Attachment 3

Attachment 3

The Prepared Direct Testimony of Joshua C. Nowak

Exhibit NYT-0001

UNITED STATES OF AMERICA BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION

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New York Transmission Owners

Docket No. ER21-___-000

PREPARED DIRECT TESTIMONY OF JOSHUA C. NOWAK ON BEHALF OF NEW YORK TRANSMISSION OWNERS

April 9, 2021

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UNITED STATES OF AMERICA BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION

New York Transmission Owners) Docket No. ER21-___-000

PREPARED DIRECT TESTIMONY OF <u>Joshua C. Nowak</u>

I. INTRODUCTION 1

2	Q.	Please state your name, affiliation, and business address.
3	A.	My name is Joshua C. Nowak. I am employed by Concentric Energy Advisors, Inc.
4		("Concentric") as an Assistant Vice President. My business address is 293 Boston Post
5		Road West, Suite 500, Marlborough, Massachusetts 01752.
6		A. Qualifications
7	Q.	Please describe your background and professional experience in the energy and utility
8		industries.
9	A.	I hold a Bachelor's degree in Economics from Boston College. I have more than 10 years
10		of experience consulting to the energy industry. As a consultant, I provide economic,
11		financial, and strategic advisory services to clients in regulated utility industries. I have
12		provided testimony regarding financial matters before multiple regulatory agencies. I have
13		advised numerous energy and utility clients on a wide range of financial and economic
14		issues with primary concentrations in cost of capital and utility rate matters. Many of these
15		assignments have included the determination of the cost of capital for valuation and

1		ratemaking purposes. Prior to joining Concentric in 2018, I was employed by National
2		Grid USA where I was responsible for regulatory strategy and cost of capital matters across
3		the company's multiple U.S. operating companies and service territories. A summary of
4		my professional and educational background is presented in Appendix A.
5	Q.	Please describe Concentric's activities in energy and utility engagements.
6	A.	Concentric provides financial and economic advisory services to many energy and utility
7		clients across North America. Our regulatory, economic, and market analysis services
8		include utility ratemaking and regulatory advisory services; energy market assessments;
9		market entry and exit analysis; corporate and business unit strategy development; demand
10		forecasting; resource planning; and energy contract negotiations. Our financial advisory
11		activities include buy and sell-side merger, acquisition, and divestiture assignments; due
12		diligence and valuation assignments; project and corporate finance services; and
13		transaction support services. In addition, we provide litigation support services on a wide
14		range of financial and economic issues on behalf of clients throughout North America.
15	Q.	On whose behalf are you submitting this testimony?
16	A.	I am submitting this Direct Testimony on behalf of Central Hudson Gas & Electric
17		Corporation ("Central Hudson"), Consolidated Edison Company of New York, Inc. ("Con
18		Edison" or "CECONY"), Niagara Mohawk Power Corporation d/b/a National Grid
19		("National Grid"), New York State Electric & Gas Corporation ("NYSEG"), Orange and
20		Rockland Utilities, Inc. ("O&R"), and Rochester Gas and Electric Corporation ("RG&E")
21		collectively referred to as the "Transmission Owners," "TOs," or "Companies."

1	B. Summary of Testimony				
2	Q.	What is the purpose of your Prepared Direct Testimony?			
3	A.	The purpose of my Prepared Direct Testimony is to present evidence of the uncompensated			
4		risks and nonprofit operation	risks and nonprofit operations required of the TOs absent the approval of a means for them		
5		to fund and earn a return ("T	O Funding") for transmission system upgrades needed to		
6		reliably interconnect new ger	neration sources to the New York Transmission System.		
7		These transmission system up	pgrades are referred to in the New York Independent System		
8		Operator, Inc.'s ("NYISO")	Open Access Transmission Tariff ("OATT") as System		
9		Upgrade Facilities ("SUFs")	and System Deliverability Upgrades ("SDUs") (collectively,		
10		"SUFs/SDUs"). Under the existing approach, Interconnection Customers fund SUFs/SDUs			
11		caused by their generator interconnections but then the TOs are required to own, operate,			
12		and maintain those SUFs/SDUs without being allowed to recover a return for those assets			
13		(the "Existing Funding Approach"). TO Funding would allow the TOs to continue to			
14		construct (subject to a developer's right to construct stand-alone upgrades), own, operate,			
15		and maintain these facilities, but by being allowed to self-fund, the TOs would then be			
16		enabled to earn a return on th	e value of the transmission assets.		
17	Q.	Have you provided any Exhibits with your testimony?			
18	A.	Yes. I have included the following:			
19		<u>Exhibit No.</u>	Exhibit Description		
20		Exhibit NYT-0002	Joshua Nowak Professional and Educational Background		
21		Exhibit NYT-0003 Risk Catalog for the Transmission Owners			
22	Exhibit NYT-0004 Risk Disclosures of the TOs				

