes from those investments. As this chapter shows, the regulatory structure enacted through EIMA does not properly track, guarantee, or optimize the potential customer benefits derived from ComEd's massive investments. This includes both the operational benefits customers may indirectly enjoy from a modernized grid as well as the direct benefits customers can achieve through taking advantage of beneficial customer applications.

This chapter shows that despite promising immediate functionality and benefits, ComEd and the law it championed neglected beneficial customer applications. In some cases, ComEd used its position as a gatekeeper to actively frustrate the very benefits it promised EIMA would deliver. As a result, while customers have experienced a significant, 37 percent, increase in delivery rates, direct customer benefits and functionality have fallen woefully short of what ComEd promised.

This chapter outlines some of the various ways the promised benefits have fallen short:

- ComEd's claim that the value of reliability and operational benefits are worth its massive investment is based on few metrics and insufficient analysis
- ComEd caused beneficial customer applications to be delayed, not enabled, or drastically underutilized
- Beneficial customer applications promised with EIMA were used by ComEd as leverage to get its next legislation, FEJA

It is important to note that customers have benefited from an energy efficiency policy environmental advocates won in EIMA during the legislative process, allowing the Illinois Power Agency to procure cost-effective energy efficiency measures as a resource in its annual procurement plan.[440] This policy, discontinued in 2017,[441] while an unambiguous positive for customers, was not core to EIMA's "obligations" and "assurances" explored in this report and is therefore not discussed further.

5.1 ComEd's claim that the value of reliability and operational benefits are worth its massive investment is based on few metrics and insufficient analysis

Illinois does not know if ComEd's unprecedented spending and profits were "worth it," that is, if they are providing enough value to ComEd customers and the public. The potential benefits of EIMA are not properly tracked, especially when taking into account the risks inherent to utility capital spending outlined in section 3.3.4. There has been no comprehensive cost-benefit analysis, much less an examination of whether the same or similar benefits could have been gained through less expensive, easier, or otherwise superior alternatives. As such, it is impossible to know whether the investments, as conducted, maximized value for customers.

5.1.1 RELIABILITY

ComEd frequently touts high level metrics demonstrating reliability improvements as evidence that the billions of dollars in EIMA spending were completely justified. While these improvements are welcome and of clear customer and public benefit, these high-level metrics are entirely insufficient to determine whether or not these improvements justify EIMA's billions in costs to consumers and negative impacts on Illinois regulation. This is especially true given ComEd's poor reliability track record and the fact that the last time ComEd had a reliability-related spending spree it was investigated and found to be inefficient.[442]

ComEd has chronically struggled to keep its spending on reliability at proper levels.[444] Investing in its infrastructure to be able to consistently provide reliable service is one of ComEd's fundamental obligations.[445] The company is expected to do so without special treatment or special cost recovery.

Reliability benefits were also not part of any cost benefit analysis, even an insufficient one like the AMI plan. Simple metrics track system performance, but not whether that performance was achieved efficiently or not, that is, whether customers gained value through the investment or "overpaid."[446] The annual Formula Rate Updates, which use reliability metrics to potentially penalize the utility, allow ComEd to remove the impact of up to nine storm days per year, if they pass a certain threshold.[447] Storms, of course, are what ComEd's system needs to be able to reasonably withstand. Removing storms also removes key data to track overall system performance over time.

By 2020, ComEd touted a 70% improvement in its reliability metrics over a 2001-2010 baseline,[448] as measured by the number of outages and duration of outages that the

Figure 9: ComEd reliability marketing[443]

Ultimately, we don't know if 70 percent improvement was an appropriate amount for the $1.5 billion in reliability investments on top of the roughly $1 billion annual baseline grid investments customers paid for.

entire system and individual customers experience. This improvement is positive and based on metrics which are relatively objective. That does not necessarily mean the money spent to achieve this improvement was spent efficiently or that other investments could not have achieved similar or better results for less.

An example from ComEd's history underlines the importance of these considerations. As covered in section 1.2.1, ComEd's spent intensive amounts of capital to address chronic reliability issues over 1999 through 2000. After it did, the Commission retained Liberty Consulting to audit the spending. Liberty found, among other things, that ComEd's reliability investments cost more than they would have had investments been made "on a systematic basis at the appropriate time" and that some cost overages resulted from ComEd's "need to complete a large number of distribution capital additions in a very short period of time without necessary planning and which resulted in contractor charges at unreasonably high levels because of the level of overtime included in the contract prices."[449] In other words, the last time ComEd had a reliability-related spending spree it was investigated and found to be inefficient.

This is further relevant given that EIMA did not base specified investment amounts on specified outcomes or amounts of work to be completed. Rather, it simply, with no record or empirical justification, required investment amounts, for example "an estimated $200,000,000 for reducing the susceptibility of certain circuits to storm-related damage..."[450]

Distributed automation, technology that allows a utility to automatically isolate smaller segments of circuits in delivery wires so fewer customers are affected by a problem, is another example. ComEd described this technology as "the self-healing nature of the Smart Grid."[451] EIMA required distributed automation be included in the $1.3 billion for the "Smart Grid" upgrades but did not specify an amount.[452] Of the four specified upgrades, AMI was known to cost around $1 billion according to earlier rate cases,[453] so it seems that distributed automation just got most of the money left over. ComEd's infrastructure planning, like the $200 million for storm hardening from the law, gives us no record, account, or justification of how the amount was arrived at.[454] Setting spending amounts did not secure utility service outcomes but it did secure utility profits, which are directly tied to the spending amounts, especially in combination with EIMA's accelerated cost recovery and revenue and profit guarantees. On the other hand, from a customer and the public's perspective: was $250 million in distribution automation spending the "right" amount? We don't know.

ComEd touts its reliability improvements as evidence EIMA is good law even in light of the ongoing scandal. Ultimately, we don't know if 70 percent improvement was an appropriate amount for the $1.5 billion[455] in reliability investments on top of the roughly $1 billion annual baseline grid investments customers paid for. EIMA was constructed to not ask the question. Rather, we are to trust the company's assertions as such. ComEd gains a public relations talking

point and without having any of its claims scrutinized for efficiency or compared to alternatives.

This is not only a problem now — we don't know if the incredible incentives of EIMA were worth it — but a problem for the future as well. ComEd's reliability performance improvements have already started to plateau and increases in usage due to the electrification of the building and transportation sectors will place new strains on the grid. If reliability performance starts to falter again, what incentives, or more simply how much spending, to say nothing of the efficiency of the spending, will be necessary for ComEd to meet fundamental service obligations?

5.1.2 OPERATIONAL BENEFITS

The operational benefits that ComEd assured would pay for the EIMA investments by themselves have also not been properly tracked, reported and scrutinized. In addition, some of the benefits ComEd touted are savings on expenses that customers arguably should not be paying for in the first place.

Some states have rejected AMI investment programs because of questions about whether they provide net benefits or not.[456] This was also the view held by then-Exelon CEO and Chairman John Rowe, who in March 2011 said "Smart grid we are reluctant to embrace because it costs too much and we're not sure what good it will do. We have looked at most of the elements of smart grid for 20 years and we have never been able to come up with estimates that make it pay."[457]

While ComEd was able to avoid close scrutiny of its reliability investments, a familiar form of utility spending, it provided more justification for its novel and significant investment in AMI. ComEd justified the cost of its AMI investments with operational benefits,[458] benefits it established through the 2009 AMI pilot program conducted under its control. The operational benefits it established include reduced truck trips, easier storm outage restoration, reduction of consumption on inactive meters, reduction of bad debt, reduction of stolen energy, and reduction in operational expenses such as meter reading.[459]

Due to the structure of EIMA, any lower operating expenses resulting from these investments should be automatically passed on to customers in future bills. The formula rate uses ComEd's actual operating expenses, as reported to regulators, to calculate how much it will collect from customers through its monthly bills. However, operational benefits and savings from EIMA investments have not been separated out and have been poorly tracked.

This isn't to say that ComEd doesn't provide lots of information concerning its operations and the smart grid and its investments. Some individual operational efficiencies are tracked with the customer metrics in the annual AMI updates. One example is the reduction in greenhouse gases from reduced truck rolls.[460]

ComEd's annual financial forms and annual rate cases are also full of high-level information on its expenses. But none of this information is analyzed to gauge whether EIMA is delivering the savings that ComEd promised in its cost-benefit analysis. In fact, the authors are unaware of any comprehensive tracking of the savings from EIMA investments, formal or informal.

ComEd does track information on actual dollar amounts of savings from some individual operational benefits tied to EIMA's performance metrics.[461] If the company falls short on one of these metrics in a given year, the Commission automatically reduces ComEd's profit level for that year by a small amount.

Some of the costs the performance metrics measure arguably should be covered by the utility, not passed along to its customers, in the first place. For example, customers pay for the bad debt, or uncollectibles from outstanding bills, from customers who cannot afford, or otherwise do not pay, their electric bills. Customers also pay for energy stolen through meter tampering and when electricity is used at a meter that does not have an account associated with it, for example after a customer moves out.[462] While one can make a case for passing (at least some) bad debt costs to customers, so as not to incentivize the utility to aggressively disconnect homes from a vital service, there is less of a case that customers should bear the costs of tampering or meters running without an associated account.

Since it would cost a certain amount to send out a crew to turn off an old meter before AMI functionality allowed remote disconnection, ComEd would decide to leave some meters on that should not be. AMI undoubtedly makes it easier for ComEd to turn off meters and, due to the structure of the utility's cost recovery, this saves customers money.

Beyond these few performance metrics, no operational cost savings are properly scrutinized by the Commission. Outside the nine performance metrics in EIMA, all of EIMA's spending (the "inputs" for the rate-setting formula) is presumed to be reasonable in amount and the outcomes and the value of the outcomes are not examined and not relevant. Said another way, despite the fact that these spending levels required upending Illinois electrical utility regulation, those same spending levels did not require any additional Commission oversight to analyze and optimize their outcomes.

As covered in section 3.3.2, ComEd's annual cost recovery dockets are now routine affairs with few parties involved, few contested issues, and few changes or reductions to the annual, automatic profit increases. Operational savings are not examined in any holistic or detailed way. Given the volume of filings, the timeline for consideration, and the few parties examining them, ComEd's high-level inputs in its annual formula rate filings could include huge inefficiencies and the chances that anyone would spot them are very small.

After $2.6 billion in investment, customers are bound to enjoy some benefits, which is clearly the case for ComEd customers. Without proper examination, evaluation, and comparison to alternatives and to market prices, however, regulators and the public have no way of understanding the value of these investments, and if they were ultimately "worth it."

5.2 ComEd caused beneficial customer applications to be delayed, not enabled, or drastically underutilized

The company promised customers the ability to take advantage of direct customer application benefits upon their first billing on a smart meter,[463] a promise, in retrospect, that was clearly impossible to keep. But held to even a more reasonable timeline the company performed poorly in making these benefits available to customers. The company has not suffered any real consequences for this failing, while customers lost out on benefits and value.

This section walks through a few indicative examples, though there are many more. This includes data access, the legal and functional foundation for allowing third parties to provide products and services to customers using AMI, and time-of-use rates, which can arguably be called the key beneficial customer application of AMI.[464]

This section also includes examples of beneficial customer applications that have not been enabled or are drastically under-utilized: ComEd's Smart Grid Test Bed, which was

supposed to allow third parties to innovate, and Green Button Connect, which was supposed to allow for easy data access.

Any rollout of new products and services will have hiccups, of course, and there are unknowns when planning such investments, but the company's smart grid plan was full of promised benefits on timeframes it should have known were impossible to deliver on.[465]

5.2.1 DELAYED: DATA ACCESS, THE FOUNDATION

The new technology of smart meters and associated communication assets create and transmit large amounts of data that was simply not available to utilities or their customers before. Customer and third-party access to the data produced by smart meters provides the foundation of beneficial customer applications. Access to data and the ability to easily and seamlessly share it with third parties is essential to customers' ability to benefit from smart meters.

This basic functionality, promised to be delivered concurrently with the customer's first bill on a smart meter, was delayed. Allowing third party access to customer data requires rules and standards: what the utility could do with what data and under what requirements. These rules and standards, necessary to enable beneficial customer applications from third parties, did not fully arrive until July 2017.[466] Even then, the rules were established only as a voluntary framework, not a uniform mandatory protocol governing utilities and third parties.[467] Illinois, to this day, does not have mandatory standards set in rules addressing data access and privacy. A delay was inevitable given that EIMA provided no rules and protocols, or guidance as to how to set up rules and protocols, that would allow customer data to be shared with the third parties providing those services in those markets.

Formalizing the rules and protocols to enable data access requires balancing the need for easy customer and third-party access against the inflexible demand to protect customer data from unauthorized release. Establishing protocols involves myriad policy and technical considerations, including but not limited to: the types and definitions of AMI data,[468] rules and procedures for a customer to authorize disclosure of their data to an unregulated third party, how the data can be anonymized, notification requirements for customers, and the many, many technical practicalities of transitioning from the utility's legacy information technology systems to the new ones to allow for the secure sharing of data only to those third parties authorized by customers.[469]
While these dynamics and policy considerations are complicated, they were not new, or unexpected. As ComEd wrote, "Broad deployment of Smart Grid and AMI in Illinois has been actively studied and considered in the regulatory processes since 2007."[470] The ISSGC report outlined the data access needs required for customers to enjoy AMI benefits from third parties in 2010.[471]

EIMA failed to include clear policies, guidelines, or processes to ensure the data access necessary to develop the promised marketplace for beneficial customer applications. The law's language was so vague that basic legal questions about, for example, whether the utility could release certain types of data promised by ComEd were not resolved until July 30, 2014, almost three years after EIMA was in effect.[472]

The law's brief and inadequate consideration of these issues includes only a few general statements such as "The AMI Plan shall secure the privacy of personal information and establish the right of consumers to consent to the disclosure of personal

energy information to third parties … ."[473] It does not outline how the questions surrounding data access and privacy can be explored and codified as quickly and efficiently as reasonably possible, nor does it seem to even anticipate a rule mandating standards.

As a result of the law's lack of clarity or direction, not only was a marketplace for beneficial customer applications not available immediately as promised, the Commission and stakeholders had to engage in a time and resource intensive "Enabling the Market" process,[474] the last contested issue of which was not decided until *this year*, almost nine years after EIMA's passage.[475] The April 1, 2020, Final Order outlined the convoluted, almost six-year, process.[476]

The "Enabling the Market" process included a parade of formal dockets[477] considering data access issues one at a time. In July 2017, almost six years after the passage of EIMA, the Commission finally adopted a voluntary data framework.[478] The voluntary framework did not establish standards for data access[479] but rather ordered that:

> the Open Data Access Framework *be considered* by the utilities as they design new AMI-based data services, and by all stakeholders in discussions throughout the course of AMI deployment around how AMI data can be used to *enable the market* for the development of products and services for the customers of Ameren and ComEd.[480] (emphasis added)

The Commission's order shows that the beneficial customer applications that ComEd promised to deliver immediately had still not arrived. The Commission hoped that through their "voluntary roadmap" "... *services and practices can be developed over time to enable Smart Grid functions and the market*. The utilities have committed to working in good faith with all stakeholders to identify future AMI related data services, and the Commission encourages the parties to continue discussions on an informal basis throughout the period of AMI deployment."[481] (emphasis added.)

In other words, nearly six years after EIMA's passage, the market was still not enabled. In order to finally do so the Commission adopted a *voluntary* framework to enable the market for beneficial customer applications at some unknown point in the future, a market which had been promised to be available immediately. This vague and voluntary process depended on the same ongoing negotiations between utilities and stakeholders which had not enabled a market up until that point.

Nearly six years after EIMA's passage, the market was still not enabled. In order to finally do so the Commission adopted a voluntary framework to enable the market for beneficial customer applications at some unknown point in the future, a market which had been promised to be available immediately.

After nine years, in no real sense can this market be claimed to "be enabled" today.

ComEd's future-oriented rhetoric is out of sync with its performance in crafting EIMA and implementing its smart grid. ComEd and its law have failed to take among the most basic steps to harness the potential applications of the information and communications-capability made possible by the smart grid. In 2016, then-ComEd CEO

and President Anne Pramaggiore spoke of ComEd's smart grid as potentially becoming an information technology "platform" similar to Amazon, claiming that ComEd could help bring about "a 'third industrial revolution' by situating itself as the indispensable network at the 'convergence of energy and digital communication.'"[482]

When these statements were made, EIMA had been passed almost five years earlier and Illinois would not have even a voluntary framework for handling data access for more than another year. While comparing itself to "platform" companies like Amazon, ComEd was miles away from having the expertise, resources, and policies it would need to bring on and maintain vendors, optimize easy usability, and add value to customers.