1		Exhibit NYT-0005 Potential 1	Negative Revenue Adjustments of the TOs	
2	Q.	. Were these Exhibits prepared by you o	r under your direction?	
3	A.	Yes, they were.		
4	Q.	. Please summarize your testimony and o	onclusions.	
5	A.	Under the Existing Funding Approach ap	olied under the NYISO OATT, the TOs are	
6		required to own, operate, and maintain SU	JFs/SDUs caused by generator interconnections	
7		but are not allowed to earn a return for the	ose assets. As such, the TOs are required to	
8		conduct nonprofit operations that expose	hem to uncompensated risks. This inhibits the	
9		Companies' ability to raise capital necess	ary to continue to provide safe and reliable	
10		service and maintain the financial soundn	ess of the Companies' operations. The Existing	
11		Funding Approach is therefore unjust and	unreasonable.	
12				
13		The TOs seek to have TO Funding adopte	d in the NYISO OATT to provide an opportunit	y
14		to earn a return on SUFs/SDUs and comp	ensate investors for the risks they bear. This	
15		would ensure that the TOs are allowed an	opportunity to earn a return on SUFs/SDUs that	Ċ
16		the Companies are required to own, opera	te, and maintain.	
17				
18		In Section II of my testimony, I describe t	he relevant regulatory principles and recent	
19		precedent applicable to the TOs' request.	In Section III, I review the general principles of	ĩ
20		risk and return, and how they are typically	v applied to regulated utilities and the effect	
21		SUFs/SDUs have on them. In Section IV	, I discuss the several categories of	
22		uncompensated risks borne by the TOs in	owning, operating, and maintaining SUFs/SDUs	s.

1		In Section V, I describe how the requirement of maintaining nonprofit operations violates
2		fundamental principles in the regulatory construct and inhibits the TOs' ability to raise
3		capital. In Section VI, I describe how the proposed TO Funding is not expected to have a
4		significant effect on costs to generators. In Section VII, I provide my conclusions.
5		II. REGULATORY PRINCIPLES AND RECENT PRECEDENT
6	Q.	Please describe the guiding principles used in establishing the relationship between
7		risk and return for a regulated utility.
8	A.	The foundations of public utility regulation require that utilities receive a fair rate of return
9		sufficient to attract needed capital to maintain important infrastructure for customers at
10		reasonable rates. The basic tenets of this regulatory doctrine originate from several
11		decisions by the United States Supreme Court, notably Bluefield Waterworks and
12		Improvement Company v. Public Service Commission of West Virginia, 262 U.S. 679
13		(1923) ("Bluefield"), and Federal Power Commission v. Hope Natural Gas Company, 320
14		U.S. 591 (1944) ("Hope"). In Bluefield, the Supreme Court found that for a regulated
15		enterprise:
16 17 18 19 20 21 22 23 24 25		A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding, risks and uncertainties; but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to maintain the profit prof
23 26		duties. A rate of return may be reasonable at one time and become too high

and enable it to raise the money necessary for the proper discharge of its public duties. A rate of return may be reasonable at one time and become too high or too low by changes affecting opportunities for investment, the money market and business conditions generally.

27

28

1		The Supreme Court has further elaborated on this requirement in its decision in Hope.
2		There the Supreme Court described the relevant criteria as follows:
3 4 5 6 7 8 9		From the investor or company point of view it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock. By that standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital.
10	Q.	Why is it important for a regulated company to be allowed the opportunity to earn a
11		return that is adequate to attract capital on reasonable terms?
12	A.	A regulated company's costs of capital must reflect the costs of capital of other enterprises
13		having comparable risks and acting independently in the financial markets. A return that is
14		adequate to attract capital at reasonable rates and reasonable terms enables a utility to
15		provide safe, reliable utility service while maintaining its financial integrity. That return
16		should be commensurate with the returns expected elsewhere in the market for investments
17		of equivalent risk. If it is not, debt and equity investors will seek alternative investment
18		opportunities for which the expected return reflects the perceived risks, thereby impeding a
19		utility's ability to attract capital at reasonable cost.
20	Q.	How do the <i>Hope</i> and <i>Bluefield</i> decisions relate to the proposed TO Funding for
21		SUFs/SDUs?
22	А.	In the 2018 United States Court of Appeals, District of Columbia Circuit ("DC Circuit")
23		decision in Ameren Services Co. v. FERC, 330 F.3d 494 ("Ameren"), the DC Circuit
24		vacated FERC orders that had previously allowed incoming generators to determine
25		whether they would self-fund any upgrades to the existing grid necessary to reliably

1	interconnect their generating facility, regardless of whether grid owners wanted to fund
2	such construction themselves. The DC Circuit remanded the case to FERC on the basis
3	that FERC had inadequately responded to the issues that "involuntary generator funding
4	compels [grid owners] to construct, own, and operate facilities without compensatory
5	network upgrade charges-thus forcing them to accept additional risk without
6	corresponding return as essentially non-profit managers of these upgrade facilities." ¹
7	Elaborating on these points, the DC Circuit found:
8 9 10 11 12 13 14 15 16	We therefore think that FERC inadequately considered Petitioners' argument that all costs, and risks, are not baked in—that, in fact, shareholders are forced to accept incremental exposure to loss with no corresponding benefit. Without analysis, the Commission casts doubt on the likelihood that these risks exist. But if Petitioners are conceptually correct that they bear these risks as owners of the transmission lines, it supports their basic contention that they are entitled to be compensated now as owners for operating the upgrades. And since this contention was raised appropriately, failure to meaningfully respond to it makes FERC's decision arbitrary and capricious. ²
17	On remand from the Ameren decision, FERC reinstated the right of transmission owners to
18	elect to fund the capital costs associated with network upgrades finding that "transmission
19	owners should not be required to accept the potential increased reliability and litigation risk
20	that Generator Up-Front Funded network upgrades may pose to their systems with no
21	return." ³ As I discuss in detail in Section IV, the TOs bear risks as a consequence of
22	owning and operating SUFs/SDUs. Therefore, without the opportunity to fund and earn a
23	return on SUFs/SDUs, TOs are uncompensated for the risks they bear as the owners and
24	operators of SUFs/SDUs.