5.2.2 DELAYED: TIME-OF-USE RATES, THE KEY BENEFICIAL CUSTOMER APPLICATION

Time-of-use (TOU) rates are one of the most important beneficial customer applications of smart meters. Virginia regulators recently rejected a utility's AMI investment plan, saying it "failed to justify "overall benefits to customers" without a comprehensive proposal for time-of-use ratesetting."[483] ComEd customers are still broadly unable[484] to take advantage of time-of-use rates, and won't be able to for another four years.[485]

According to the American Council for an Energy-Efficient Economy:

> TOU rates vary on a fixed schedule to recover higher revenue during times when utility demands (and costs) are higher and lower revenue at other times. The intention of a TOU rate is to send customers price signals to reduce usage during peak hours at times when utility costs are highest. TOU rates also send price signals to customers related to future investments: if a utility can reduce peak demand, costly investments in new infrastructure may be avoided or deferred.[486]

Under a TOU rate, electricity rates are higher at certain (peak) periods than they are the remainder of the day (off-peak). Because the periods are set and known by customers, TOU rates provide incentives for customers to shift consumption from peak to off-peak periods, saving money by spending less per kilowatt hour in off-peak times. Additionally, because significant system costs stem from managing peak demand (when everyone is consuming at the same time), shifting customer consumption in this manner saves distribution system costs, savings that can be passed on to customers. TOU rates similarly impact peak demand for power generation, with similar system and public benefits.

The Smart Grid Advisory Council recognized that:

> … one of the primary consumer benefits of AMI deployment will be the opportunity to provide customers with enhanced dynamic pricing options, including TOU rates. The cost-benefit analysis upon which Ameren's AMI Plan was approved explicitly relied upon customers obtaining lower energy prices or reducing use in response to TOU rates, among other time-based pricing structures.[48]

ComEd resisted offering TOU rates, arguing against stakeholder proposals in numerous dockets asking the Commission to order the company to offer them,[488] including a specific petition to the Commission to investigate the matter.[489] Throughout this process, while resisting calls to offer a TOU rate, ComEd acknowledged their benefits.[490] The Commission, citing a lack of authority in EIMA, declined to order ComEd to offer a TOU rate, while also acknowledging their benefits.[491]

Ultimately, ComEd agreed to initiate a TOU pilot after the passage of the 2016 FEJA.[492] The pilot, begun in 2020 with only 1,900 participants, will run for four years, meaning ComEd does not anticipate offering TOU to all customers before 2024 or 2025, if it is even planning to make it available to everyone at that time.[493] ComEd agreed to this drawn-out pilot approach while praising the more robust efforts of other utilities which easily could have been adopted by ComEd.[494]

ComEd's primary rationale for not offering TOU was that such offerings should come from the competitive market, and that it was concerned "about the controversy that could well be generated by its active participation in a "competitive" offering."[495] Of course, ComEd has shown no hesitation to cause controversy when it is in the company's interest to do so.

ComEd did not shy from controversy in advocating for EIMA over considerable opposition — including a veto, in convincing the General Assembly to adopt two resolutions condemning the Commission over accounting decisions, followed by a trailer bill voiding Commission orders including rate cases, and in attempting to impose a more radical and controversial "demand charge" on residential customer bills in FEJA.[496]

ComEd was also already authorized to offer two other time-variable rate options, Real Time Pricing[497] and Peak Time Rebates,[498] meaning it had already "entered the market" of what could be considered "competitive rates." Their existence undermines the "controversy" concern, while they also do not represent a replacement for TOU rates.

ComEd began offering Real Time, or "Hourly" Pricing, in 2007.[499] Real-time rates reflect the actual price of energy supply in the wholesale energy markets at any given time. As such, they offer both the possibility of the largest savings and the largest risk.[500]

Over time, following the market produces the cheapest power prices by default. Any prices that are stabilized will by definition be higher since they must include a risk premium to offset the price risk that someone else must take. Following the market is also the riskiest because prices can fluctuate wildly, for example because of unanticipated effects like a temporarily out of service transmission line, but also because a ComEd customer does not know for sure what electricity will cost until the time they are using it.

Savings for customers willing to accept, and with the ability to manage, the risk of Real Time Pricing can be significant. According to ComEd "Typical participants have saved an average of more than 15 percent on

TABLE 10: COMPARISON OF COMED'S TIME-VARIABLE RATE OFFERINGS

	When Offered by ComEd	Opportunity for significant customer savings	Relative risk level for customers
Real Time Pricing	Offered after 2007 law	High	High
Peak Time Rebates	Offered after 2011 law	Low	None
Time of Use	Still in pilot form - unlikely broadly available until 2024-2025	High	Low

their electricity supply costs compared to what they would have paid on the standard ComEd fixed-price rate."[501] These savings can be realized without changes in customer behavior. Two different studies using anonymous customer data both found that 97 percent of ComEd customers would save money without behavioral change. One found average annual savings of over $123 and the other of over $86. In both, the average annual expense to the small number of customers whose bill would rise was under $7.[502]

Despite the potential savings advantages of this rate offering, the number of customers participating has remained low. For most of the program's existence, roughly around 10,000-11,000 customers have participated year to year, with increases in recent years.[503] More marketing may increase participation, but the inherent risk of the program limits the universe of customers willing to participate, especially when compared to the predictability of TOU rates.

This is the main reason why the real-time rates are not a substitute for TOU rates. In TOU rates the cost for electricity, which still changes over the course of the day to allow for cost savings, is known well in advance of using it.

While Real Time Pricing was a pre-EIMA time-variable rate offering, ComEd did insert one other in EIMA, Peak Time Savings (sometimes called Peak Time Rebate), without concern for "controversy."[504] Peak Time Savings, however, is less a different rate structure, and more a rebate program for conserving energy when the grid is overloaded at times of high usage. In fact, rebate structures like Peak Times Savings can be offered in combination with rate structures like TOU.[505]

ComEd describes the program:

> ComEd will credit your energy bill on hot summer days when you reduce your energy usage below your recent average use during Peak Time Savings Hours. Between June 1 and October 31, ComEd will announce Peak Time Savings Hours when energy is most in demand. These events typically occur in the afternoon between the hours of 11 am to 7 pm, usually on 3 to 6 days in the summer. Today saving energy is more important than ever. Announcements always occur the morning of the event, day-ahead notifications are never possible. But remember, there's no penalty for not participating in any particular Peak Time Savings Hours event, and you can always participate during the next one.[506]

Peak Times Savings has been better subscribed than Real-Time Pricing: As of 2018 ComEd had enrolled 277,000 customers in the program.[507]

The customer savings and energy conservation impact, however, is lower than that from other time-varying rates. Customer savings, though an imperfect comparison,[508] illustrate this lower impact. According to ComEd, for Peak Time Savings customers, "most customers will receive a $1 to $12 credit on their bill per Peak Time Savings Hours when they participate,"[509] one seventh to one tenth of the average savings of a Real Time Pricing customer who takes no action to achieve savings.[510] A responsive Real Time Pricing customer could save significantly more.[511]

Real Time Pricing and Peak Time Savings are valuable programs, but neither offer the same combination of savings potential and predictability that make a well designed TOU rate one that will be accepted by a broad number of customers and result in significant, system-wide energy conservation and other customer savings, meaning neither present as much of a threat to Exelon's

ComEd was able to use the Test Bed as evidence to avoid responsibility for delivering beneficial customer applications but faced no responsibility, not even a mention, when its Test Bed failed.

business interests as TOU rates do. As Commissioner Miguel Del Valle observed in a 2017 dissent, "These savings, especially the energy conservation, would have a negative effect on Exelon's bottom line."[512]

5.2.3 NOT ENABLED: COMED SMART GRID TEST BED

ComEd's Test Bed was an innovative initiative intended to provide third parties with the opportunity to create and test products on ComEd's smart grid. It failed and hardly a word has been said about it beyond a buried report.

The Test Bed was an essential part of enabling the competitive market the company touted. ComEd presented the Test Bed as not only another reason the utility itself did not need to offer beneficial customer applications itself, but the strongest evidence of such, stating "EIMA's general focus on developing competitive products and services is most evident in EIMA's "test bed" requirement."[513] ComEd included the Test Bed in its "Planned Activities to Facilitate Future Customer Applications," in its original AMI deployment plan, saying it " intends to establish a "Co-Creation" process to engage customers and third parties in enablement of new products and services."[514]

The Test Bed did not work as promised. An independent analysis found that only two projects were approved over its entire four-year life. It called the results of the test bed disappointing. The only completed projects were a utility sensor for the grid and a combination street light / electric vehicle charger, neither of which are customer applications.[515]

The evaluation expressed concern the Test Bed may not be meeting the goals presented in the legislation.[516] The evaluation found that the Test Bed was more of a "demonstration" than "test" bed, stating:

> It would seem that most products and programs would need to be "utility ready" before installation in the test bed would be allowed. That requires prior testing and certification, and therefore commercial readiness. The test bed, as established, appears to be more of a marketing value to the applicants than a means of promoting the development of new technologies."[517]

The Test Bed was designed by ComEd to be more "co-marketing" than "co-creation."

Ultimately, the analysis determined ComEd's efforts met the intent of the legislation,[518] and blamed the law, rather than the company that shaped and championed the law, for the initiative's shortcomings.[519] It described the failure of the Test Bed to provide an opportunity to actually "test" new products "as a constraint of the original legislation rather than an omission."[520]

This evaluation was submitted with the company's 2017 Annual Infrastructure Progress Report. The Commission did not acknowledge the report, comment on it, or investigate what the impacts of this failure were on customers. ComEd was able to use the Test Bed as evidence to avoid responsibility for delivering beneficial customer applications but faced no responsibility, not even a mention, when its Test Bed failed.

5.2.4 WOEFULLY UNDERUTILIZED: GREEN BUTTON CONNECT

While technically enabled, Green Button Connect is embarrassingly underutilized and a clear failure.

As described in section 5.2.1, customers' ability to easily and seamlessly share usage data with third parties is essential for them to enjoy the benefits of the smart grid. Green Button Connect, as described by ComEd is,

> "an industry initiative stemming from a White House call to action for utility companies to voluntarily provide customers with easy access to their energy usage in a secure electronic format. Green Button Connect My Data allows customers to authorize third-party service providers to receive direct access to their energy usage analytics via the Green Button functionality. The ability to transfer data more seamlessly to third party developers will help accelerate applications and analytics that leverage smart meter data."[521]

ComEd joined other utilities to announce participation in Green Button Connect in March 2012, saying the platform would help customers "make informed decisions about how to reduce energy consumption and save money."[522] ComEd's AMI Plan relied on Green Button Connect:

> Customers can provide energy usage data to energy suppliers and other energy companies to participate in programs that can further reduce their energy costs. While the "Green Button" provides a standardized and easy manner for the customer to provide this data to third parties, these third parties are not able to access this data without express permission from the customer.[523]

After making these promises and acknowledging Green Button Connect's value to customers, ComEd resisted its implementation.[524] The Commission also acknowledged the benefits of Green Button Connect, while lamenting that EIMA left the regulator without the authority to require it.[525] Advocates and the Commission finally secured ComEd's agreement to use the technology in 2015 and the company implemented it in 2016, five years after EIMA was passed.[526]

Several years later, Green Button Connect is still a failure. Just this past year the Commission lamented on a Green Button Connect controversy in which the utilities may not have been meeting Green Button Connect requirements. The Commission also acknowledged that only three entities have registered for ComEd's GCB and none for Ameren, the downstate utility.[527]

In their 2020 annual update ComEd highlighted activity from 2018: "Through 2018, thirty-eight (38) third parties have inquired about the Green Button Connect process with twenty (20) taking the first steps to begin the process with six (6) third parties moving forward with IT testing."[528]

Even with that level of activity ComEd could not get another company registered in their Green Button Connect functionality over the last year and a half.

While the company would be quick to call that service "enabled" we, unfortunately, must call it a failure.

5.3 By withholding important customer and public benefits, ComEd was able to leverage them again in subsequent legislation that won ComEd and Exelon further windfalls

ComEd promised that EIMA would deliver significant customer benefits: more information, choice and control, more energy efficiency, and more clean energy. Not only did the company fail to deliver the promised

benefits, in some cases it actively blocked them. Even worse, it used the withheld promise for leverage to gain more benefits for itself and Exelon in future legislation.

As described in section 5.2.2, ComEd avoided offering a TOU rate for years after EIMA despite its earlier promises that its customers would enjoy the option and despite pressure from the Commission and advocates to offer one. The company ultimately committed to a pilot program, but only in negotiated energy legislation that included significant windfalls for both ComEd and Exelon. FEJA, the second major piece of legislation recognized in the deferred prosecution agreement as won in part through ComEd's illegal scheme, included a ten-year, $2.35 billion subsidy for two of Exelon's financially struggling nuclear power plants and the consolidation of energy efficiency programs under ComEd's control, along with significant profit incentives for ComEd to achieve energy efficiency goals, among other gains.[529]

Two examples of promised benefits that were withheld and later agreed to in FEJA are distributed generation like rooftop and community solar[530] and a key smart grid operating program.[531]

Then-ComEd COO and President Anne Pramaggiore promoted EIMA as a road map "for a greener future," highlighting its increases in energy efficiency spending and facilitation of wind and solar integration, and electric vehicle charging.[532] Accordingly, ComEd's AMI Plan had a section on enabling distributed generation.[533] In approving the plan, however, the Commission commented that "ComEd's AMI plan claims the benefits for these potential Smart Grid applications, without actually addressing implementation issues or costs."[534]

ComEd was engaging in worse behavior than just neglecting to implement its promised benefits. ComEd was actively blocking some of the very same benefits it was promising, engaging in what Anne Pramaggiore later described as the "solar wars."[535] While state law created the potential for community solar projects in 2007, it allowed ComEd to approve or deny such projects, and, as described by Crain's journalist Steve Daniels, ComEd took "the stance that it won't approve such projects until state law is changed to get rid of "net metering," which allows residents with solar panels to sell excess power generated back to ComEd at favorable rates."[536] ComEd and Exelon blocked legislative efforts to fix problems with the state's renewable energy standard, problems inhibiting the growth of rooftop solar.[537] In a dissent, Commissioner del Valle outlined further actions ComEd took to frustrate solar development:

> ComEd explicitly established barriers to entry for community solar projects,[538] which would increase competition with Exelon's generation business,[539] and successfully prevented a Commission Rule that would have allowed third-parties to provide the service despite ComEd's policy.[540]"[541]

As with time-of-use rates, ComEd was able to delay or otherwise frustrate the growth of rooftop and community solar

ComEd was actively blocking some of the very same benefits it was promising, engaging in what Anne Pramaggiore later described as the "solar wars."

in Illinois.[542] These problems were only finally addressed through FEJA[543] (and insufficiently, the renewables industry has returned to the Illinois General Assembly for longer term fixes).[544]

Voltage optimization is another example. Voltage optimization is a capital investment on the grid, not a customer application. Voltage optimization uses AMI and other technology to improve the efficiency of the grid itself which can result in millions of dollars in savings. The ISSGC anticipated programs like voltage optimization and explained, among the benefits, "Utilities can maintain a lower regulated voltage providing savings to the customer and increasing system efficiency."[545]

If the Commission had remained in charge of smart grid policy, Voltage Optimization most certainly would have been included in smart grid investments,[546] in part because Voltage Optimization performs so well in cost benefit analysis.[547]

ComEd included a voltage optimization feasibility study in its 2015 AMI report.[548] It shows that the savings are substantial, 3 to 4 percent across participating lines,[549] and that the value of those savings would be 2.3 times as high as the costs.[550] ComEd estimated the cost to implement Voltage Optimization on roughly 50% of its circuits as between $425-575 million.[551]

EIMA provided ComEd a healthy incentive to complete such investments: guaranteed profit. In 2015 however, ComEd noted that, given the cost, "an appropriate cost recovery mechanism will need to be considered and addressed," referencing pending legislation that ultimately became part of FEJA the following year.[552]

The "appropriate cost recovery mechanism" ComEd ultimately won in FEJA was to include voltage optimization in a program intended to incentivize additional customer, rather than utility, energy efficiency.[553] FEJA also provided ComEd an additional profit incentive to achieve energy efficiency goals through this program.[554]

ComEd's claim that it needed this incentive for voltage optimization was misleading: the energy efficiency program voltage optimization was included in is designed to incent behavior that would not occur absent incentives, which is clearly not the case with voltage optimization. ComEd had the ability to easily finance such investments, had healthy incentives to, and, unrelated to EIMA, had Commission support to do so.[555] ComEd is currently spending capital at higher rates than at the peak of EIMA;[556] annual voltage optimization spending amounts are trivial in the context of ComEd's overall capital spending. A separate cost recovery mechanism was clearly not "needed," as the company claimed.

ComEd's claim was also a misdirection: Including a *utility* efficiency program like voltage optimization in a *customer* energy efficiency program allows ComEd to more easily achieve its energy efficiency goals and corresponding incentive profits, while delivering less energy efficiency to its customers. ComEd used Voltage Optimization to water down its customer energy efficiency program. ComEd knew this: it had previously testified that it understood voltage optimization "to be more of a utility optimization measure rather than a 'true' energy efficiency measure."[557]

ComEd and Exelon used political power for years to hinder or outright block clean energy, energy efficiency, and consumer protection programs, creating leverage to build even more support for its priorities. What's worse, it "double-dipped," using the same leverage multiple times to gain multiple windfalls.

Recommendations

COMED PROMISED customers more reliable service, cost savings from increased operational efficiency, rapid advances in clean energy and energy efficiency, and an exciting new world of information, choice and control unlocked by the new technologies of the smart grid.

Almost nine years after EIMA's passage, the record is clear: EIMA delivered record profits and political power to ComEd and Exelon while leaving ComEd customers and the public with broken promises.

Illinois Capitol. Photo: Jim Bowen

EIMA also marks the beginning of ComEd's illegal scheme to increase its power and influence, in service of Exelon's interests over the interests of its customers and the people of Illinois.

ComEd's corrupt activity extends beyond criminal conduct. Corruption also means "a departure from the original or from what is pure or correct." Under this definition, ComEd and Exelon unquestionably corrupted utility policy in Illinois. EIMA inverted the purpose of utility regulation, the guarantee of the public good through the opportunity for private profit, instead guaranteeing private profit without adequately ensuring the public good. With a longer view, Illinois continues to suffer harms from ComEd's bad nuclear plant investments in the 1980s, a problem that still heavily influences energy policy in Illinois.

Public utilities fundamentally belong to the public, and public policy set by public bodies in a fair and transparent manner should ultimately govern them. In Illinois, this too has been inverted: too many institutions, be they government, business, or civil society organizations, have bent to utility power and influence, rather than the other way around. We've accepted ComEd and Exelon's power as "just the way things are." We've accepted Exelon's complete control of ComEd and its obvious conflicts with ComEd's service obligations.

ComEd's admission to a long-running criminal scheme to unduly control Illinois energy policy should create opportunities for meaningful reform unimaginable months ago. These reforms are possible, but in no way inevitable. ComEd amassed its power and influence over many years, mostly through legal means. While current problems diminish its power, that power remains formidable.

ComEd and Exelon have inflicted multiple and diverse harms over many years. Undoing and rectifying these harms will not only take diligent and courageous policymakers, it will take time. So the time to start is now.

Illinois can build an energy system that actually meets the 21st century needs and expectations of its customers. One that uses data and analytics to save customers money and deliver a better service. One that helps strengthen our built infrastructure instead of just our bills. One built on safe, clean energy that does not pollute our air and water. One designed to avoid the worst consequences of climate change and be more resilient to the consequences we will not avoid. One that delivers the original public utility promise of universal, reliable, affordable service and new promises of customer choice and control. One where customers have information at their fingertips that is understandable, helpful, and actionable. And one where utilities contribute to state policy decisions, but don't control them.

There is no single path to the energy system of the future, and just as energy systems are transforming, so must public policy and utility regulation. Any path forward must not only include a vision of the future, but build off the wisdom of the past.

Below are recommendations to specifically address the harms caused by EIMA, including ComEd's efforts to secure and implement its legislation.

RESTORE EFFECTIVE REGULATION OF COMED'S ASSETS

Return to traditional ratemaking built on accepted and reasonable cost control measures: Illinois should remove the unbalanced and utility-friendly EIMA ratemaking process.[558] ComEd returned to the General Assembly multiple times to secure favorable accounting and ratemaking treatment which should be specifically refuted by future Commission or Illinois General Assembly action. Neither institution should

be serving as a rubber stamp for the utility. ComEd's automatic annual profits and rate base increases must end.

ComEd should also be subject to a backward-looking cost benefit analysis that looks to evaluate the value customers received for their billions in investments.

Perform a top-to-bottom audit of ComEd's grid: ComEd's grid has been a black box in which planning and costs have been hidden from regulators and the public. ComEd's entire grid should go through a comprehensive top-to-bottom audit paid for by ComEd shareholders but overseen by the Commission. The audit should investigate the current physical grid, including costs, potential overpayments, and reliability issues, as well as ComEd's operational and data capabilities to implement the smart grid it promised. This will ensure customers are not overpaying for the grid and more. It should be the first step to informing a comprehensive Integrated Grid Planning process.

Integrated Grid Planning: Integrated Grid Planning is a transparent process in which the Commission, utility and various stakeholders participate to make holistic grid planning decisions rather than the historic process, wherein ComEd makes decisions on its own and the Commission and stakeholders have limited opportunities to respond. In order to ensure ComEd's grid is as cost effective as possible and is maximizing the use of distributed energy resources (like residential rooftop solar and energy storage) to offset expensive grid investments, ComEd should be mandated to participate in a separate, formal docketed proceeding at the Commission which gathers extensive feedback from ComEd's communities and stakeholders and creates a transparent Integrated Grid Plan for ComEd.

As part of this process, the Commission must ensure actual delivery of the customer benefits promised almost a decade ago.

ENSURE THE ACTUAL DELIVERY OF PROMISED SMART GRID BENEFITS

Immediately establish time of use rates: ComEd should immediately bring a tariff to the Commission to provide two TOU rates for all Residential and Small Commercial customers.

One rate would be more tailored for customers with electric vehicles and those who wish to try to save more money. The other would be the default rate for ComEd and would be opt-out. The transition to this new default TOU rate should include a shadow billing period and targeted education programs that ensure those with load profiles which do not work well with TOU would be educated about opting out through multiple touch points.

Investigate and facilitate a third party market of innovative services through data access, including achieving Green Button Connect certification: The Commission should conduct a thorough investigation into whether or not ComEd will be able to be a neutral platform for third party innovation to deliver customer savings. If this cannot be achieved ComEd should face penalties for failing to deliver promised EIMA benefits. ComEd's Information Technology spending should also be investigated.

At a minimum, ComEd must be forced to gain Green Button Connect My Data certification,[559] and include publicly accessible technical documentation, a testing environment, technical support to third parties, uptime requirements, and robust customer support and problem resolution for third parties and customers who are trying to

maximize the value and use of smart grid data. Third parties should be able to access more than just interval usage data, e.g., billing rates, because customers think in dollars, not kilowatt hours.

Any changes in these areas should consider that information technology companies often make money off selling customer data and access to customers (e.g., through advertising). Neither ComEd nor third parties should be allowed to use such business models.

ADDRESS THE CONFLICT OF INTEREST INHERENT IN EXELON'S OWNERSHIP OF COMED

Exelon should be forced to divest from ComEd.

Short of that, Exelon should divest from Exelon Generation and legislators and the commission should take action to investigate and mitigate the inherent conflict between Exelon's business needs and ComEd's service obligations to Illinois. One approach would be to strengthen the requirements around General Service Agreements and affiliate relationships, creating an entirely new process to examine corporate structure conflicts of interest.

Whatever the approach the Commission must remove any disincentives to lowering usage and supply prices for electricity and deliver those savings to Illinois customers. Any company that has any interest in generation in and around Illinois should not control ComEd.

Exelon has begun publicly discussing breaking up its generation and distribution assets.[560] Decision makers should remain vigilant to ensure the companies do not leverage such action for legislative windfalls.

ESTABLISH MORE EFFECTIVE CHECKS TO UTILITY POLITICAL POWER AND INFLUENCE

End political giving by utilities: Regulated utilities should no longer be able to directly contribute to campaign committees or PACs.

End recovery of charitable contributions from customers: Utilities should be free to make charitable contributions, but they should no longer be allowed to recover them from ratepayers.

Make deferred prosecution agreement rules permanent: The deferred prosecution agreement includes a number of lobbying and contracting rules ComEd must follow for three years.[561] The Illinois General Assembly should make these policies permanent and to cover all regulated utilities.

Re-empower the Illinois Commerce Commission: The Illinois Commerce Commission needs significantly more resources and tools to perform its duty to defend and promote the public interest in utility regulation. This includes a larger budget and staff, including staff with information technology and smart grid expertise, a department dedicated to corporate governance, and stronger data access and transparency rules for utility information.

Notes

1. ICC Docket No. 07-0566, Final Order, 103.

2. Illinois Statewide SmartGrid Collaborative: Collaborative Report, September 20, 2010, 10.

3. ICC Docket No. 10-0527, Final Order, 101. "That being said, as noted by all parties, the Commission has adopted a process for consideration of Smart Grid in Illinois. That process is well under way and the Illinois Statewide Smart Grid Collaborative is complete. [...] The next step in the process is the Smart Grid Policy Docket. The Policy Docket is the appropriate proceeding to consider funding proposals for Smart Grid."

4. Illinois Compiled Statutes, 220 ILCS 5/16-108.5. For example, see sections 2.1, 3.2, and 4.2.

5. ComEd Press Release, City of Chicago Club Speech, Anne Pramaggiore, October 3, 2011, 4-7.

6. United States of America vs. Commonwealth Edison Company, Deferred Prosecution Agreement, July 17, 2020.

7. Bishop, Greg, RICO lawsuit filed against Madigan, ComEd in federal court, The Center Square, August 10, 2020.

8. ICC Docket No. 12-0298, ComEd Brief on Exceptions on Rehearing, 1.

9. Illinois Compiled Statutes, 220 ILCS 5/16-108.5 (b)(1)

10. Illinois Compiled Statutes, 220 ILCS 5/16-108.5(c) and (d). See Chapter 2 and Section 3.2.

11. ComEd Press Release, "ComEd, Illinois Business Owners Testify About Economic Benefits of Grid Modernization," April 6, 2011.

12. ICC Docket No. 12-0298, Final Order on Rehearing, 16. Commonwealth Edison Company's Infrastructure Investment Plan, 2020 Annual Update, April 1, 2020, 54.

13. Commonwealth Edison Company, Annual Report of Electric Utilities Licensees and/or Natural Gas utilities to the Illinois Commerce Commission "Form 21 ILCC," see 6a, line 40 from relevant years 2011-2018, or Table 7 in this report. See also Figure 4 for historical comparison.

14. Daniels, Steve, With smart grid completed, ComEd budgets as if it never happened, Crain's Chicago Business, February 15, 2020. ComEd's profits are directly tied to its rate of capital spending. See section 1.41.

15. Author calculations from the Commission's Rate Case History excel sheet accessible at https://icc.illinois.gov/downloads/public/RateCaseHistory.xlsx.

16. See section 3.2.3

17. Illinois Compiled Statutes, 220 ILCS 5/16-108.5 (c)

18. Amount calculated off of ICC Docket No. 20-0393, ComEd Schedule B-2.1, 5-13.

19. Author calculations based on ICC Docket No. 11-0721 Final Order on Rehearing, 37; and ICC Docket No. 19-0387, Final Order, 51.

20. Crawford, Jonathan and Malik, Naureen, Why Your Utility Bill's Still Rising Even When Power's So Cheap, Bloomberg, April 4, 2016.

21. ComEd press release, City of Chicago Club Speech, Anne Pramaggiore, October 3, 2011, 6.

22. ComEd press release, City of Chicago Club Speech, Anne Pramaggiore, October 3, 2011, 6. ComEd press release, ComEd Hails General Assembly Passage of Historic Energy Infrastructure Modernization Bill, May 31, 2011.

23. Transcript, Exelon's Rowe calls on Congress to allow EPA to move forward on emissions regulation, E & E News, March 9, 2011.

24. Ibid

25. Hearing Transcript, In the Matter of the Merger of Exelon Corporation and Constellation Energy Group, Inc., Maryland Public Service Commission, Case No. 9271, October 31, 2011, 117.

26. ICC Docket No. 12-0298 ComEd Brief on Exceptions, 8.

27. See section 5.2.

28. See section 5.3

29. See section 5.1.

30. Calculation based off of revenue requirements from the annual formula rate updates compared to the 2011 rate case.

31. Author calculations from the Commission's Rate Case History excel sheet accessible at https://icc.illinois.gov/downloads/public/RateCaseHistory.xlsx.

32. Calculated taking the $15.8B in 2023 rate base Exelon forecasted on its earnings call slide and using the ratio of 2019 rate base to profit. Using this calculation, ComEd's would earn roughly $960 million in annual authorized profits. Exelon Corporation, Earnings Conference Call, Fourth Quarter 2019, February 11, 2020, slide 25. These numbers were the same in the Exelon Summer 2020 Investor Meetings Presentation, August 11, 2020.

33. Author calculations based on ICC Docket No. 11-0721 Final Order on Rehearing, 37; and ICC Docket No. 19-0387, Final Order, 51.

34. See section 2.1.2

35. Commonwealth Edison Company's Infrastructure Investment Plan, 2020 Annual Update, April 1, 2020, 54.

36. See section 2.2.2.

37. Ibid

38. Author calculations from the Commission's Rate Case History excel sheet accessible at https://icc.illinois.gov/downloads/public/RateCaseHistory.xlsx.

39. Author calculations from the Commission's Rate Case History excel sheet accessible at https://icc.illinois.gov/downloads/public/RateCaseHistory.xlsx.

40. Author calculations from ICC Docket No. 20-0393, ComEd Schedule B-2.1, 5-13.

41. Exelon Corporation, Earnings Conference Call, Fourth Quarter 2019, February 11, 2020, slide 25.

42. Author calculations, calculated from Exelon Corporation, United States Securities and Exchange Commission, Form 10-K. 10-K filings available at https://www.sec.gov/cgi-bin/browse-edgar?action=getcompany&CIK=0001109357&type=10-K&dateb=&owner=include&count=40&search_text=

43. Ibid

44. Ibid. Daniels, Steve, Exelon wins its nuke bailout in biggest energy bill in 20 years, Crain's Chicago Business, December 1, 2016.

45. Author calculations from the Commission's Rate Case History excel sheet accessible at https://icc.illinois.gov/downloads/public/RateCaseHistory.xlsx.

46. Author calculations from ICC Docket No. 20-0393, ComEd Schedule B-2.1, 5-13.

47. ICC Docket No. 20-0393, ComEd Schedule B-2.1, 5-13.

48. Author calculations from the Commission's Rate Case History excel sheet accessible at https://icc.illinois.gov/downloads/public/RateCaseHistory.xlsx.

49. Ibid

50. ICC Docket No. 17-0044, Miguel Del-Valle, Dissent, 11.

51. Commonwealth Edison Company's Multi-Year Performance Metrics Annual Report for the Year Ending December 31, 2019, April 16, 2020, Revised, page 1 for performance year 7 and report body for performance metric histories.

52. Commonwealth Edison Company, Smart Grid Advanced Metering Annual Implementation Progress Report, April 2020, Appendix C — Revised Smart Grid Advanced Metering Infrastructure Deployment Plan, C-6.

53. ComEd Press Release, City of Chicago Club Speech, Anne Pramaggiore, October 3, 2011, 6. Accessed at https://www.comed.com/News/Documents/newsroomreleases_10032011.pdf

54. 220 ILCS 5/16-108.6(c)(2). See Section 4.2.1.

55. ICC Docket No. 12-0298, ComEd Brief on Exceptions on Rehearing, 3.

56. See Section 4.2.3. ICC Docket No. 12-0298, ComEd Brief on Exceptions, 4.

57. ICC Docket No. 12-0298, Final Order 41, 44-45. ICC Docket No. 13-0285, Final Order, 14-17. ICC Docket No. 15-0100, Final Order, 2-4, 6-8.

58. See section 5.1.

59. Illinois Compiled Statutes, 220 ILCS 5/8-401.

60. Commonwealth Edison Company, Smart Grid Advanced Metering Annual Implementation Progress Report, April 2019, 59.

61. ICC Docket No. 14-0507, Final Order, 5.

62. See sections 5.2.3 and 5.2.4.

63. See section 5.3.

64. Daniels, Steve, Exelon confirms it's looking at a bust-up, Crain's Chicago Business, November 3, 2020.

65. Daniels, Steve, ComEd suffers a sudden interruption of power—in Springfield, Crain's Chicago Business, July 24, 2020.

66. Daniels, Steve, How long-ago power plays set ComEd's current woes in motion, Crain's Chicago Business, December 20, 2019

67. Commonwealth Edison Company, "Company information," access at https://www.comed.com/AboutUs/Pages/CompanyInformation.aspx

68. Ibid

69. Commonwealth Edison Company, "Fact Sheet," access at https://www.comed.com/SiteCollectionDocuments/SystemFactsSheet.pdf

70. Exelon Corporation, United States Securities and Exchange Commission, Form 10-K For the Fiscal Year Ended December 31, 2019, 48.

71. Commonwealth Edison Company's Infrastructure Investment Plan, 2020 Annual Update, April 1, 2020, 54.

72. Commonwealth Edison Company's Infrastructure Investment Plan, 2019 Annual Update, April 1, 2019, 6.

73. Commonwealth Edison Company, "Fact Sheet," access at https://www.comed.com/SiteCollectionDocuments/SystemFactsSheet.pdf;

74. ICC Docket No. 19-0387, A Schedules, Schedule A-3(a)(5) and (a)(6), Schedule A-3(a), 10; These prices average all subclasses and include all fixed and volumetric charges for the distribution portion of a customer's bill at indicative January 2019 levels.

75. Illinois Commerce Commission, Historical Price to Compare, access at https://www.icc.illinois.gov/downloads/public/pluginillinois/HistoricalPriceToCompare.pdf

76. ICC Docket No. 19-0387, Final Order, 51.

77. ICC Docket No. 20-0393, Commonwealth Edison Company, ICC General Information Requirements, Sec. 285.305, For Filing Year 2020, Part 285.305 (a)(1).

78. Illinois Commerce Commission, Plug In Illinois website, About Electric Choice, access at https://www.pluginillinois.org/about.aspx

79. Office of the Illinois Attorney General, Illinois Does Not Need a Low-Carbon Portfolio Standard, April 29, 2015, 7.

80. Cohen, Bernard, The Nuclear Energy Option, 1990, Chapter 9. Accessed at http://www.phyast.pitt.edu/~blc/book/chapter9.html; Liberty Consulting Group, Audit of Commonwealth Edison T&D Revenue Requirements, Final Report, October 4, 2002, I-51-52.

81. Office of the Illinois Attorney General, Illinois Does Not Need a Low-Carbon Portfolio Standard, April 29, 2015, 7.

82. Modified table replicated from: Throgmorton, James A., Planning as Persuasive Storytelling, The Rhetorical Construction of Chicago's Electric Future, The University of Chicago Press, 1996, 71.