¹ *Ameren*, 880 F.3d, at 572.

² *Id.*, at 581.

³ *Midcontinent Indep. Sys. Operator, Inc.*, 164 FERC ¶ 61,158 (2018) at P 31.

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1	
2	Further, the DC Circuit addressed the issue of the practical reality that transmission owners
3	operate as a nonprofit business in service of SUFs/SDUs articulating that:
4 5 6 7 8	Petitioners' second—and more fundamental—argument is that FERC's orders require them to act, at least in part, as a nonprofit business. Put another way, by modifying the transmission owners' entire enterprise, FERC's orders attack their very business model and thereby create a risk that new capital investment will be deterred. ⁴
9	In its order on remand from the Ameren decisions, FERC found it had erred in prior orders
10	by failing to address transmission owners' arguments that without the option to self-fund
11	transmission upgrades, transmission owners were required "to act in part as non-profit
12	businesses by modifying their entire enterprises, thereby creating a risk that future capital
13	investment will be deterred." ⁵ As discussed in more detail in Section V, such operations
14	violate the long-established Hope and Bluefield principles and would inhibit a utility's
15	ability to raise capital and potentially diminish its financial integrity. Consequently,
16	without the opportunity to fund SUFs/SDUs, the TOs are required to construct, own,
17	operate, and maintain transmission operations that are entirely nonprofit operations. The
18	incremental risks associated with such operations will be borne by investors without
19	compensation and therefore inhibit the TOs' ability to raise capital.

⁴ *Ibid*.

⁵ *Id.* at P 32.

1 III. RISK AND RETURN

2 Q. Please describe how risk is defined and how it relates to regulated utility companies.

3 Risk is the chance that an outcome will deviate from expectations. From the perspective of A. 4 an investor, risk is the probability that expected, future returns may not be realized. There 5 are several factors that can cause an actual return to deviate from an expected return. These 6 factors include inflation, interest rate risks, business risks, and financial risks. As it relates 7 to rate-regulated utility companies, including the TOs, an investor's expected return is the 8 utility's authorized rate of return. While a utility is authorized a rate of return, there is no 9 guarantee that the utility will achieve its authorized rate of return. Rather, under the *Hope* 10 and *Bluefield* standards, a utility is granted the opportunity to earn its authorized rate of 11 return. Interest rate risks, business risks, and financial risks will affect a utility's ability to 12 achieve its expected return just like unregulated enterprises.

13

14 Importantly, risk is a prospective concept related to the uncertainty of future outcomes. 15 Historical experience is an important factor in assessing the risks of an investment, but it 16 does not capture the full spectrum of risks that may affect a company's future outcomes. 17 That is, historical experience largely informs only a fraction of the uncertainty of future 18 outcomes -i.e., the "known unknowns." These are factors that are typically considered in 19 a fixed model of known possible outcomes. However, there are also significant "unknown 20 unknowns" – events without precedent that can affect a company's future outcomes. As 21 such, a company's historical experience does not capture the breadth of future outcomes;

1		evidence of a prior gain or loss is not necessary to indicate the potential for a future gain or			
2		loss.			
3	Q.	How is a company's return related to its underlying risks?			
4	A.	A fundamental tenet of financial theory is that an investor will require compensation,			
5		through a higher return, to make an investment with greater risk relative to other			
6		investments with lower risks. Therefore, as a company's risk increases, investors require a			
7		higher rate of return. In assessing risk, it is important to consider that risks are typically			
8		measured in terms of both probability and impact. That is, either an increase in the			
9		probability of an event occurring (i.e., its likelihood), or an increase in the consequences of			
10		such an event occurring (<i>i.e.</i> , its magnitude), can increase overall risk.			
11	Q.	How can an increase in risk be expressed?			
12	A.	Increased risks can manifest in several ways:			
13		1. A new risk factor may be observed;			
14		2. There is an increased probability of an adverse event occurring;			
15		3. There is an increase in the magnitude of a potential adverse impact when an event			
16		occurs; or			
17		4. There is greater exposure (<i>e.g.</i> , through increases in total assets) to either an adverse			
18		event, or the potential impact of an adverse event.			

1	Q.	For a regulated utility, how are investors compensated for an increase in risk?			
2	A.	For rate-regulated utility companies, like the TOs, the authorized rate of return on rate base			
3		is the primary mechanism available to compensate investors for increased risk tolerance. ⁶			
4		In that sense, there is a meaningful distinction between regulated and unregulated			
5		industries. Since utilities are typically not allowed to earn above the authorized rate of			
6		return, the overall risk profile tends to be asymmetrical relative to unregulated industries.			
7		Whereas an unregulated company may be able to offset significant losses with significant			
8		gains over the long-run, utility companies remain exposed to significant losses without the			
9		opportunity to earn significant gains in excess of the authorized rate of return. For this			
10		reason, any increase in risks - or increase in potential losses - must be recognized in the			
11		authorized return to investors.			
12	Q.	How are investors typically compensated for the risks associated with utility			
13		investments?			
14	A.	Constructing, owning, operating, and maintaining utility investments involves risk. Several			
15		of these risk factors can cause unrecovered costs, liabilities, or damages which may be			
16		borne by shareholders. Absent the SUFs/SDUs, the investors in the TOs' expected return			
17		is equal to the weighted average cost of capital applied to rate base investments. The			
18		weighted average cost of capital is determined based on investors' required returns given			
19		the risks associated with the rate base investments. This is illustrated in Equation [1]:			
20 21		Expected Return _{Rate Base} = WACC × Rate Base Equation [1]			

⁶ While other opportunities, such as Earnings Adjustment Mechanisms or other incentive mechanisms also exist, these are typically targeted to achieve specific program or policy objectives that are not incented under traditional ratemaking.