83. Public Act 90-561. Illinois Commerce Commission, Plug In Illinois website, About Electric Choice, access at https://www.pluginillinois.org/about.aspx

84. Public Act 90-561. Lazar, Jim, Electricity Regulation in the US: A guide. Second Edition, June 2016, 9-10.

85. Illinois Commerce Commission, Report to the General Assembly: Summary of Annual Reports Filed by Electric Utilities Regarding the Transition to a Competitive Electric Industry, May 2003, 4. Exelon has a highly complex corporate structure, with many subsidiaries also bearing

the name "Exelon." In this report, references to "Exelon" alone are to Exelon Corporation, and any subsidiaries will be given their full name, e.g. Exelon Generation.

86. Hawthorne, Michael, 2 coal-burning plants to power down early, Chicago Tribune, March 1, 2012.

87. Exelon Corporation, access at https://www.exeloncorp.com/company/about-exelon

88. ICC Docket No. 20-0393, Commonwealth Edison Company ICC General Information Requirements Sec. 285.305 For Filing Year 2020, Part 285.305(a)(2), 1.

89. Ibid

90. Exelon Corporation, access at https://www.exeloncorp.com/companies/exelon-generation

91. ICC Docket No. 20-0393, Commonwealth Edison Company ICC General Information Requirements Sec. 285.305 For Filing Year 2020, Part 285.305(a)(1).

92. Exelon Corporation, access at https://www.exeloncorp.com/company/about-exelon

93. Author calculation from United States Securities and Exchange Commission, Form 10-K For the Fiscal Year Ended December 31, 2019, Exelon Corporation, 51.

94. ICC Docket No. 11-0721, Direct Testimony of Scott Hempling on Behalf of The Citizens Utility Board, January, 13, 2012, 37.

95. Ibid, 40.

96. Illinois Compiled Statutes, 220 ILCS 5/1-102.

97. Illinois Compiled Statutes, 220 ILCS 5/8-401

98. Lazar, Jim, Electricity Regulation in the US: A guide. Second Edition, June 2016, 6.

99. Ibid, 89.

100. Lazar, Jim, Electricity Regulation in the US: A guide. Second Edition, June 2016, 143. Illinois Compiled Statutes, 220 ILCS 5/16-108.5 (d). EIMA's Formula Rates structure acted as a partial (almost complete) decoupling, through a post-year reconciliation with expected revenues within a +/- 50 basis points revenue collar. The 2016 Future Energy Jobs Act made the structure a full decoupling by removing the collar.

101. Ibid.

102. Author calculations, calculated from Exelon Corporation, United States Securities and Exchange Commission, Form 10-K. 10-K filings available at https://www.sec.gov/cgi-bin/browse-edgar?action=getcompany&CIK=0001109357&type=10-K&dateb=&owner=include&count=40&search_text=

103. Daniels, Steve, Electrons are telling the story: The economic pain is intense, May 8, 2020. Regional grid operators manage capacity markets to ensure the power system has enough capacity, the ability to generate power on demand, to meet the times when system demand is highest.

104. Daniels, Steve, Exelon hunts more state nuke subsidies following Illinois win, Crain's Chicago Business, February 25, 2017.

105. Daniels, Steve, Exelon's Crane says decision on nuke closures looming, Crain's Chicago Business, August 4, 2020. Daniels, Steve, Exelon threatens closure of three more Illinois nukes, Crain's Chicago Business, February 12, 2020.

106. Illinois Statewide Smart Grid Collaborative, Collaborative Report, September 30, 2010, 48-50; Rachel Gold, Corri Waters, and Dan York, ACEEE, Leveraging Advanced Metering Infrastructure To Save Energy, January 2020, iv.

107. Hearing Transcript, In the Matter of the Merger of Exelon Corporation and Constellation Energy Group, Inc., Maryland Public Service Commission, Case No. 9271, October 31, 2011, 117.

108. Ibid.

109. Illinois Compiled Statutes, 220 ILCS 5/7-101(3)

110. ICC Docket No. 17-0044, Miguel Del-Valle, Dissent, 1-2.

111. Ibid. 1.

112. Ibid, 1-2.

113. Author calculations from ICC Docket No. 19-0387, Schedule C-13, 1.

114. ICC Docket No. 20-0393, Schedule C-13, 1.

115. ICC Docket No. 14-0312, Final Order, 88-90. ICC Docket No. 17-0044, Miguel Del-Valle, Dissent, 2.

116. ICC Docket No. 17-0044, Miguel Del-Valle, Dissent, 7.

117. ICC Docket No. 17-0044, Miguel Del-Valle, Dissent, 7.

118. Gaines, Sally L., 5 More ComEd Execs Lose Jobs, Chicago Tribune, November 25, 1999.

119. Ibid

120. Liberty Consulting Group, Audit of Commonwealth Edison T&D Revenue Requirements, Final Report, October 4, 2002, I-52.

121. Ibid

122. 2019 Commonwealth Edison: Electric Reliability Report & Customer Satisfaction Survey, 2-3; https://icc.illinois.gov/industry-reports/electric-reliability

123. Liberty Consulting Group, Audit of Commonwealth Edison T&D Revenue Requirements, Final Report, October 4, 2002, I-19.

124. Blum, Howard, PG&E reaches $13.5-billion settlement with victims of devastating California wildfires, Los Angeles Times, December 6, 2019.

125. Liberty Consulting Group, Audit of Commonwealth Edison T&D Revenue Requirements, Final Report, October 4, 2002, I-51-I-52. Ill. ComEd agrees to record $1.34 billion rate refund to settle lawsuit, UPI, September 27, 1993.

126. Liberty Consulting Group, Audit of Commonwealth Edison T&D Revenue Requirements, Final Report, October 4, 2002, I-51-I-52.

127. Ibid, I-51.

128. Ibid, I-3.

129. The Liberty Consulting Group, Investigation of Commonwealth Edison's Transmission and Distribution Systems, First Report, Executive Summary, ES-2.

130. Daniels, Steve, Suburban sparks for ComEd, Crain's Chicago Business, April 14, 2007.

131. Daniels, Steve, Deerfield suit seeks millions from ComEd, Crain's Chicago Business, April 17, 2008.

132. Daniels, Steve, In 2011, ComEd power outages lasted twice as long on average, Crain's Chicago Business, July 11, 2012.

133. Daniels, Steve, ComEd seeks outage passes, Crain's Chicago Business, July 16, 2011.

134. National Association of Regulatory Utility Commissioners, Timeline of Major Events in Illinois Electric Industry Restructuring; for more information on the transition see the Post 2006 Initiative: Final Staff Report to the Commission, December 2, 2004, access at https://icc.illinois.gov/programs/post-2006-initiative

135. Daniels, Steve, Power struggle: Pols eye rate fix, Crain's Chicago Business, March 31, 2007. Daniels, Steve, ComEd execs getting Exelon stock again, Crain's Chicago Business, July 11, 2013.

136. Daniels, Steve, ComEd execs getting Exelon stock again, Crain's Chicago Business, July 11, 2013.

137. Ibid

138. ICC Docket No. 07-0566, Final Order, 103.

139. Yue, Lorene, ComEd asks for rate hike, Crain's Chicago Business, October 17, 2007.

140. Daniels, Steve, ComEd spinoff in S'field mix, Crain's Chicago Business, June 30, 2007.

141. Ibid

142. Daniels, Steve, How long-ago power plays set ComEd's current woes in motion, Crain's Chicago Business, December 20, 2019

143. Nadel, Steven and Young, Rachel, Why Is Electricity Use No Longer Growing?, American Council for an Energy-Efficient Economy, February 2014, 1.

144. Ibid, 2.

145. Ibid, 14.

146. Daniels, Steve, How long-ago power plays set ComEd's current woes in motion, Crain's Chicago Business, December 20, 2019

147. Ibid

148. Ibid

149. Arnold, Tony and McKinney, Dave, ComEd Charged With Bribery For Steering Jobs, Other Benefits For Speaker Michael Madigan. Speaker Denies The Feds' Claims. WBEZ, July 17, 2020.

150. Meisner, Jason and Long, Ray, FBI raids downstate home of longtime ComEd lobbyist who is close confidant of Speaker Madigan, Chicago Tribune, July 18, 2019.

151. National Institute of Science and Technology, Smart Grid: A Beginner's Guide, access at https://www.nist.gov/el/smart-grid/about-smart-grid/smart-grid-beginners-guide. United States Department of Energy, The Smart Grid: an introduction, prepared for the U.S. Department of Energy by Litos Strategic Communication, 11, 13.

152. United States Department of Energy, The Smart Grid: an introduction, prepared for the U.S. Department of Energy by Litos Strategic Communication, 41.

153. T&D World, Using Reclosers on Modern Distribution Networks, April 3, 2017.

154. Stanton, Tom, Smart Grid Strategy: How Can State Commission Procedures Produce the Necessary Utility Performance?, National Regulatory Research Institute, February, 2011, 23.

155. Ibid

156. Ibid, 5.

157. Illinois Compiled Statutes, 220 ILCS 5/16-108.6(a)

158. Rachel Gold, Corri Waters, and Dan York, ACEEE, Leveraging Advanced Metering Infrastructure To Save Energy, January 2020, 4.

159. Ibid, 5.

160. Commonwealth Edison Company's Infrastructure Investment Plan, 2019 Annual Update, April 1, 2019, 64.

161. Illinois Statewide SmartGrid Collaborative: Collaborative Report, September 30, 2010, 10.

162. ICC Docket No. 07-0566, Final Order, 137-143.

163. Ibid, 48. The report also identified benefits to regional grid operators, competitive energy suppliers, and other third parties, including governments.

164. Ibid, 48-49.

165. Ibid, 49-50.

166. Rachel Gold, Corri Waters, and Dan York, Leveraging Advanced Metering Infrastructure To Save Energy, American Council for an Energy-Efficient Economy, January 2020, iv.

167. Ibid, 7.

168. Ibid, iii.

169. Illinois Statewide SmartGrid Collaborative: Collaborative Report, September 30, 2010, 24.

170. Illinois Compiled Statutes, 220 ILCS 5/16-108.6(f) and 108.7(d).

171. ICC Docket No. 14-0212, Final Order, 21.

172. Illinois Compiled Statutes, 220 ILCS 5/16-108.7. The Illinois Science and Energy Innovation Foundation, access at https://www.iseif.org/about/ "ISEIF was created in the 2011 Energy Infrastructure Modernization Act as a private not-for-profit organization, funded by ComEd and Ameren to help consumers understand and harness the benefits of a more modern, efficient electric grid."

173. ICC Docket No. 12-0298, ComEd Brief on Exceptions, 7-9.

174. ICC Docket No. 11-0721, Direct Testimony of Scott Hempling on Behalf of The Citizens Utility Board, January, 13, 2012, 33.

175. Transcript, Exelon's Rowe calls on Congress to allow EPA to move forward on emissions regulation, E & E News, March 9, 2011.

176. Rachel Gold, Corri Waters, and Dan York, Leveraging Advanced Metering Infrastructure To Save Energy, American Council for an Energy-Efficient Economy, January 2020, vi.

177. Illinois Commerce Commission ICC Citizens' Guide to the Illinois Commerce Commission, September 2019, Appendix B.

178. "The ICC's mission is to balance the interests of consumers and utilities to ensure adequate, efficient, reliable, safe and least-cost public utility services, while promoting the development of an effectively competitive energy supplier market." Access at https://icc.illinois.gov/about/commissioners. Hempling, Scott, "COMMISSIONS ARE NOT COURTS; REGULATORS ARE NOT JUDGES," access at https://www.scotthemplinglaw.com/essays/commissions-r-not-courts.

179. Roosevelt, Franklin D., Campaign Address in Portland, Oregon on Public Utilities and Development of Hydro-Electric Power, September 21, 1932. Access at https://www.presidency.ucsb.edu/documents/campaign-address-portland-oregon-public-utilities-and-development-hydro-electric-power

180. Lazar, Jim, Electricity Regulation in the US: A Guide, Second Edition, The Regulatory Assistance Project, 47 - 83, 86 - 87.

181. Ibid.

182. Ibid, 53 - 57.

183. ICC Docket No. 19-0387, Final Order, 43.

184. Lazar, Jim, Electricity Regulation in the US: A Guide, Second Edition, The Regulatory Assistance Project, 52, 86 - 87

185. In practice, for many reasons, not least of all the informational asymmetry that a utility holds compared to the Commission and other parties, it is basically impossible to review every investment.

186. Throgmorton, James A., Planning as Persuasive Storytelling, The Rhetorical Construction of Chicago's Electric Future, The University of Chicago Press, 1996, 102.

187. Decoupling, or the "volume balancing adjustment," described earlier, does "true up" revenue collection based on higher or lower usage. EIMA not only makes adjustments for lower or higher revenue because of lower or higher usage collected through volumetric charges, it also trues up the amount of revenue required by the utility's actual expenses it used to deliver the service that year. Illinois Compiled Statutes, 220 ILCS 5/16-108.5 (d).

188. Wernau, Julie, Legislature overrides Gov. Pat Quinn's veto to allow smart grid, Chicago Tribune, October 27, 2011.

189. Public Act 097-0616 and Public Act 97-0646.

190. Wernau, Julie, Legislature overrides Gov. Pat Quinn's veto to allow smart grid, Chicago Tribune, October 27, 2011. Then-Chairman of the Commission also raised objections and concerns regarding EIMA. Chairman Doug Scott, Illinois Commerce Commission at the City Club of Chicago, September 27, 2011, access at https://youtu.be/Kh9WizYrOF0. Office Of the Illinois Attorney General press release, ATTORNEY GENERAL MADIGAN, CONSUMER ADVOCATES: VOTE 'NO' TO AUTOMATIC RATE HIKES ON ILLINOIS UTILITY BILLS, May 18, 2011.

191. ICC Docket No. 11-0721, ComEd Ex. 1.2.

192. ICC Docket No. 09-0263, Final Order, October, 14, 2009, 58.

193. ICC Docket No. 07-0566, Final Order, 143

194. Appellate Court of Illinois, Second District, Docket Nos.2-08-0959, 2-08-1037, 2-08-1137,

195. ICC Docket No. 10-0527, Final Order, 100-103.

196. ICC Docket No. 12-0298, ComEd Brief on Exceptions on Rehearing, 1.

197. ICC Docket No. 20-0393, AG Initial Brief, 16-17; Illinois Compiled Statutes, 220 ILCS 5/16-108.5(b),(b-5).

198. Illinois Compiled Statutes, 220 ILCS 5/16-108.5 (b-5).

199. Illinois Compiled Statutes, 220 ILCS 5/16-108.5 (b)(1).

200. Illinois Compiled Statutes, 220 ILCS 5/16-108.5 (b)(1).

201. Illinois Compiled Statutes, 220 ILCS 5/16-108.5(b)

202. Illinois Compiled Statutes, 220 ILCS 5/16-108.6(c)

203. Ibid

204. Ibid

205. Commonwealth Edison Company, Smart Grid Advanced Metering Annual Implementation Progress Report, April 2020, 3-4: "On April 1, 2015, ComEd submitted the 2015 AIPR, with updates to the 2014 Revised AMI Plan ("2015 Revised AMI Plan"). [...] The 2015 Revised AMI Plan was deemed accepted by the Commission by operation of law when an investigation of the 2015 AIPR was not commenced within 21 days of its filing. On April 1, 2016, ComEd submitted the 2016 AIPR, with updates to the 2015 Revised AMI Plan ("2016 Revised AMI Plan"). [...] The 2015 [sic] Revised AMI Plan was deemed accepted by the Commission by operation of law... [...] The 2018 [sic] Revised AMI Plan was deemed accepted by the Commission by operation of law when an investigation of the 2019 AIPR was not commenced within 21 days of its filing."

206. Commonwealth Edison Company's Infrastructure Investment Plan, 2020 Annual Update, April 1, 2002, 63.

207. Commonwealth Edison Company's Infrastructure Investment Plan, 2019 Annual Update, April 1, 2019, 64 (Table B.1) and 65 (Figure

B.2); though not further investigated by this report, the Commission's December 2017 Report on the Energy Infrastructure Modernization Act's Infrastructure Program and Performance-Based Formula Rate includes supposed actual spending amounts, investment as of 12/31/2016, which differ by up to more than $50 million when compared to the 2016 numbers in Commonwealth Edison Company's Infrastructure Investment Plan, 2019 Annual Update, 64.

208. Compare the cost of microgrids proposed in legislation to the cost later allowed by the Commission: a draft of what would become the FEJA allowed ComEd to invest an estimated $250 million in five microgrids; after that provision was struck in legislative negotiations, the Commission later approved ComEd's proposed $25 million investment in one microgrid. 99th General Assembly, Senate Bill 2814, House Amendment 2, 310. ICC Docket No. 17-0331, Final Order, 59. Daniels, Steve, ComEd gets state approval of $25 million Bronzeville mini-power grid, Crain's Chicago Business, February 28, 2018.

209. Illinois Compiled Statutes, 220 ILCS 5/16-108.5(c)&(d). For example, see ICC Docket No. 19-0387, Final Order, Appendix A ("forward look" filing year) and Appendix B ("backward look" reconciliation year).