1 2		where:	Expected Return Rate Base	=	Return to investors:
3					·····
4			WACC	=	Weighted average cost of capital;
6 7			Rate Base	=	Book value of assets in rate base ⁷
8		Applying Equa	tion [1], for an assumed Rate I	Base of \$1	00 million, and a WACC of 8.00
9		percent, the ret	urn to investors is \$8 million a	nnually, a	s shown in Equation [2]:
10 11		\$8 n	$nillion = 8.00\% \times \$100 mil$	lion	Equation [2]
12	Q.	How do SUFs/	SDUs affect an investors' exp	pected ret	urn?
13	A.	Requiring an ir	vestor to own SUFs/SDUs wit	thout offer	ing an opportunity to earn a return
14		requires them t	o incur risk without compensa	tion. That	is, without TO Funding, investors
15		receive no addi	tional compensation for the as	sets constr	ructed, owned, operated, and
16		maintained by	transmission owners – there is	simply no	upside to investors. However, the
17		TOs are expose	ed to downside-only risks inher	rent in con	structing, owning, operating, and
18		maintaining SU	JFs/SDUs. As described in gre	eater detai	l in Section IV, the SUFs/SDUs
19		entail several ri	sk factors that can cause poter	ntial losses	to investors. From a risk
20		perspective, the	e expected value of such losses	s can be es	timated as the product of the
21		probability of a	loss and the estimated magnit	ude of a lo	oss. An "Expected Loss" is defined
22		in Equation [3]			
23		Expe	cted Loss = Probability of	$Loss \times M$	agnitude of Loss Equation [3]

⁷ Rate base is frequently adjusted to also reflect regulatory assets or liability (*e.g.*, accumulated deferred income taxes, if applicable), cash working capital, and other items at the discretion of the regulator.

I	Applying Equation [3], and assuming a hypothetical annual probability of 5 percent applied					
2	to a potential loss of \$10 million, the Expected Loss is \$0.5 million annually, as shown in					
3	Equation [4].					
4	$0.5 million = 5.00\% \times 10 million$ Equation [4]					
5 6	Without TO Funding, TOs must bear the risk associated with potential losses (represented					
7	as an "Expected Loss") on SUFs/SDUs without a compensatory increase in the overall					
8	return to investors. That is, an investor's expected return in an enterprise containing					
9	traditional rate base assets as well as SUFs/SDUs must incorporate the effect of both the					
10	Expected Return on Rate Base and the effect of SUFs/SDUs, which includes only downside					
11	risks without any potential for higher returns. This is shown in Equation [5].					
12	Expected Return _{Rate Base+SUF/SDUs} = (WACC × Rate Base) – Expected Loss					
13	Equation [5]					
14	By applying the assumed values in Equations [2] and [4], the effect of the Expected Loss					
15	associated with the risk factors inherent in SUFs/SDUs reduces an investor's expected					
16	return from \$8 million (as shown in Equation [2]) to \$7.5 million, after deducting the					
17	Expected Loss of \$0.5 million (as shown in Equation [4]). Because the weighted average					
18	cost of capital is authorized on the basis of an investor's required return on rate base, the					
19	incremental risks associated with SUFs/SDUs represent a reduction in investors' expected					
20	returns on the enterprise. As such, investors will require a higher return to invest in the					
21	enterprise resulting in a higher cost of capital that is uncompensated by the authorized					
22	return on rate base. The incremental risks therefore result in an uncompensated cost to the					
23	TOs.					

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1				
2	Ev	ven if the probability and magnitude of a potential loss were minimized, no rational		
3	inv	vestor would willingly put capital at risk where the only possible outcomes are: (1)		
4	bro	eaking even; or (2) incurring a financial loss. However, if the TOs were granted TO		
5	Fu	nding and the ability to earn a rate of return on SUFs/SDUs, then the incremental return		
6	co	mpensates investors for the potential financial losses associated with the incremental		
7	ris	ks that they bear.		
8	IV.	UNCOMPENSATED RISKS		
9	Q. W	hat types of risk do the TOs face in the provision of service to their customers?		
10	A. Th	ne TOs have exposure to a variety of risks in the ordinary course of doing business – that		
11	is, constructing, owning, operating, and maintaining their transmission systems and			
12	providing electric service to their customers. As they publicly disclose to their investors,			
13	the	ose risks include:		
14		• <u>Regulatory Risk</u> : As regulated utilities, the TOs rely on the ratemaking process to		
15		provide timely recovery of their costs. However, that recovery is not guaranteed.		
16		The operation and maintenance of electric transmission assets entails the possibility		
17		that the TOs may not recover some or all their costs, including costs associated with		
18		SUFs/SDUs.		
19		• <u>Reliability Risk</u> : The TOs are required to meet a variety of mandatory reliability		
20		standards, including those established by the North American Electric Reliability		
21		Corporation ("NERC"), the New York State Reliability Council, LLC, the New York		
22		Public Service Commission ("NYPSC"), and other regulators. If the TOs fail to		