210. Tietjen, Darryl, Tariff Development I: The Basic Ratemaking Process, Briefing for the NARUC/INE Partnership, slide 24.

211. Illinois Compiled Statutes, 220 ILCS 5/16-108.5(d).

212. Illinois Compiled Statutes, 220 ILCS 5/16-108.5(c)(3).

213. Illinois Compiled Statutes, 220 ILCS 5/16-108.5(f-5).

214. Ibid.

215. ICC Docket No. 17-0044, Miguel Del-Valle, Dissent, 11.

216. Commonwealth Edison Company's Multi-Year Performance Metrics Annual Report for the Year Ending December 31, 2019, April 16, 2020, Revised, page 1 for performance year 7 and report body for performance metric histories.

217. Liberty Consulting Group, Audit of Commonwealth Edison T&D Revenue Requirements, Final Report, October 4, 2002, I-3-I-5.

218. See for example ICC Docket No. 12-0298, ComEd Brief of Exceptions, 18 - 23.

219. Commonwealth Edison Press Release, "ComEd, Illinois Business Owners Testify About Economic Benefits of Grid Modernization," April 6, 2011. While we undertake this analysis to illustrate the effect of EIMA's formula compared to the specified investments, we would be remiss to not point out that this statement is antithetical to the operating regulatory theory. That is, profits and returns are not guaranteed, on purpose. Shareholders get residual profits after expenses and investments are taken into account and they are compensated for that risk. To create a law mandating increasing investments with complete and quicker recovery isn't a question of necessity, it is whether a natural monopoly should become an automatic profit machine.

220. Commonwealth Edison Company's Infrastructure Investment Plan 2020 Annual Update, April 1, 2020, 64.

221. Daniels, Steve, ComEd asks Springfield to force you to make a 13-year bet on interest rates, Crain's Chicago Business, March 15, 2019. Daniels, Steve, ComEd flips Madigan's switch, Crain's Chicago Business, June 4, 2011.

222. See Figure 2.

223. Author calculations based on ICC Docket No. 11-0721 Final Order on Rehearing, 37; and ICC Docket No. 19-0387, Final Order, 51.

224. Exelon, Earnings Conference Call, Fourth Quarter 2019, February 11, 2020, slide 25. $200 million figure comes from author calculations taking the $15.8B in 2023 rate base Exelon forecasted on its earnings call slide and using the ratio of 2019 rate base to profit. Using this calculation, ComEd's would earn roughly $960 million in annual authorized profits.

225. Illinois Compiled Statutes, ILCS 220 5/16-108.5(c)(3): "(3) Include a cost of equity, which shall be calculated as the sum of the following:(A) the average for the applicable calendar year of the monthly average yields of 30-year U.S. Treasury bonds published by the Board of Governors of the Federal Reserve System in its weekly H.15 Statistical Release or successor publication; and (B) 580 basis points."

226. Daniels, Steve, ComEd flips Madigan's switch, Crain's Chicago Business, June 4, 2011.

227. Public Act 97-0646 lowered the added basis points from 600 to 580.

228. Author calculations from the Commission's Rate Case History excel sheet accessible at https://icc.illinois.gov/downloads/public/RateCaseHistory.xlsx.

229. Returns on equity from earlier ComEd rate cases: 10-0467, 10.5%, 07-0566, 10.3%, 05-0597, 10.045%. From contemporary traditional rate cases for gas utilities: Nicor 18-1775, 9.73%, 17-0124, 9.80%, Ameren 15-0142, 9.60%. Figures are from the Commission's Rate Case History excel sheet accessible at https://icc.illinois.gov/downloads/public/RateCaseHistory.xlsx.

230. 101st General Assembly, House Bill 3152, Senate Bill 2080. The bills, as introduced, eliminated the 2022 sunset, without replacing it with a new sunset. Subsequent amendments (Senate Amendment 4, House Amendment 1) included a 2032 sunset.

231. Ibid, 19-20.

232. Figures and author calculations from the Commission's Rate Case History excel sheet accessible at https://icc.illinois.gov/downloads/public/RateCaseHistory.xlsx.

233. Ibid

234. Ibid

235. Ibid

236. Putting Consumers & Climate First, Governor Pritzker's Eight Principles for a, Clean & Renewable Illinois Economy, August 21, 2020, 3.

237. Illinois Compiled Statutes, ILCS 220 5/16-108.5(h)

238. Exelon, Earnings Conference Call, Fourth Quarter 2019, February 11, 2020, slide 25.

239. This "other" is presumably mainly from regulatory assets ComEd acquired through FEJA.

240. Daniels, Steve, With smart grid completed, ComEd budgets as if it never happened, Crain's Chicago Business, February 15, 2020.

241. Exelon, Earnings Conference Call, Fourth Quarter 2019, February 11, 2020, slide 25. These numbers were the same in the Exelon Summer 2020 Investor Meetings Presentation, August 11, 2020.

242. Calculated taking the $15.8B in 2023 rate base Exelon forecasted on its earnings call slide and using the ratio of 2019 rate base to profit. Using this calculation, ComEd's would earn roughly $960 million in annual authorized profits. Exelon Corporation, Earnings Conference Call, Fourth Quarter 2019, February 11, 2020, slide 25.

243. Author calculations, calculated from Exelon Corporation, United States Securities and Exchange Commission, Form 10-K. 10-K filings available at https://www.sec.gov/cgi-bin/browse-edgar?action=getcompany&CIK=0001109357&type=10-K&dateb=&owner=include&count=40&search_text=

244. Ibid

245. Calculation based off of revenue requirements from the annual formula rate updates compared to the 2011 rate case. Of course, in a non-formula rate scenario, ComEd likely would have come in for a rate increase over this time and increased its revenue requirement. This calculation simply provides a rough idea of the significant growth in ComEd's revenue, paid for by ComEd customers.

246. ICC Docket No. 11-0721 Final Order on Rehearing, 37; and ICC Docket No. 19-0387, Final Order, 51.

247. The Power Bureau, Cost Analysis for the Energy Infrastructure Modernization Act (EIMA) and the Future Energy Jobs Act (FEJA): Illinois Energy Consumer's Perspective for Illinois Policymakers, 17.

248. Engelhardt, Jeff, ComEd smart grid plan adds consumer protections, Daily Herald, May 26, 2011.

249. Illinois Compiled Statutes, 220 5/16-108.5 (g).

250. Daniels, Steve, ComEd flips Madigan's switch, Crain's Chicago Business, June 4, 2011.

251. Commonwealth Edison Company's Infrastructure Investment Plan, 2020 Annual Update, April 1, 2020, 64

252. August 20, 2020 Letter from Joe Dominguez to Mayor Lori Lightfoot, 5.

253. Exelon Corporation, access at https://content.exeloncorp.com/myth-vs-fact#fact-checked2

254. August 20, 2020 Letter from Joe Dominguez to Mayor Lori Lightfoot, 5.

255. ICC Docket No. 11-0721 Final Order on Rehearing, 37. ICC Docket No. 12-0321, Final Order, 106. ICC Docket No. 13-0318, Final Order, 89. ICC Docket No. 14-0312, Final Order, 104. ICC Docket No. 15-0287, Final Order, 75. ICC Docket No. 16-0259, Order on Rehearing, 7. ICC Docket No. 17-0196, Final Order, 41. ICC Docket No. 18-0808, Final Order, 63. ICC Docket No. 19-0387, Final Order, 51.

256. Crawford, Jonathan and Malik, Naureen, Why Your Utility Bill's Still Rising Even When Power's So Cheap, Bloomberg, April 4, 2016. Illinois Commerce Commission, Historical Price to Compare, accessible at: https://www.icc.illinois.gov/downloads/public/pluginillinois/HistoricalPriceToCompare.pdf

257. ComEd Press Release, ComEd Files for Delivery Rate Decrease, Announces Further Customer Support, April 16, 2020.

258. Calculated as 9 months of the annualized revenue requirement of $1,660,304,000 from rate case 05-0597 and 3 months of the annualized revenue requirement of $1,961,065,000 from rate case 07-0566, which went into effect in October of 2008.

259. ICC Docket No. 20-0393, ComEd Exhibit 1.0, 20

260. Of course, under formula rates ComEd is also guaranteed to collect its revenue requirement in 2021, something it did not enjoy in 2008.

261. ComEd Press Release, ComEd Files for Delivery Rate Decrease, Announces Further Customer Support, April 16, 2020.

262. See Table 8.

263. August 20, 2020 Letter from Joe Dominguez to Mayor Lori Lightfoot, 5.

264. Author calculations based on annual formula rate updates: ICC Docket No. 11-0721 Final Order on Rehearing, 37. ICC Docket No. 12-0321, Final Order, 106. ICC Docket No. 13-0318, Final Order , 89. ICC Docket No. 14-0312, Final Order, 104. ICC Docket No. 15-0287, Final Order, 75. .ICC Docket No. 16-0259, Order on Rehearing, 7. ICC Docket No. 17-0196, Final Order, 41. ICC Docket No. 18-0808, Final Order, 63. ICC Docket No. 19-0387, Final Order, 51.

265. ICC Docket No. 13-0318, Final Order , 89. ICC Docket No. 14-0312, Final Order, 104. ICC Docket No. 15-0287, Final Order, 75. .ICC Docket No. 16-0259, Order on Rehearing, 7.

266. ICC Docket No. 11-0721, Direct Testimony of Scott Hempling on Behalf of The Citizens Utility Board, January, 13, 2012, 15.

267. Ibid

268. ICC Docket No. 20-0393, ComEd Schedule B-2.1, 5-13.

269. See the Rate Base Section of ICC Docket Nos. 13-0318, 14-0312, 15-0287, 16-0259, 17-0196, 18-0808, and 19-0387.

270. ICC Docket no. 17-0196, Final Order, 4.

271. Amount calculated off of ICC Docket No. 20-0393, ComEd Schedule B-2.1, 5-13.

272. ICC Docket No. 20-0393, ComEd Schedule B-2.1, 5-13.

273. ComEd Press Release, ComEd, Illinois Business Owners Testify About Economic Benefits of Grid Modernization, April 6, 2011.

274. See Section 2.1.

275. Daniels, Steve, With smart grid completed, ComEd budgets as if it never happened, Crain's Chicago Business, February 15, 2020.

276. See 220 ILCS 108.5(b) for the requirement to begin investment, and 220 ILCS 108.5(l) for language added in the 2013 trailer bill stating that ComEd "shall be deemed to have been in full compliance with all requirements of subsection (b)" and that the Commission could not investigate ComEd's compliance or penalize it for noncompliance.

277. ICC Docket No. 12-0298, Final Order on Rehearing, 31, 33.

278. Ibid, 6.

279. Ibid, 16. Commonwealth Edison Company's Infrastructure Investment Plan, 2020 Annual Update, April 1, 2020, 54.

280. ICC Docket No. 12-0298 Final Order on Rehearing, 16.; Commonwealth Edison Company's Infrastructure Investment Plan, 2020 Annual Update, April 1, 2020, 54.

281. Commonwealth Edison Company's Infrastructure Investment Plan, 2020 Annual Update, April 1, 2020, 64

282. ICC Docket No. 12-0298, Redacted Initial Brief on Rehearing of the Staff of the Illinois Commerce Commission, 14.

283. Ibid

284. Ibid

285. Ibid

286. Commonwealth Edison Company, Annual Report of Electric Utilities Licensees and/or Natural Gas utilities to the Illinois Commerce Commission "Form 21 ILCC," see 6a, line 48 from the relevant years.

287. Ibid, lines 40, 41, and 48 from the relevant years.

288. Ibid, line 40.

289. Ibid, line 41.

290. Commonwealth Edison Company's Infrastructure Investment Plan 2019 Annual Update, April 1, 2019, 65.

291. Commonwealth Edison Company, Annual Report of Electric Utilities Licensees and/or Natural Gas utilities to the Illinois Commerce Commission "Form 21 ILCC," see 6a, line 48 from relevant years.

292. Author calculations. For data sources, see Table 6 and its citations.

293. Cahill, Joe, The ICC should pull the plug on this ComEd power play, Crain's Chicago Business, January 9, 2020.

294. Author calculations using Exelon Corporation, Earnings Conference Call, Fourth Quarter 2019, February 11, 2020, slide 25, Commonwealth Edison Company's Infrastructure Investment Plan 2019 Annual Update, April 1, 2019, 65, and Commonwealth Edison Company's Infrastructure Investment Plan, 2012, 12.

295. Commonwealth Edison Company's Infrastructure Investment Plan 2019 Annual Update, April 1, 2019, 65. Remember the formula rates are built to quickly and automatically turn ComEd's spending into increased revenue and profits; this is what ComEd said it needed in order to modernize its system.

296. Daniels, Steve, Exelon wins its nuke bailout in biggest energy bill in 20 years, Crain's Chicago Business, December 1, 2016.

297. Rate base figures from the Commission's Rate Case History excel sheet accessible at https://icc.illinois.gov/downloads/public/RateCaseHistory.xlsx. Commonwealth Edison Company's Infrastructure Investment Plan, 2020 Annual Update, April 1, 2002, 64.

298. Daniels, Steve, With smart grid completed, ComEd budgets as if it never happened, Crain's Chicago Business, February 15, 2020.

299. Ibid

300. Exelon Corporation, United States Securities and Exchange Commission, Form 10-K For the Fiscal Years 2007 - 2016. Crawford, Jonathan and Malik, Naureen, Why Your Utility Bill's Still Rising Even When Power's So Cheap, Bloomberg, April 4, 2016.

301. Daniels, Steve, ComEd outlines financial hit from ICC rate ruling, Crain's Chicago Business, June 1, 2012: "In a regulatory filing today, ComEd said the ICC's ruling earlier this week to reduce ComEd's 2012 revenues by $169 million — rather than the $59 million ComEd proposed under last year's landmark formula rate law — will cost parent Exelon Corp. 16 cents per share this year and another 8 to 10 cents per share annually in 2013 and 2014. ComEd said one ICC decision in particular, to disallow a return on the utility's pension asset, costs ComEd $35 million."

302. Daniels, Steve, ComEd spinoff in S'field mix, Crain's Chicago Business, June 30, 2007.

303. Ibid.

304. Crawford, Jonathan and Malik, Naureen, Why Your Utility Bill's Still Rising Even When Power's So Cheap, Bloomberg, April 4, 2016.

305. Daniels, Steve, ComEd seeks to freeze above-market rates in return for $500m cash to budget-crippled state, Crain's Chicago Business, May 4, 2010.

306. ICC Docket No. 20-0393, Commonwealth Edison Company, ICC General Information Requirements, Sec. 285.305, For Filing Year 2020, Part 285.305 (a)(1)., Daniels, Steve, Exelon weighs shedding nuclear plants, other non-utility assets, Crain's Chicago Business, October 12, 2020.

307. Crawford, Jonathan and Malik, Naureen, Why Your Utility Bill's Still Rising Even When Power's So Cheap, Bloomberg, April 4, 2016.

308. Bishop, Greg, RICO lawsuit filed against Madigan, ComEd in federal court, The Center Square, August 10, 2020.

309. Daniels, Steve, ComEd spinoff in S'field mix, Crain's Chicago Business, June 30, 2007.

310. Daniels, Steve, Class-action suit seeks customer reimbursement from ComEd, Crain's Chicago Business, July 28, 2020., Exelon Corporation, United States Securities and Exchange Commission, Form 10-K For the Fiscal Years 2007 - 2011.

311. Author calculations, calculated from Exelon Corporation, United States Securities and Exchange Commission, Form 10-K. 10-K filings available at https://www.sec.gov/cgi-bin/browse-edgar?action=getcompany&CIK=0001109357&type=10-K&dateb=&owner=include&count=40&search_text=

312. ICC Docket No. 07-0566, Final Order, 137-143., ICC Docket No. 10-0527, Final Order, 101. "That being said, as noted by all parties, the Commission has adopted a process for consideration of Smart Grid in Illinois. That process is well under way and the Illinois Statewide Smart Grid Collaborative is complete. Also, IIEC informs the Commission that one of the topics discussed at the ISSGC was different funding proposals for Smart Grid. The next step in the process is the Smart Grid Policy Docket. [...] The Commission sees no reason why the Company should not continue its current course until the Policy Docket is complete."

313. ICC Docket No. 10-0527, Final Order, 101-102. "Also, several parties provided interesting testimony regarding what alternative regulation, and Smart Grid alternative regulation in particular, could look like - NRDC proposed linking energy efficiency measures and decoupling and CUB proposed constructing a sharing mechanism that gives utilities an economic incentive to develop demand-side initiatives while simultaneously stabilizing and reducing costs for customers. [...] These ideas, however, are illustrative of the conversation that should take place regarding Smart Grid cost recovery in the Policy Docket."

314. ICC Docket No. 17-0044, Miguel Del-Valle, Dissent, 11: "Additionally, "market price suppression effects or demand reduction induced price effects" (i.e., reductions in wholesale markets—which could affect Exelon's revenue) are excluded by statute from being used to calculate whether a measure is cost effective. P.A. 99-906, § 5 amending 20 ILCS 3855/110 ("Total Resource Costs Test")."

315. Cahill, Joe, Exelon, ComEd discover the downside of successful lobbying, Crain's Chicago Business, October 18, 2019.

316. Public Act 98-0015.

317. Illinois 98th General Assembly, House Resolution 1146. Exelon press release, Exelon Statement on Illinois Nuclear Power Plant Report, January 12, 2015.