1		comply with those requirements (whether or not they are at fault), they could incur
2		compliance costs, fines and other assessments or penalties, which may be material.
3		As recognized in the Ameren decision, these costs are generally not recoverable in
4		rates.8 The incremental investments associated with SUFs/SDUs increase the
5		obligations for reliability compliance and the potential for such penalties.
6	•	Cybersecurity Risk: As the owners of critical energy infrastructure, the TOs face the
7		risk that their equipment could be subject to a cyber-attack, which could disrupt
8		operations, cause property damage, or create substantial response costs. SUFs/SDUs
9		often add to the system's overall complexity and must integrate with the balance of
10		the system, creating potentially greater opportunities for cyber-attacks.
11	•	Environmental Risk: Severe weather events are predicted to become more frequent
12		due to the effects of climate change. Those events may damage transmission
13		equipment, resulting in service disruptions and repair costs. Further, the Companies
14		are exposed to potential environmental risks and liabilities, such as those related to
15		contaminated property, oil-filled equipment, and air emissions in their ordinary
16		course of doing business. By expanding their systems through SUFs/SDUs, the
17		potential for environmental liabilities or equipment failure from weather events will
18		increase.
19	•	Operational Risk: Operating and maintaining electric transmission property is
20		inherently hazardous, exposing the TOs to the possibility of being held liable in the

⁸ *Ameren*, 880 F.3d, at 583.

1		event of an accident, encroachment, or incursion. That liability may not be fully
2		insurable and may be subject to substantial deductibles.
3		Because the SUFs/SDUs form a part of the TOs' transmission systems, many of the risks
4		the TOs face owning, operating, and maintaining their existing networks they similarly face
5		owning, operating, and maintaining SUFs/SDUs. A catalog of these risks is provided as
6		Exhibit No. NYT-0003.
7	Q.	Is there evidence that investors are aware of these risks and consider them when
8		making investment decisions?
9	А.	Yes, there is. The TOs disclose risks to their investors in their registration statements for
10		the sale of their securities filed under the Securities Act of 1933, as amended (and in
11		offering memoranda or circulars for the sale of securities exempt from registration), in their
12		annual reports filed under the Securities Exchange Act of 1934, as amended and in other
13		filings with the Securities and Exchange Commission ("SEC") and other regulators, as
14		applicable. These risks are also discussed, to varying degrees, by the credit rating agencies
15		and equity analysts. Further, there are numerous examples of investors in utilities suffering
16		financial harm due to liabilities related to these risk factors. The following subsections
17		summarize the evidence supporting each risk factor, including as applicable: (1) public
18		disclosures made by the TOs; (2) statements made by credit rating agencies; and (3)
19		historical evidence demonstrating the materiality of each risk factor.
20	Q.	Why is investor perception important in the evaluation of these risks?
21	A.	As described in Section II above, Hope and Bluefield require that utilities receive a fair rate
22		of return sufficient to attract needed capital. Accordingly, investor perception is central to

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1		fair rate of return determinations because investors set the market cost of capital.					
2		Therefore, the discussion that follows focuses on the risks that are identified in documents					
3		provided to utility investors. As FERC has previously found:					
4 5 6 7 8 9 10 11 12 13		Fundamentally, rate of return and risk go hand-in-hand: the higher the risk, the higher the required rate of return; the lower the risk, the lower the required rate of return. The key issue is whose risk perceptions are driving the rate of return. The only relevant risk perceptions are those of investors in the capital markets. While it is not possible to survey all investors in the market as to their risk perceptions regarding a specific company, the next best thing is to look to published investor services like S&P, which are likely relied on by investors when establishing their risk perceptions. By doing so, a nexus is established between risk and investors' required rate of return. ⁹					
14	Q.	How do SUFs/SDUs affect that risk?					
15	A.	The effect ownership and operation of SUFs/SDUs have on each of the specific risks					
16		identified above is discussed in more detail in each of the following subsections. However,					
17		the high-level effects of SUFs/SDUs on the Companies' business risks are summarized					
18		below:					
19		• <u>Intrinsic Risk</u> : As a general matter, increased ownership of electric transmission					
20		assets will increase exposure to risks. SUFs/SDUs are integrated with the TOs' other					
21		transmission assets and therefore carry risk. Like any other transmission system					
22		component, SUFs/SDUs may be damaged in a storm, subject to a cyber-attack, or					
23		responsible for a service disruption.					
24		• <u>System Complexity</u> : SUFs/SDUs require the Companies to integrate new equipment					
25		into their systems to provide open access transmission service to interconnection					

⁹ FERC Docket No. RP10-1398, Opinion and Order on Initial Decision, Opinion No. 528, Issued October 17, 2013, at 255-256.

1	customers with discrete commercial interests. The integration of that new equipment
2	increases the complexity of the TOs' systems and, therefore, the risks of service
3	interruptions, cyber-attacks, and environmental liabilities. Further, that increase in
4	complexity imposes additional information costs on investors. As noted in the
5	Ameren decision:
6 7 8 9 10 11 12 13 14 15 16 17 18	[A]dded complexity can be expected to impose its own form of deterrence upon investors, via information costs. Even if FERC could somehow provide protection for each of the many risks involved, potential investors would need to expend costly time and resources to examine and understand what the petitioning transmission owners would call the "non-profit" segments of their business, in order to verify that they are, in fact, riskless. And investors' confidence in their own assessment of such risklessness would itself carry some perceived risk. To the extent that other comparable utilities do not carry responsibility for such "non-profit" lines of business, and earn the same rate of return on the assets in their rate base, they would thus become relatively more attractive to investment professionals. ¹⁰
19	• <u>Ownership Obligation</u> : Interconnecting generators may elect the option to build
20	SUFs/SDUs. In that circumstance, the Companies are required to step in and take
21	ownership of SUFs/SDUs after they are placed into service. While the TOs still
22	oversee the interconnecting generator's construction of the SUFs/SDUs, the
23	Companies' indirect involvement makes it more difficult for them to manage and
24	oversee several elements of the process. While the Companies seek to mitigate such
25	issues, TOs may: (1) have less control over the project's supply chain; (2) not have a
26	dedicated project team as they would if they were constructing the project
27	themselves; and (3) have less ability to successfully file warranty claims in the event

¹⁰ *Ameren*, 880 F.3d, at 582.

1		of an operational issue (e.g., due to materials used or quality of craftsmanship).
2		These issues exacerbate the business risks inherent in owning electric transmission
3		assets.
4		• <u>Cost Overruns</u> : As described in Section 25.8.6.4 of the NYISO OATT, the TOs are at
5		risk of bearing certain cost overruns in their construction of SUFs/SDUs. This risk is
6		discussed in more detail in Section IV.A, below.
7	Q.	What does that imply regarding the TOs' return requirements for SUFs/SDUs?
8	A.	Requiring the TOs to own, operate and maintain SUFs/SDUs without allowing them the
9		opportunity to earn a regulated return would result in the TOs taking on incremental risk
10		without just compensation. In other words, without the chance to recover a return on
11		investment, SUFs/SDUs are downside-only propositions for the TOs. Therefore, the TOs
12		require the opportunity to earn a return on SUFs/SDUs as compensation for the incremental
13		risks due to ownership of those SUFs/SDUs.
14	Q.	Is your testimony intended to serve as an exhaustive account of all risks faced by the
15		TOs?
16	A.	No, it is not. My testimony is intended to identify categories of risk that the TOs face in
17		the ordinary course of doing business and apply to SUFs/SDUs. While historical
18		experience is instructive, investors are primarily concerned with prospective (<i>i.e.</i> , forward-
19		looking) risk. I have accounted for many of the types of risk that the Companies have
20		faced historically and continue to face today, but the future is inherently uncertain. That
21		uncertainty intrinsically creates still further risk for investors.

1		A. Regulatory Risk
2	Q.	How are the TOs affected by regulatory risk?
3	A.	As regulated utilities, the TOs' rates are subject to regulation by the FERC, state regulators
4		such as the NYPSC, or both. The ratemaking process employed by those regulators is
5		premised on the foundational principle that, to commit the capital needed to provide safe
6		and reliable service to the public, the utility must have the opportunity to recover invested
7		capital and the market-required return on such capital. In that respect, the regulatory
8		framework in which a utility operates is an essential factor in both debt and equity
9		investors' risk assessments. The ratemaking process inherently does not guarantee that
10		regulated utilities will recover 100 percent of their costs. Indeed, the NYPSC has noted
11		that it has "the ability to examine and disallow costs that are not prudently incurred by the
12		Company at all times" and "the authority to institute proceedings and conduct
13		investigations into the Company's practices and rates at any time." ¹¹ The FERC has
14		similar authority. Therefore, the TOs bear the risk that some or all their expenses may go
15		unrecovered and, therefore, funded by investors. Further, SUFs/SDUs exacerbate that risk
16		by requiring the TOs to incur incremental operations and maintenance expenses, the
17		recovery of which is not guaranteed.
18	Q.	Do investors consider regulatory risks when evaluating the Companies?
19	A.	Yes, they do. To identify the TOs' investor risk disclosures, I reviewed the public SEC

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filings made by their publicly-traded corporate parents to the extent available. The relevant

¹¹ Cases 06-E-1433 & 06-E-1547, Order Setting Permanent Rates, Reconciling Overpayments During Temporary Rate Period, and Establishing Disposition of Property Tax Refunds, at 33.

1	excerpts from filings made by Avangrid, Inc. ("Avangrid") (parent company of NYSEG
2	and RG&E), Consolidated Edison, Inc. ("CEI") (parent company of Con Edison and
3	O&R), Fortis, Inc. ("Fortis") (ultimate parent company of Central Hudson), and National
4	Grid plc (parent company of National Grid) are provided as Exhibit No. NYT-0004. As
5	shown in Exhibit No. NYT-0004, Avangrid, CEI, Fortis, and National Grid plc all discuss
6	regulatory risk extensively when describing their risk factors. ¹² For example, Avangrid
7	indicated:
8 9 10 11 12 13 14 15 16 17 18 19	The operations of AVANGRID are subject to, and influenced by, complex and comprehensive federal, state and local regulation and legislation, including regulations promulgated by state utility commissions and the FERC. This extensive regulatory and legislative framework regulates the industries in which our subsidiaries operate, our business segments, rates for our products and services, financings, capital structures, cost structures, construction, environmental obligations, development and operation of our facilities, acquisition, disposal, depreciation and amortization of facilities and other assets, service reliability, hedging, derivatives transactions and commodities trading.
20 21 22 23 24 25 26 27	The federal, state and local political and economic environment has had, and may in the future have, an adverse effect on regulatory decisions with negative consequences for AVANGRID. These decisions may require AVANGRID to cancel, reduce, or delay planned development activities or other planned capital expenditures or investments or otherwise incur costs that we may not be able to recover through rates. We are unable to predict future legislative or regulatory changes, initiatives or interpretations, and there can be no

¹² Generally, each of the TOs recover their costs, to varying degrees, through rates established by the FERC and/or the NYPSC. Accordingly, I discuss the risks associated with regulation by each regulator. While those risks may not be universally applicable to every TO, they are applicable to many of the TOs.