318. Daniels, Steve, Exelon wins its nuke bailout in biggest energy bill in 20 years, Crain's Chicago Business, December 1, 2016.

319. Sol Warren, Michael, N.J. approves $300M nuclear bailout — and your utility bill just went up, Newjersey.com, April 18, 2019. Maher, Kris, Nuclear-Bailout Bills in Pennsylvania, Ohio Take Heat Over Cost, Wall Street Journal, April 29, 2019. Cahill, Joe, Exelon, ComEd discover the downside of successful lobbying, Crain's Chicago Business, October 18, 2019.

320. United States Securities and Exchange Commission, Form 10-K For the Fiscal Year Ended December 31, 2018, Exelon Corporation, 61-62. https://www.sec.gov/Archives/edgar/data/8192/000162828019001107/exc-20181231x10k.htm#s3D49B3622E455ECFB9A01DB77085E405., author calculations. Cahill, Joe, Exelon, ComEd discover the downside of successful lobbying, Crain's Chicago Business, October 18, 2019, "Exelon stock has climbed more than 60 percent since 2015, outpacing the broader stock market and other utility stocks by wide margins."

321. Cahill, Joe, Exelon, ComEd discover the downside of successful lobbying, Crain's Chicago Business, October 18, 2019.

322. Daniels, Steve, How long-ago power plays set ComEd's current woes in motion, Crain's Chicago Business, December 20, 2019.

323. Daniels, Steve, ComEd power outages lasted twice as long on average, Crain's Chicago Business, July 11, 2012.

324. Wernau, Julie, Legislature overrides Gov. Pat Quinn's veto to allow smart grid, Chicago Tribune, October 27, 2011.

325. See 220 ILCS 108.5(b) for the requirement to begin investment, and 220 ILCS 108.5(l) for language added in the 2013 trailer bill stating that ComEd "shall be deemed to have been in full compliance with all requirements of subsection (b)" and that the Commission could not investigate ComEd's compliance or penalize it for noncompliance.

326. ICC Docket No. 12-0298, Order on Rehearing, 31,33.

327. Ibid, 17-19.

328. Ibid, 29-30

329. Ibid, 33.

330. Ibid, 25-26, 29, 31. "The Commission is stuck between the evidentiary problems resulting from ComEd's legal theory and the result of ComEd's refusal to comply with a Commission Order. ComEd's tactics have left the Commission with a poor evidentiary record and no good options." "ComEd specifically removed all mention of the impact of the Docket 11-0721 Order in an errata filed the day Staff and Intervenor Direct Testimony was due. [...] The Company did not make a prima facie showing in its direct case of why the Commission's June 22, 2012 Order should be changed. ComEd did not attempt to make this showing until its Rebuttal Testimony - to which no party had an opportunity to respond," "The Commission, however, agrees with Staff's assessment that: [...] Likewise, any staffing issues that ComEd may have do not appear to be the cause of the delayed deployment schedule, but rather are a result of ComEd's decision to delay deployment."

331. ICC Docket No. 11-0271 on Final Order on Rehearing and ICC Docket No. 12-0298 Order on Rehearing.

332. ICC Bench Session Minutes, December 5, 2012,14-18. Chairman Scott said "Having said that, there is one thing that I would like to say. The narrative surrounding this case has been pretty disappointing to me and it's just a narrative because there has been more than that. I think the Judge did a very good job of laying out in the Order which we just passed. So I won't hash it in detail, but we see things like testimony introduced and then asked to be pulled through an errata document which obviously is highly unusual to say the least saying that the testimony could have been misinterpreted and then telling us essentially that none of this is about the money and we can't even consider the money in this case when the narrative outside of this room is that it's all about the money in this case. And then we see the $100 million figure that we've seen outside of here come back into play in rebuttal testimony with, as the Order points out, very little to support that and that's the same dollar figure we've heard for a long time which strangely didn't change after we essentially put back in the pension asset, which in the reconciliation cases estimated to be about $70 million and that number hasn't changed. That is much larger than the number which is confidentially kept in the testimony in this case, which is also troubling and as the Order I think really points out a lot of this …"

333. ICC Special Open Meeting Minutes, June 22, 2012, 20-22.

334. Public Act 98-0015: in part, 220 ILCS 5/16-108.5(k) and (l): "(k) The changes made in subsections (c) and (d) of this Section by Public Act 98-15 are intended to be a restatement and clarification of existing law, and intended to give binding effect to the provisions of House Resolution 1157 adopted by the House of Representatives of the 97th General Assembly and Senate Resolution 821 adopted by the Senate of the 97th General Assembly that are reflected in paragraph (3) of this subsection. In addition, Public Act 98-15 preempts and supersedes any final Commission orders entered in Docket Nos. 11-0721, 12-0001, 12-0293, and 12-0321 to the extent inconsistent with the amendatory language added to subsections (c) and (d). [...] (l) Each participating utility shall be deemed to have been in full compliance with all requirements of subsection (b) of this Section, subsection (c) of this Section, Section 16-108.6 of this Act, and all Commission orders entered pursuant to Sections 16-108.5 and 16-108.6 of this Act, up to and including May 22, 2013 (the effective date of Public Act 98-15). The Commission shall not undertake any investigation of such compliance and no penalty shall be assessed or adverse action taken against a participating utility for noncompliance with Commission orders associated with subsection (b) of this Section, subsection (c) of this Section, and Section 16-108.6 of this Act prior to such date. Each participating utility other than a combination utility shall be permitted, without penalty, a period of 12 months after such effective date to take actions required to ensure its infrastructure investment program is in compliance with subsection (b) of this Section and with Section 16-108.6 of this Act."

335. See ICC Docket No. 11-0721, Final Order on Rehearing 18 - 35, for commentary. Of the changes the Illinois General Assembly forced, ComEd would not have won profits on funding pensions absent Illinois General Assembly intervention, and the reconciliation interest additions would have been greatly smaller. Compare the Weighted Average Cost of Capital — usually in the six percentage points range, with the short-term interest rate approved in 11-0721 Final Order on Rehearing. Interestingly, the only year that resulted in a refund to customers because ComEd overcollected, 2012, calculated the interest at the customer deposit interest rate which is effectively 0%. See 12-0321 Final Order Compliance filing of the formula. The third change, earning profits off of the year-end asset additions from the capital spending instead of the year average, is, while currently unquantifiable without ComEd's help, another increase in profits and a depreciation of assets before they are in service.

336. Calculated off of each respective year's revenue requirement formula (ICC Docket Nos. 11-0721, 12-0321, 13-0318, 14-0312, 15-0287, 16-0259, 17-0196, 18-0808, and 19-0387), which is revised and populated in accordance with the respective Orders to determine the annual net revenue requirement and then submitted to the ICC as a compliance filing on eDocket under the respective docket number as Exhibit B. The reconciliation calculation uses page 6 (line 29 - Variance with Interest minus line 1e Variance with Collar); the pension calculation uses Pension Funding Cost found on page 12.

337. ComEd got the Illinois General Assembly to treat a two-year lag in revenue recovery as more than short-term debt. ICC Docket No. 11-0721, Final Order on Rehearing, 35. "the interest rate on the reconciliation amounts should not be inflated by treating this regulatory asset like longer term assets, as [ComEd's proposal] would do" under the "flawed premise that ComEd will be required to finance these balances with portions of equity and long-term debt."

338. ICC Docket No. 05-0597 Final Order, 39. Prior to March 2005 "the funding status of the [ComEd's] pension plan was at the very low end of the spectrum for large companies." In EIMA, ComEd sought to recover a profit, or incentive, from funding its pension obligations to its employees, which, while something the Commission had done in the past, had been repeatedly found by the Commission to only be appropriate if the company goes beyond fully funding its pensions. Otherwise the company is earning special treatment for something it should be doing anyway like maintaining the reliability of its distribution system.

339. Illinois 98th General Assembly, House Resolution 1146.

340. Ibid

341. Potential Nuclear Plant Closing in Illinois, Impacts and Market-Based Solutions January 5, 2015 Response to the Illinois General Assembly Concerning House Resolution 1146 Prepared by: Illinois Commerce Commission, Illinois Power Agency, Illinois Environmental Protection Agency, Illinois Department of Commerce and Economic Opportunity.

342. Exelon press release, Exelon Statement on Illinois Nuclear Power Plant Report, January 12, 2015. Maloney, Inside Exelon's last-minute push to save its nukes and remake the Illinois power sector, Utility Dive, November 18, 2016.

343. Illinois Clean Jobs Coalition website, Future Energy Jobs Act, access at https://ilcleanjobs.org/who-we-are/energy-jobs-act/

344. Daniels, Steve, Exelon wins its nuke bailout in biggest energy bill in 20 years, Crain's Chicago Business, December 1, 2016.

345. Commonwealth Edison Company, Smart Grid Advanced Metering Annual Implementation Progress Report, April 2019, C-13.

346. Public Act 097-0616 and Public Act 97-0646.

347. Ibid

348. Illinois Statewide SmartGrid Collaborative: Collaborative Report, September 30, 2010, 10.

349. See Sections 4.2 and 5.1.

350. ILCS 220 5/16-108.6(c). "After notice and hearing, the Commission shall, within 60 days of the filing of an AMI Plan, issue its order approving, or approving with modification, the AMI Plan if the Commission finds that the AMI Plan contains the information required in paragraphs (1) through (5) of this subsection (c) and further finds that the implementation of the AMI Plan will be cost-beneficial consistent with the principles established through the Illinois Smart Grid Collaborative, giving weight to the results of any Commission-approved pilot designed to examine the benefits and costs of AMI deployment."

351. 220 ILCS 5/16-108.6(c) "(1) the participating utility's Smart Grid AMI vision statement that is consistent with the goal of developing a cost-beneficial Smart Grid; (2) a statement of Smart Grid AMI strategy that includes a description of how the utility evaluates and prioritizes technology choices to create customer value, including a plan to enhance and enable customers' ability to take advantage of Smart Grid functions beginning at the time an account has billed successfully on the AMI network; (3) a deployment schedule and plan that includes deployment of AMI to all customers for a participating utility [...]; (4) annual milestones and metrics for the purposes of measuring the success of the AMI Plan in enabling Smart Grid functions; and enhancing consumer benefits from Smart Grid AMI; and (5) a plan for the consumer education to be implemented by the participating utility."

352. ICC Docket No. 12-0298, ComEd Brief on Exceptions on Rehearing, 3.

353. ILCS 220 5/16-108.6(c)

354. Black & Veatch, Advanced Metering Infrastructure (AMI) Evaluation Final Report, July 2011. Electric Power Research Institute, 2011 Technical Report: The Effect on Electricity Consumption of the Commonwealth Edison Customer Applications Program: Phase 2 Final Analysis, October 2011

355. ICC Docket No. 12-0298, ComEd Brief on Exceptions, 7-18.

356. ICC Docket No. 12-0298, Final Order, 39.

357. Ibid

358. Commonwealth Edison Company, Smart Grid Advanced Metering Annual Implementation Progress Report, April 2019, 1-2.

359. Illinois Compiled Statutes, ILCS 220 5/16-108.6(e)

360. ICC Docket No. 15-0284, Miguel del Valle, Dissent, Order on Remand, 1-2. "CUB's Complaint raises valid questions regarding ComEd's progress in implementing its AMI Plan, and the Order on Remand dismisses it without discussion of the merits of the issues raised or whether they warrant investigating."

361. ICC Docket No. 15-0284, Order on Remand, 4. Section 16-108.6(e)(1)(3).

362. ICC Docket No. 15-0284, Order on Remand, 4.

363. ICC Docket No. 17-0044, Miguel del Valle, Dissent, 12 . "See, e.g., Docket 16-0259, August 24, 2016 Evidentiary Hearing Transcript (Sep. 8, 2016) (after written testimony, the evidentiary hearing was a duration of only one hour long and only three contested issues, despite a rate increase of more than 5%—or $127 million)."

364. ICC Docket No. 19-0387, Final Order, 15.

365. Ibid, 13-14.

366. Ibid, 15.

367. Ibid, 15; this example is not perfect because it concerns estimated plant additions which are trued up, or reconciled two years later. But the same restrictions on the "inputs," which are what feed into the formula and dictate ComEd's profits, are operative for expenses or any other cost, which the Commission supposedly reviews for justness and reasonableness. Even if the Commission were able to review all these costs, and was able to get the information from the company to do so, it would still be limited to what should and should not be on that annual federal form.

368. Author calculations from the Commission's Rate Case History excel sheet accessible at https://icc.illinois.gov/downloads/public/RateCaseHistory.xlsx.

369. Ibid

370. ICC Docket No. 05-0597, Final Order, 2-3. Note some individual organizations, government agencies, and businesses participated in multiple petitions or appearances.

371. ICC Docket No.18-0808, Final Order, 2.

372. ICC Docket No. 19-0387, Final Order, 2.

373. ICC Docket No. 11-0721, Direct Testimony of Scott Hempling on Behalf of The Citizens Utility Board, January, 13, 2012, 15.

374. ICC Docket No. 11-0721, CUB Ex. 2.0, 10-11.

375. Daniels, Steve, ComEd execs getting Exelon stock again, Crain's Chicago Business, July 11, 2013.

376. ICC Docket No. 12-0298, ComEd Brief on Exceptions, 8.

377. Commonwealth Edison Company, Smart Grid Advanced Metering Annual Implementation Progress Report, April 2019, C-10 - C-12.

378. Illinois Statewide SmartGrid Collaborative: Collaborative Report, September 30, 2010, 10.

379. ICC Docket No.12-0298, Final Order, 5.

380. ComEd press release, City of Chicago Club Speech, Anne Pramaggiore, October 3, 2011.

381. Bishop, Greg, RICO lawsuit filed against Madigan, ComEd in federal court, The Center Square, August 10, 2020.

382. Hearing Transcript, In the Matter of the Merger of Exelon Corporation and Constellation Energy Group, Inc., Maryland Public Service Commission, Case No. 9271, October 31, 2011, 117.

383. Rachel Gold, Corri Waters, and Dan York, Leveraging Advanced Metering Infrastructure To Save Energy, American Council for an Energy-Efficient Economy, January 2020, 9.

384. Ibid

385. ICC Docket No. 14-0212, Final Order, 21.

386. Rachel Gold, Corri Waters, and Dan York, Leveraging Advanced Metering Infrastructure To Save Energy, American Council for an Energy-Efficient Economy, January 2020, vi.

387. ICC Docket No. 12-0298, Final Order, 3.

388. Ibid, 15-21.

389. Ibid

390. All quoted text from ICC Docket No. 12-0298 CUB/ELPC Ex. 1.3 REV, 1-3.

391. Commonwealth Edison Company, Smart Grid Advanced Metering Annual Implementation Progress Report, April 2019. The presentation is confusing with metrics and information in different places throughout its 550 pages. The Metrics and Milestones section of the AIPR is 29 pages; Attachment 1 is 57 pages; the Metric 22 Supplemental document is 32 pages; the Metric 9 Supplemental document is 14 pages. This does not count the Test bed report (Attachment 3) or the HAN Device Interoperability report (Attachment 5).

392. Commonwealth Edison Company, Smart Grid Advanced Metering Annual Implementation Progress Report, 2020, Appendix C — Revised Smart Grid Advanced Metering Infrastructure Deployment Plan, C-8.

393. Of course, as covered more below, these requirements are technically made of the company's AMI plan and its Smart Grid AMI Strategy and not the company itself. The law required ComEd's AMI Deployment plan include: "a statement of Smart Grid AMI strategy that includes a description of how the utility evaluates and prioritizes technology choices to create customer value, including a plan to enhance and enable customers' ability to take advantage of Smart Grid functions beginning at the time an account has billed successfully on the AMI network." From 220 ILCS 5/16-108.6(c)(2)

394. ICC Docket No. 12-0298, Final Order, 6.

395. Ibid, 5.

396. Ibid 4.

397. Commonwealth Edison Company, Smart Grid Advanced Metering Annual Implementation Progress Report, April 2019, 32. Commonwealth Edison Company, Smart Grid Advanced Metering Annual Implementation Progress Report, April 2020, 31. "Development of customer applications using AMI technology is rooted in the pillars of the SmartGridExchange initiative ("SGE"), which ComEd began in 2013. Following its principles to "Collaborate", "Facilitate", "Enable", "Inform", and "Deliver", the SGE guides the process of advancing ideas to pilots and of improving in-market programs."

398. ICC Docket No. 12-0298, Order on Rehearing, 17-19

399. ICC Docket No. 12-0298, Order on Rehearing, 10

400. ICC Docket No. 12-0298, ComEd Brief On Exceptions, 7.

401. Ibid, 8.

402. 220 ILCS 5/16-108.6(c)(2).