1 2		assurance that we will be able to respond adequately or sufficiently quickly to such actions. ¹³
3		Fortis explicitly notes the risks involved with assets regulated by the FERC, indicating that
4		third parties may challenge the rates FERC establishes, potentially resulting in the
5		company's inability to recover operating costs. ¹⁴ CEI identifies regulatory risks because,
6		among other reasons, rates may not be changed during each plan's term, yet its costs may
7		exceed the levels established in the plan. ¹⁵ Given that SUFs/SDUs require incremental
8		operations and maintenance expenses, cost recovery may remain a risk to the TOs even if
9		the assets are not funded by the Companies.
10	Q.	Do the credit rating agencies acknowledge regulatory risk?
11	A.	Yes, they do. Both Moody's and S&P heavily weigh the regulatory environment's
12		constructiveness when establishing credit ratings for regulated utilities. Moody's
13		characterizes the regulatory environment as an "over-arching consideration for regulated
14		utilities." ¹⁶ S&P states that the regulatory framework "is of critical importance when
15		assessing regulated utilities' credit risk because it defines the environment in which a utility
16		operates and has a significant bearing on a utility's financial performance." ¹⁷

¹³ Avangrid, Inc., 2019 10-K, at 28.

¹⁴ Fortis, Inc., 2020 Management Discussion and Analysis, at 28.

¹⁵ Consolidated Edison, Inc., 2019 10-K, at 46.

Moody's Investor Service, "Rating Methodology: Regulated Electric and Gas Utilities", June 23, 2017, at 3. S&P Global Ratings, "Key Credit Factors for the Regulated Utilities Industry," November 19, 2013, at 4. 16

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1	Q.	How do Moody's and S&P incorporate their views on regulatory risk when
2		establishing utility credit ratings?
3	A.	Generally, both Moody's and S&P rate regulated utilities on several factors that are then
4		assigned varying weights to develop a composite credit rating. For example, Moody's
5		Regulated Electric and Gas Utilities rating methodology consists of four primary factors.
6		The first two primary factors, "Regulatory Framework" and "Ability to Recover Costs and
7		Earn Returns," account for 50.00 percent of Moody's overall rating for the regulated
8		utilities. Moody's has characterized utilities' ability to recover prudently incurred costs as
9		"crucial credit considerations." ¹⁸ S&P rates regulated utilities considering business risk,
10		country risk, competitive advantage, and financial risk. S&P determines the competitive
11		advantage pillar for regulated utilities based on the stability of the ratemaking process, its
12		effectiveness from an investor perspective (<i>i.e.</i> , the ability to recover operating and capital
13		costs), its timeliness, and other factors that affect the financial health of utility companies.
14	Q.	Have the TOs faced challenges earning their authorized ROEs historically?
15	A.	Yes, they have. As shown in Figure 1 below, investor-owned electric utilities regulated by
16		the NYPSC, including many of the TOs, have tended to underearn relative to their state-
17		level authorized ROEs. While utilities may earn more or less than their allowed ROE for a
18		variety of reasons, this analysis is one indication that several of the TOs have been unable
19		to fully recover their costs. Further, the range of earned returns reflected in Figure 1
20		demonstrates that the TOs only receive the opportunity to earn, not the guarantee of
21		earning, their authorized rates of return.

¹⁸ Moody's Investor Service, "Rating Methodology: Regulated Electric and Gas Utilities", June 23, 2017, at 12.

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	2015	2016	2017	2018	2019	Average
Central Hudson	7.03%	8.24%	8.02%	7.94%	8.07%	7.86%
Con Edison	8.76%	8.41%	8.35%	8.86%	8.71%	8.62%
NYSEG	6.76%	9.58%	8.16%	7.38%	3.79%	7.14%
National Grid	5.76%	6.03%	7.14%	5.80%	8.16%	6.58%
O&R	10.11%	11.36%	12.86%	9.91%	12.76%	11.40%
RG&E	3.16%	7.82%	7.24%	7.00%	5.47%	6.14%
Avg. Earned ROE	6.93%	8.57%	8.63%	7.82%	7.83%	7.95%
Avg. Authorized ROE	9.38%	9.05%	9.05%	8.97%	8.97%	9.08%
Avg. Under-Earning	2.45%	0.48%	0.42%	1.15%	1.14%	1.13%

Figure 1: TOs' NYPSC Historical Earned vs. Authorized Returns on Equity¹⁹

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3 Have the credit rating agencies commented on the regulatory environment in New **Q**. York? 4

5 Yes, they have. Moody's has noted the declining supportiveness of the New York A.

6 regulatory environment repeatedly when downgrading the credit ratings of many of the

7 TOs. In November 2020, Moody's identified recent political intervention, including

8 Governor Cuomo's Program Bill Number 13, "An Act to Reform the Enforcement,

9 Oversight and Franchise Revocation process for Public Utilities," as well as the governor's

- 10 challenge to utility franchise certificates in New York, as a challenge for New York
- 11 utilities. Moody's opined that "[t]he proposal is credit negative for all New York utilities
- 12

because it represents the latest in a series of actions by the governor's office to intervene in

¹⁹ Annual Reports of the indicated companies filed with the New York Public Service Commission for the years 2015-2019; the "Avg. Authorized ROE" reflects the simple average of the authorized ROEs that were in effect for each company in each year, per S&P Global Market Intelligence. If the authorized ROE changed during the year, it is assumed that the new authorized ROE applies to the entire calendar year in which it was authorized.