403. ICC Docket No. 12-0298, ComEd Brief on Exceptions, 8.

404. ILCS 220 5/16-108.6(a)

405. Commonwealth Edison Company, Smart Grid Advanced Metering Annual Implementation Progress Report, April 2019, C-6 - C-7: "ComEd has identified three categories of milestones and metrics to measure the rate and extent to which Smart Grid functions are enabled and customer benefits enhanced. First, ComEd's progress in deploying AMI as planned (e.g., meter installs, operating centers completed). Many Smart Grid functions and customer benefits derive directly from AMI deployment. Second, milestones that measure which Smart Grid functions, of those tied to AMI, that are enabled by ComEd's AMI system at the time. Most will be enabled immediately, but other programs (e.g., outage management) will become available during the Plan period. Third, whether developing potential consumer benefits are enabled. As new technologies and applications supportable by Smart Grid technology become extant in the consumer market, ComEd will assess its systems' ability to support those Applications." (Emphasis added)

406. ICC Docket No. 12-0298, Final Order, 19-21.

407. ICC Docket No. 12-0298, Final Order, 48. "Distributed Generation, while defined in 16- 108(a) as a benefit to be accrued as a result of implementing the Company's AMI Plan, it is not a requirement to be addressed in the AMI Plan in order for it to be approved."

408. Daniels, Steve, State tries again to promote urban solar, but ComEd still holds the cards, Crain's Chicago Business, May 3, 2016.

409. ICC Docket No. 12-0298, Final Order, 50.

410. ILCS 220 5/16-108.6(a) and (c).

411. ILCS 220 5/16-108.6(c).

412. See Section 3.2.1.

413. ILCS 220 5/16-108.6(c). "After notice and hearing, the Commission shall, within 60 days of the filing of an AMI Plan, issue its order approving, or approving with modification, the AMI Plan if the Commission finds that the AMI Plan contains the information required…" ICC Docket No. 12-0298, Final Order, 39.

414. ICC Docket No. 12-0298, Final Order, 39.

415. ICC Docket No. 12-0298, ComEd Brief on Exceptions on Rehearing, 3.

416. Illinois Commerce Commission, Plug In Illinois website, About Electric Choice, access at https://www.pluginillinois.org/about.aspx

417. Illinois Competitive Energy Association website, Electric and Gas Choice Frequently Asked Questions, access at https://www.illinoiscompetitiveenergy.com/electric-gas-choice-faq/

418. ICC Docket No. 12-0298, ComEd Brief on Exceptions, 4.

419. See Section 5.2.4.

420. Ibid, 4.

421. Illinois General Assembly, Public Act 90-0561. Illinois Compiled Statutes 220 ILCS 5/16-103(e).

422. 220 ILCS 5/16-103(e) "(e) The Commission shall not require an electric utility to offer any tariffed service other than the services required by this Section, and shall not require an electric utility to offer any competitive service." ICC Docket No. 05-0597, Final Order, 292. "In the Commission's view, CES' UCB proposal would require ComEd to provide a new competitive service and under Section 16-103(e) of the Act, the Commission does not have authority to compel ComEd to provide such services."

423. Illinois Administrative Code, Section 452.240 Advertising, Marketing, and Customer Retention Efforts. "a) [ComEd] shall not promote, advertise or market with regard to the offering or provision of any retail electric supply service."

424. ICC Docket No. 15-0100, Petition to Initiate a Proceeding to Investigate the Adoption of a Utility Time of Use Rate. This docket demonstrates a live debate on the Commission's authority to order an electric utility to adopt a "competitive service," a time-of-use rate.

425. ICC Docket No 15-0100, Final Order, 2-3. "ComEd, RESA and Ameren argue that Section 16-103 of the Act bars the Commission from requiring new tariffed services not required by statute. 220 ILCS 5/16-103(e). [...] Staff and Ameren state that the Commission also expressed concern over whether a TOU rate is permissible under Part 452, Standards of Conduct and Functional Separation, the Commission's rules for integrated distribution companies. Docket 12-0298, Order at 44. Staff argues waivers of these rules have only been allowed when the programs at issue were statutorily required, i.e. real-time pricing ("RTP") and peak time rebate ("PTR"). See 220 ILCS 5/16-107; 220 ILCS 16-108.6(g)."

426. ICC Docket No. 12-0298, ComEd Brief on exceptions, 4.

427. ICC Docket No. 12-0298, Final Order, 4.

428. Illinois Compiled Statutes 220 ILCS 5/16-108.6(g). Illinois 99th General Assembly, Senate Bill 1585, Senate Amendment 2, Sec. 16-108.9. Microgrid pilot.

429. Illinois 99th General Assembly, Senate Bill 2814, House Amendment 4, 24.

430. ICC Docket No. 17-0331, Final Order, 17-19, 59, 75.

431. Ibid, 79.

432. See ICC Docket No. 15-0100 Generally (almost four years after EIMA was passed) and ICC Docket 12-0298 Final Order for the imposition of workshops; and Docket No. 13-0285 Final Order page 15: "ComEd correctly points out that the current proceeding is not the legal forum in which this issue may be raised. Additionally, ComEd is currently participating in workshops to discuss enabling the competitive market for electricity in relation to Time of Use rates. The wiser course of action would be to allow those workshops to continue so that a methodology can develop that does not disrupt the competitive market. That methodology cannot evolve through a Commission Order. The Commission therefore declines to require ComEd to offer the Time of Use rates that CUB/ELPC describe. On Exceptions CUB/ELPC

argue, essentially, that the conclusion above is incorrect because this issue touches directly on the consumer benefits that AMI is believed to deliver. CUB/ELPC Brief on Exceptions at 4-5. This is undoubtedly correct. However, CUB and the ELPC do not explain how it is within the statutory scope for this proceeding. This argument lacks merit."

433. ICC Docket No. 13-0285, Final Order, 17. "While the Commission realizes the potential benefits to AMI that the GBC application could have, the proposal by CUB/ELPC is not adopted as this matter is beyond the scope for this proceeding. [...] CUB/ELPC do not explain how statutory authority to approve or not approve a particular plan, which is essentially the statutory authority here, (See, 220 ILCS 5/16-108.6(e)), includes the authority to compel a utility to use a certain type of software."

434. ICC Docket No. 13-0285, Final Order, 12. "ComEd correctly points out that additional development of distributed generation enhancements and interconnection are beyond the scope of this proceeding. The authority granted the Commission in this regard is to conduct an investigation regarding ComEd's progress in implementing its AMI Plan. 220 ILCS 5/16-108.6(e)."

435. Hearing Transcript, In the Matter of the Merger of Exelon Corporation and Constellation Energy Group, Inc., Maryland Public Service Commission, Case No. 9271, October 31, 2011, 117.

436. ComEd Press release, City of Chicago Club Speech, Anne Pramaggiore, October 3, 2011.

437. Transcript, Exelon's Rowe calls on Congress to allow EPA to move forward on emissions regulation, E & E News, March 9, 2011.

438. One example comes from comparing the $50 million cost per microgrid included in earlier drafts of FEJA, (later removed in the negotiating process,) to the estimated $25 million cost of a proposed microgrid at the Commission. Illinois 99th General Assembly, Senate Bill 1585, Senate Amendment 2, Sec. 16-108.9(b).17-0331, Final Order, 59.; Daniels, Steve, ComEd gets state approval of $25 million Bronzeville mini-power grid, Crain's Chicago Business, February 28, 2018.

439. Liberty Consulting Group, Audit of Commonwealth Edison T&D Revenue Requirements, Final Report, October 4, 2002, I-4.

440. Environment Illinois Press Release, Environmentalists Applaud Environmental and Economic Victories in Smart Grid Bill, October 26, 2011.

441. Replaced by the new Section 220 ILCS 5/8-103B in FEJA.

442. ICC Docket No.01-0423, Final Order, 57. Liberty Consulting Group, Audit of Commonwealth Edison T&D Revenue Requirements, Final Report, October 4, 2002, I-4.

443. Image captured from ComEd web advertisement. Access at https://capitolfax.com/wp-content/FINAL300.gif

444. Liberty Consulting Group, Audit of Commonwealth Edison T&D Revenue Requirements, Final Report, October 4, 2002, I-51-I-52.

445. Illinois Compiled Statute 220 ILCS 5/1-102

446. Compare Commonwealth Edison Company's Multi-Year Performance Metrics Annual Report for the Year Ending December 31, 2019. and Commonwealth Edison Company's Infrastructure Investment Plan, 2020 Annual Update, April 1, 2002. to Liberty Consulting Group, Audit of Commonwealth Edison T&D Revenue Requirements, Final Report, October 4, 2002, I-3 - I-5, I-52 - I-54, III-1 - III-5.

447. 220 ILCS 5/16-108.5(f)

448. 2019 Commonwealth Edison: Electric Reliability Report & Customer Satisfaction Survey, Introduction, 1. Commonwealth Edison Company's Multi-Year Performance Metrics Annual Report for the Year Ending

449. ICC Docket No.01-0423, Final Order, 57.

450. 220 ILCS 5/16-108.5(b)(1)(A)(iv)

451. Commonwealth Edison Company's Infrastructure Investment Plan, 2012, 8.

452. 220 ILCS 5/16-108.5(b)(1)(B)

453. ICC Docket No. 07-0566, Final Order, 130

454. Commonwealth Edison Company's Infrastructure Investment Plan, 2012, 8, 12, 66-71.

455. This Is the total figure if distributed automation is included.

456. Gheorghiu, Iulia, Dominion tries again on rejected AMI plan amid Virginia's new clean energy law, Utility Dive, April 28, 2020. St John, Jeff, Why Most US Utilities Are Failing to Make the Most of Their Smart Meters, Green Tech Media, January 10, 2020.

457. Transcript, Exelon's Rowe calls on Congress to allow EPA to move forward on emissions regulation, E & E News, March 9, 2011.

458. ICC Docket No. 12-0298, ComEd Brief on Exceptions, 20, 29.

459. See for example, 220 ILCS 5/16-108.5 (f) and Black & Veatch, Advanced Metering Infrastructure (AMI) Evaluation Final Report, July 2011, Page 27, 30

460. Metric 9 Supplement to Commonwealth Edison Company's 2020 Smart Grid Advanced Metering Annual Implementation Progress Report

461. Commonwealth Edison Company's Multi-Year Performance Metrics Annual Report for the Year Ending December 31, 2019, 18-29.

462. Ibid.

463. ICC Docket No. 12-0298, Final Order, 5.

464. Gheorghiu, Iulia, Dominion tries again on rejected AMI plan amid Virginia's new clean energy law, Utility Dive, April 28, 2020.

465. See, for example, Commonwealth Edison Company, Smart Grid Advanced Metering Annual Implementation Progress Report, April 2020, C-4. "Second, milestones that measure which Smart Grid functions, of those tied to AMI, that are enabled by ComEd's AMI system at the time. Most will be enabled immediately, but other programs (e.g., outage management) will become available during the Plan period," and see Section 5.2.1.

466. ICC Docket No. 14-0507, Final Order, 5.

467. Ibid.

468. Examples of different data considerations: include the types of data, volume measured in kWh, demand measured in KW, size of the interval duration that i measured (e.g., 5 mins, 15 mins), power quality data (such as voltage), the format of the data (such as XML, machine-readable), the method of delivery (straight from the meter, through a web portal, and/or mobile application), and timeliness of delivery of data of different qualities (is usable data available in real-time, within 30 mins, is billing-quality data available the next day or at the end of the billing period).

469. Illinois Statewide SmartGrid Collaborative: Collaborative Report, September 30, 2010, 146-149.

470. Commonwealth Edison Company, Smart Grid Advanced Metering Annual Implementation Progress Report, April 2019, C - 10.

471. Illinois Statewide SmartGrid Collaborative: Collaborative Report, September 30, 2010, 147-148. "3. Customer authorization should continue to be required for access to any customer specific Meter Data by a third party. [...] 5. The utility should provide electronic access to Billing Data and Usage Data to customer-authorized third parties within a reasonable period of time from receipt of authorization. [...] 6. A service and supply agreement with a customer should contain an explicit authorization for the ARES to access and use Usage Data and Billing Data for billing purposes."

472. ICC Docket No. 13-0506, Order on Rehearing, 10-12. Commonwealth Edison Company, Smart Grid Advanced Metering Annual Implementation Progress Report, April 2019, A-6. "In the Data Privacy Order on Rehearing, the Commission held that Section 16-122 and Section 16-108.6 of the PUA do not prohibit the release of anonymous customer usage information in accordance with the data protocol adopted in the Final Order which protects customer privacy and is in the public interest." The ISSGC contemplated anonymous data as aggregated data. Illinois Statewide SmartGrid Collaborative: Collaborative Report, September 30, 2010, 149.

473. ICC Docket No. 14-0507, Final Order, 2-4 "Section 16-108.6 of the Public Utilities Act, 220 ILCS 5 ("PUA") provides, in relevant part: [...] The AMI Plan shall secure the privacy of personal information and

474. Commonwealth Edison Company, Smart Grid Advanced Metering Annual Implementation Progress Report, April 2019, A-5. "Beginning in April 2013 and continuing on throughout 2014, 2015 and 2016, Staff hosted a series of "Enabling the Market" workshops that were attended by utilities, consumer groups, Retail Electric Suppliers ("RESs"), and other interested stakeholders. In addition to the items the Commission directed the parties to address, the workshops covered several AMI-related topics, including the release of customer-specific information by electric utilities and enabling RESs to offer TOU and other dynamic pricing products, which eventually led to the development of ComEd's Rider RMUD – Residential Meter Usage Data ("Rider RMUD") [...]"

475. ICC Docket No. 17-0123, Final Order, 36.

476. Ibid, 1-2. "On March 15, 2017, the Illinois Commerce Commission ("Commission") issued an order ("Initiating Order") initiating this proceeding to investigate a non-Retail Electric Supplier ("RES") third-party warrant process for access to customer

Advanced Metering Infrastructure ("AMI") interval meter data. Prior to the initiation of this proceeding, on August 8, 2014, the Citizens Utility Board ("CUB") and the Environmental Defense Fund ("EDF") (jointly, "CUB/EDF") filed a petition to initiate a proceeding to adopt the Illinois Open Data Access Framework ("Framework") designed to provide "governing standards for access to customer usage data by customers, utilities, and third parties (any party other than the customer and utility)." The Citizens Utility Bd. and The Envtl. Def. Fund, Proceeding to Adopt the Ill. Open Data Access Framework, Docket No. 14-0507, Petition (Aug. 15, 2014). On December 17, 2014, CUB/EDF filed a Motion to Stay Docket No. 14-0507. Pursuant to the Motion to Stay, Commission Staff ("Staff") in the Policy Division submitted a Report to the Commission dated January 15, 2015, recommending that the Commission open a docket to address the need for, and form of, any customer authorization required for access by non-RES third-parties to AMI interval meter data. In response to the Staff Report, on January 28, 2015, the Commission initiated Docket No. 15-0073 to investigate the customer authorization required for non-RES third-parties to access AMI data. Ill. Commerce Comm'n On Its Own Motion, Investigation into the Customer Authorization Required for Access by Third Parties Other Than Retail Electric Suppliers to Advanced Metering Infrastructure Interval Meter Data, Docket No. 15-0073, Initiating Order (Jan. 28, 2015). In its final Order in Docket No. 15-0073, the Commission addressed, inter alia, the issue of a third-party warrant process. In the Order, the Commission approved only an authorization received by the utility directly from a customer and declined to approve a third-party warrant process. Docket No. 15-0073, Order at 27-28 (Mar. 23, 2016). The Commission concluded that a warrant process may be possible with appropriate safeguards and processes and directed that the issue of a third-party warrant process be considered in Docket No. 14-0507. Following several meetings and other discussions by the parties on the issue of a third-party warrant process in Docket No. 14-0507, on February 27, 2017, CUB/EDF filed a Joint Motion for Partial Dismissal Pursuant to Commission Order ("Joint Motion"). The Joint Motion stated that, upon the granting of the Joint Motion, Staff would submit a report within 30 days to the Commission recommending that the Commission open a docket pursuant to Section 10-101 of the Public Utilities Act ("Act") to investigate a non-RES third-party warrant process. The Joint Motion further stated that, after reviewing the legal and procedural issues involved, the parties were unable to reach agreement on an appropriate third-party warrant process. The parties concluded that the issue of an appropriate non-RES third-party warrant process would best be considered in a new docket, thereby permitting the parties to continue to pursue settlement of the remaining technical issues pertaining to the Framework in Docket No. 14-0507. In a Staff Report from the Commission's Policy Division dated March 1, 2017, Staff recommended that this new proceeding address, without being limited to, a list of issues as described in the Joint Motion."

477. ICC Docket No. 13-0506: Investigation of Applicability of Sections 16-122 and 16-108.6 of the Public Utilities Act; ICC Docket No. 14-0507 — Proceeding to Adopt the Illinois Open Data Access Framework; ICC Docket 14-0701: Investigation of Standard Terms for Customer Authorization of Access to Interval Usage Data for Non-Billing Purposes; ICC Docket No. 15-0073: Investigation into the Customer Authorization Required for Access by Third Parties Other Than Retail Electric Suppliers to Advanced Metering Infrastructure Interval Meter Data; ICC Docket No. 17-0123: Investigation into a Non-RES Third-Party Warrant Process for Access to Customer Advanced Metering Infrastructure Interval Meter Data.

478. ICC Docket No. 14-0507, Final Order, 5-6.

479. Ibid, 5. The Commission agreed Standards would be good: "The Commission agrees with the Parties that it is important that standards and expectations are in place for the utilities, their customers and third parties on what data will be collected using the AMI system and how that data can be used."

480. ICC Docket No. 14-0507, Final Order, 6. "the Open Data Access Framework provides beneficial considerations for data collection, security, management and means by which customers and third parties can access AMI data; and (5) the Data Roadmaps of Ameren and ComEd represent sound and appropriate plans to develop various systems and services around AMI data for customers and third parties.IT IS THEREFORE ORDERED that the Open Data Access Framework be considered by the utilities as they design new AMI-based data services, and by all stakeholders in discussions throughout the course of AMI deployment around how AMI data can be used to enable the market for the development of products and services for the customers of Ameren and ComEd."

481. Ibid, 5.

482. Gavin Bade, Utility Dive, Chicago's REV: How ComEd is reinventing itself as a smart energy platform, , March 31, 2016.

483. Gheorghiu, Iulia, Dominion tries again on rejected AMI plan amid Virginia's new clean energy law, Utility Dive, April 28, 2020.

484. Of the 103 offers available at Plug In Illinois none of them are Time-based rates like TOU. https://www.pluginillinois.org/offers.aspx?said=1 (accessed 8/16/2020)

485. Commonwealth Edison Company, Smart Grid Advanced Metering Annual Implementation Progress Report, April 2019, 59.

486. Baatz, Brendon, "Rate Design Matters: The Intersection of Residential Rate Design and Energy Efficiency," American Council for an Energy-Efficient Economy, March, 2017, 9.

487. Smart Grid Advisory Council – Guidance Regarding Implementation of Time of Use Rates March 14, 2012, 4-5. Ameren still does not offer time of use rates.

488. ICC Docket No. 12-0298, Final Order 41, 44-45. ICC Docket No. 13-0285, Final Order, 14-17. ICC Docket No. 15-0100, Final Order, 2-4, 6-8.

489. ICC Docket No. 15-0100, Petition to Initiate a Proceeding to Investigate the Adoption of a Utility Time of Use Rate.

490. For example, Commonwealth Edison Company, Smart Grid Advanced Metering Annual Implementation Progress Report, April 2019, ATT 1-11 and 12. ICC Docket No. 12-0298, Final Order 41, 44-45. ICC Docket No. 13-0285, Final Order, 14-17. ICC Docket No. 15-0100, Final Order, 2-4, 6-8.

491. See ICC Docket No. 15-0100 and ICC Docket 12-0298, Final Order for the imposition of workshops and Docket No. 13-0285, Final Order, 15: "ComEd correctly points out that the current proceeding is not the legal forum in which this issue may be raised. Additionally, ComEd is currently participating in workshops to discuss enabling the competitive market for electricity in relation to Time of Use rates. The wiser course of action would be to allow those workshops to continue so that a methodology can develop that does not disrupt the competitive market. That methodology cannot evolve through a Commission Order. The Commission therefore declines to require ComEd to offer the Time of Use rates that CUB/ELPC describe. On Exceptions CUB/ELPC argue, essentially, that the conclusion above is incorrect because this issue touches directly on the consumer benefits that AMI is believed to deliver. CUB/ELPC Brief on Exceptions at 4-5. This is undoubtedly correct. However, CUB and the ELPC do not explain how it is within the statutory scope for this proceeding. This argument lacks merit."

492. ICC Docket No. 18-1824, Final Order, 1.

493. Commonwealth Edison Company, Smart Grid Advanced Metering Annual Implementation Progress Report, April 2019, 59. "... ComEd has developed, and filed with ICC, a four-year Residential Time of Use Pricing Pilot. The TOU pilot provides three fixed pricing periods, which encourage customers to use less during the system peak hours, shifting that consumption to the off-peak hours. The pilot seeks to determine if TOU pricing 1) encourages customers to reduce or shift electricity usage from periods when prices are typically higher in the wholesale electricity market 2) motivates less electricity usage during periods of peak demand in the distribution and transmission systems 3) encourages electric vehicle owners to charge their electric vehicles in the early morning hours and 4) increases overall customer satisfaction with their electric service."

494. Commonwealth Edison Company, Smart Grid Advanced Metering Annual Implementation Progress Report, April 2019, Attachment 1, 11-12. "After years of carefully designed and evaluated pilots, time-varying rates may be at a turning point. In 2019, the three California IOU's (PG&E, SDG&E, and SCE) will be implementing opt-out time of use (TOU) rates for all residential customers (over 20 million). Historically, utilities have offered time-varying rates to residential customers on an opt-in basis due to concerns from regulators around the impact on electric bills. Evaluation of TOU rate pilots by the Brattle Group, however, have found that customers demonstrate sufficient understanding of TOU rates and an ability to shift energy usage. If evidence continues to support the benefits of well-designed TOU rates in managing peak loads and in giving customers opportunities to save money, more states are likely to make time-varying rates the default option. In the California utilities TOU pilots, 90 – 99% of participants chose to remain on the rate, suggesting that an opt-out program structure combined with education may be an effective way to scale." (footnote removed)

495. ICC Docket No. 12-0298, ComEd Brief on Exceptions, 15.

496. See sidebar: EIMA was the first victory for an unparalleled political influence operation. Daniels, Steve, Run your dishwasher at the wrong time, watch your electric bill soar?, Crain's Chicago Business, October 112, 2016.

497. ICC Docket No. 18-1772, Final Order, 1.

498. ICC Docket No. 12-0484, Final Order, 1-2.

499. ICC Docket No. 18-1772, Final Order, 1.

500. Ibid 1-5.

501. ComEd, Hourly Pricing web page, access at: https://www.comed.com/WaysToSave/ForYourHome/Pages/HourlyPricing.aspx

502. Elevate Energy, ComEd Hourly ComEd Hourly Pricing Performance vs. Performance vs. Performance vs. Fixed-Price Rate During 2013, August 2015. Zethmayr, Jeff and Kolata, David, The Costs and Benefits of Real Time Pricing, The Citizens Utility Board and Environmental Defense Fund, November 14, 2017, 3.

503. For example see Metric #7 in ComEd's Smart Grid Advanced Metering Annual Implementation Progress Reports.

504. Illinois Compiled Statutes, 220 ILCS 5/16-108.6(g)

505. Baatz, Brendon.Rate Design Matters: The Intersection of Residential Rate Design and Energy Efficiency, American Council for an Energy-Efficient Economy, March 2017, iv.

506. ComEd, Peak Times Saving web page, access at https://www.comed.com/WaysToSave/ForYourHome/Pages/PeakTimeSavings.aspx.

507. Commonwealth Edison Company, Smart Grid Advanced Metering Annual Implementation Progress Report, April 2020, A-9.

508. Among other reasons, the bill credits do not come from Exelon or ComEd, but rather are paid for by the PJM regional transmission capacity markets. ComEd bundles all of its Peak Time Savings customers together and bids into the market, using the proceeds to pay for the program.

509. ComEd, Peak Time Savings FAQ web page, access at https://www.comed.com/SmartEnergy/InnovationTechnology/Pages/PeakTimeSavingsFAQ.aspx

510. This estimate is derived by dividing $12 by $86 and $123, the two average annual savings from real time prices cited above.

511. One of the authors, over two years and one month in the program, has saved 25% over that time with modest behavioral changes.

512. ICC Docket No. 17-0044, Miguel Del-Valle, Dissent, 14.

513. ICC Docket No. 12-0298, ComEd Brief on Exceptions, 10

514. Commonwealth Edison Company, Smart Grid Advanced Metering Annual Implementation Progress Report, April 2019, C-87.

515. Commonwealth Edison Smart Grid Test Bed Evaluation, Quanta Technology, LLC, March 24, 2017, 10. "G&W's Accusense voltage sensing devices were installed in the Test Bed. These devices collect critical voltage data for optimizing grid power delivery and reliability. [...] In collaboration with the Illinois Institute of Technology ("IIT") and Silver Spring Networks ("SSN"), eluminocity piloted their Light & Charge system, a combined smart LED streetlight and electric vehicle charging unit, which eluminocity developed in cooperation with automaker BMW."

516. Commonwealth Edison Smart Grid Test Bed Evaluation, Quanta Technology, LLC, March 24, 2017, iii. "While the actual operation of the test bed, review of projects, acceptance criteria and rejection for cause, appears to be working as intended, the results of the four year experiment in establishing a Smart Grid Test Bed may not be meeting the goals presented in the legislation. It would seem that most products and programs would need to be "utility ready" before installation in the test bed would be allowed. That requires prior testing and certification, and therefore commercial readiness. The test bed, as established, appears to be more of a marketing value to the applicants than a means of promoting the development of new technologies. This might be due to the limitations of testing a new technology on an actual system that is required to maintain service levels to its customers."

517. Ibid

518. Ibid, 14-15: "The general purpose of the Test Bed stated within ComEd's presented plan is in accordance with the legislation. However, in the presentation of its specific objectives, ComEd uses the qualifier, "ready for utility system installation and demonstration testing." This qualifier limits the acceptable projects to those that have proven functional capability and are seeking verification of their adaptability to utility systems. While this qualification falls within the objectives of the legislation, the emphasis would seem to be

on "demonstration" of an applicant's product or program, rather than on any "testing" as mentioned within the legislative objectives. [...] In general, the ComEd plan meets the intent of Illinois Legislation 220 ILCS 5/16-108.8. The emphasis on demonstration versus testing can be attributed to the need to place equipment and programs on or within an operating electric delivery system where operational performance must be previously demonstrated in a test environment. This characteristic of the ComEd plan can be viewed as a constraint of the original legislation rather than an omission."

519. Ibid, 8: "The rejected projects all succumbed to the limitations noted in the original legislation, and reiterated in the ComEd information available to the applicants. They either utilized equipment that was not compatible with the materials and equipment presently utilized by ComEd on its electric delivery system, were either commercially available or utilized existing, proven technologies, would have been cost prohibitive to integrate into the ComEd system, or, used technology that was not ready for a live test on an operating electric delivery system."

520. Commonwealth Edison Smart Grid Test Bed Evaluation, Quanta Technology, LLC, March 24, 2017, 7, 14.

521. Commonwealth Edison Company, Smart Grid Advanced Metering Annual Implementation Progress Report, April 2019, 45.

522. Ibid, C-83.

523. Ibid, C-84.

524. ICC Docket No. 13-0285, Final Order, 16 "ComEd further avers that it has not yet developed the Green Button: Connect My Data ("GBC") application for use by ComEd customers. Instead, ComEd is in the process of monitoring the Green Button: Connect My Data applications that are currently being piloted by other utilities."

525. Ibid, 17: "While the Commission realizes the potential benefits to AMI that the GBC application could have, the proposal by CUB/ELPC is not adopted as this matter is beyond the scope for this proceeding. [...] CUB/ELPC do not explain how statutory authority to approve or not approve a particular plan, which is essentially the statutory authority here, (See, 220 ILCS 5/16-108.6(e)), includes the authority to compel a utility to use a certain type of software."

526. Commonwealth Edison Company, Smart Grid Advanced Metering Annual Implementation Progress Report, April 2019, 45.

527. ICC Docket No. 17-0123, Final Order, 15-16: "ICEA suggests that rather than adopt the JPP, the Commission should re-visit Green Button Connect. The record shows that only three third-parties have registered for Green Button Connect in ComEd's territory and none in Ameren's. The Commission considers the problems that are identified as reasons for adopting the JPP to in reality be reasons to explore an update to Green Button Connect. [...] In their BOEs, CUB/EDF/Elevate and Mission:data assert that there is no record evidence that Green Button Connect can accommodate phone and paper authorizations. CUB/EDF/Elevate RBOE at 4; Mission:data RBOE at 7-9. In its RBOE, Staff states that it understands that a telephone authorization process currently exists. Staff RBOE at 4. In their RBOEs, Ameren and ComEd assert that any updates to Green Button Connect are outside the scope of this docket. Ameren RBOE at 2; ComEd RBOE at 3-4. For the remaining reasons discussed in this Order, the JPP is not adopted, but this controversy lends further support to the conclusion that an update to Green Button Connect may need to be explored."

528. Commonwealth Edison Company, Smart Grid Advanced Metering Annual Implementation Progress Report, April 2020, A-8.

529. Daniels, Steve, Class-action suit seeks customer reimbursement from ComEd, Crain's Chicago Business, July 28, 2020.

530. Citizens Utility Board, What is the Future Energy Jobs Act?, 1.

531. Public Act 99-0906, modifying the definition of "Energy Efficiency" in 20 ILCS 3855/1-10. ILCS 220 5/8-103B(b-20).

532. ComEd press release, City of Chicago Club Speech, Anne Pramaggiore, October 3, 2011, 5-7.

533. Commonwealth Edison Company, Smart Grid Advanced Metering Annual Implementation Progress Report, April 2019, C-77 - C-80.

534. ICC Docket No. 12-0298 Final Order, 50.

535. Pramaggiore, Anne and Jensen, Val, Building the Utility Platform, Fortnightly Magazine, July 2017.

536. Daniels, Steve, State tries again to promote urban solar, but ComEd still holds the cards, Crain's Chicago Business, May 3, 2016.

537. Daniels, Steve, Clean-energy law revamp is dead, Crain's Chicago Business, May 15, 2014.

538. [Footnote from original, see note 541] "In re CUB/EDF Petition for Community Solar Riders, Docket No. 15-0156, ComEd Motion to Dismiss at 5-6 (April 30, 2015) ("ComEd has considered the provision of [net meter aggregation, a.k.a. community solar], but has not elected to provide such services at this time. ").

539. [Footnote from original, see note 541] ComEd argued that it had significant concerns about revenue loss. Id. ("Until the ratemaking, cost recovery, and cost shifting issues stemming from the reliance on kilowatthour-based rates for the recovery of distribution facilities and certain supply costs and current net metering policies are addressed, the time is not right to pursue an expansion of net metering services into virtual net metering.").

540. [Footnote from original, see note 541] See In re Net Metering Rulemaking, Docket No. 15-0273, Second Notice Order at 39-41 (Nov. 12, 2015) ("It should not be within the purview of the entity not supplying the electricity [i.e. ComEd] to frustrate the purpose of the net metering program by disallowing meter aggregation [between third parties and customers]."); Docket No. 15-0273, Memorialization of Ex Parte Communication – Attachment (Mar. 3, 2016) (ComEd letter to JCAR arguing the Commission misinterprets the term "electricity provider"); Docket No. 15-0273, Final Order (receiving objection and modification from JCAR, and accepting modification; but see Docket No. 15-0273, Commissioner Opinion (Comm'r del Valle Dissenting) (Apr. 27, 2016) (explaining that "electricity provider" is an ambiguous term and properly clarified by the Second Notice Order and JCAR's modification should have been rejected). "

541. ICC Docket No 17-0044, Miguel del Valle, Dissent, 12. Footnotes in original.

542. Daniels, Steve, Clean-energy law revamp is dead, Crain's Chicago Business, May 15, 2014. Daniels, Steve, State tries again to promote urban solar, but ComEd still holds the cards, Crain's Chicago Business, May 3, 2016.

543. Citizens Utility Board, What is the Future Energy Jobs Act?, 1-2.

544. See: https://www.pathto100.net/

545. Illinois Statewide Smart Grid Collaborative, Collaborative Report, September 30, 2010, 107-112.

546. Commonwealth Edison Company, Smart Grid Advanced Metering Annual Implementation Progress Report, April 2015, A-10: "The ICC, in Docket No. 13-0495, stated that "A review of the record leads the Commission to believe that a VO feasibility study should be pursued and could in fact result in many direct and indirect benefits." The order also stated that "The record is also not clear whether there is already a budget earmarked for voltage optimization in ComEd's Smart Grid plan. If there is already, it should go forward; if not the Company is directed to include it with the next AMI plan filing." In accordance with ComEd's 2014 AIPR, a Voltage Optimization Feasibility study was completed by Applied Energy Group ("AEG") in December 2014."

547. Ibid, A-11 "The high level estimated potential Total Resource Cost (TRC) benefit cost ratio for viable feeders ranges from 2.2 to 2.3"

548. Ibid, A-10 - A-140.

549. Ibid, A-12.

550. Ibid.

551. Ibid, A-13.

552. Ibid, A-13.

553. Public Act 99-0906, modifying the definition of "Energy Efficiency" in 20 ILCS 3855/1-10. ILCS 220 5/8-103B(b-20).

554. ILCS 220 5/8-103B(g)(7)

555. ICC Docket No. 13-0495, Final Order, 95. "A review of the record leads the Commission to believe that a VO feasibility study should be pursued and could in fact result in many direct and indirect benefits. The Commission agrees that it would qualify as a Section 8-103 energy efficiency measure because it could result in lowered end-use electricity, but it appears that it should be incorporated into the Company's smart grid plan. This is the appropriate route not only because of the budget constraints for EE plans, but also because it is made possible by the grid upgrades being rolled out by the Company and it would ensure that the supply side is managed efficiently. The record is also not clear whether there is already a

556. Daniels, Steve, With smart grid completed, ComEd budgets as if it never happened, Crain's Chicago Business, February 15, 2020.

557. ICC Docket No. 13-0495, Final Order, 92.

558. ILCS 220 5/16-108.5 and ILCS 220 5/16-108.6

559. Though the The North American Energy Standards Board's Energy Services Provider Interface standard started GBC, the Green Button Alliance has a Test and Verification Program to get Green Button Connect My Data certified: https://www.greenbuttonalliance.org/certification

560. Daniels, Steve, Exelon confirms it's looking at a bust-up, Crain's Chicago Business, November 3, 2020.

561. United States of America vs. Commonwealth Edison Company, Deferred Prosecution Agreement, July 17, 2020, 9, 10, Attachment A, Attachment B.