1		utility regulation, which undermines the consistency and predictability of the state's
2		regulatory framework." ²⁰ Given the increased regulatory risk recognized by Moody's, and
3		a history of several TOs recently underearning relative to authorized ROEs, any
4		incremental costs pose a substantial risk of being unrecovered in rates.
5	Q.	Have you developed any analysis to quantify regulatory risk outside of New York?
6	A.	Yes, I have. I analyzed the data reflected in the Regulatory Research Associates ("RRA")
7		rate case database to identify rate cases across the United States that resulted in
8		disallowances of either operating expenses or capital expenditures. Specifically, I
9		compared the requested revenue increase to the authorized revenue increase for each case
10		to determine the amount of revenue increase denied by the regulator.
11		
12		In many cases, one of the primary reasons the regulator authorizes a rate increase that is
13		less than what the utility requests is because of differences in the estimated cost of capital.
14		While investors in utility assets generally face the risk that they may be authorized a below-
15		average rate of return, that is not the same as a disallowed operating cost or capital
16		expenditure as the TOs are currently not allowed any return at all for SUFs/SDUs.
17		Accordingly, I have adjusted the analysis to exclude the effects of rate of return-related
18		revenue reductions. I refer to the resulting disallowances as "non-return-related revenue
19		reductions." These non-return related revenue reductions are indicative of the types of

²⁰ Moody's Investor Services, Sector Comment, Regulated Electric and Gas Utilities-US, "Latest political intervention into regulatory oversight is credit negative for New York utilities", November 13, 2020, p. 1.

risks that the TOs bear in owning, operating, and maintaining SUFs/SDUs (*i.e.*, the risk that
 some or all the costs they incur may not be recoverable through the ratemaking process).

3 Q.

. What were the results of your analysis?

A. While all companies that file rate cases face some degree of regulatory risk, my analysis
focused on the 113 fully litigated electric rate cases decided after January 1, 2010, with
historical test years that reported sufficient data to develop my analysis. Non-return-related
revenue reductions were ordered by the regulator in 104 of those cases, with reductions
totaling more than \$2.4 billion. Figure 2 below provides a scatterplot of the non-return
related revenue reductions in each case.



Figure 2: Non-Return Related Revenue Reductions Over Time



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1	Q.	Do all the revenue reductions reflected in your analysis result in shareholders bearing
2		costs?
3	A.	No, they do not. Regulators may deny portions of a utility's requested revenue requirement
4		for many reasons that do not directly result in shareholders bearing costs. For example, a
5		regulator may authorize depreciation rates that are lower than the company requested.
6		However, there are instances where regulators deny portions of a utility's request that do
7		shift costs to shareholders. For instance:
8		• In 2019, the California Public Utilities Commission ("CPUC") reduced Southern
9		California Edison Company's ("SCE") requested revenue requirement by
10		approximately \$120.1 million over three years after finding that SCE imprudently
11		replaced certain utility poles prematurely due to its use of the computer program
12		"SPIDACalc v5.0." ²¹ The CPUC determined that SCE did not adequately vet the
13		software considering SCE's pole replacement program's size.
14		• The Connecticut Department of Public Utility Control (now the Public Utilities
15		Regulatory Authority) in 2010 excluded approximately \$1.7 million in costs over two
16		years from Connecticut Light and Power Company's ("CL&P") rates, finding that the
17		costs CL&P incurred placing a customer service center in an urban center did not
18		produce direct benefits to CL&P's ratepayers. ²²

²¹ See California Docket No. 19-05-020, Application of the Southern California Edison Company (U338E) for Authority to Increase its Authorized Revenues for Electric Service in 2018, Among Other Things, and to Reflect that Increase in Rates, Decision on Test Year 2018 General Rate Case for Southern California Edison Company, Public Utilities Commission of the State of California, May 16, 2019, at 37-40.

²² See Connecticut Docket No. 09-12-05, Application of the Connecticut Light & Power Company to Amend its Rate Schedules, Decision, Department of Public Utility Control, June 30, 2010, at 37-40.

1	•	The Public Utilities Commission of Nevada ("Nevada PUC") found in 2011 that
2		Nevada Power Company's ("Nevada Power") salary and wage increases were
3		excessive in relation to economic growth. Accordingly, the Nevada PUC reduced
4		Nevada Power's proposed revenue requirement to exclude approximately 4.00
5		percent of the labor costs for its management and union employees and approximately
6		5.00 percent of the labor costs for its executives and officers. The Nevada PUC
7		found that this adjustment "better aligns Nevada Power's salary and wage expenses
8		with market data and current economic conditions." ²³
9	•	The Massachusetts Department of Public Utilities ("MADPU") reduced the revenue
10		requirement requested by Boston Gas Company and Colonial Gas Company by
11		approximately \$4.1 million to exclude information systems and facilities rent expense
12		associated with plant that was not in service until after the close of the historical test
13		year. The MADPU found that insufficient evidence had been provided regarding
14		these costs. ²⁴
15	•	PNM Resources, Inc. recorded a pre-tax impairment of \$37.7 million in 2019 due to
16		disallowed costs associated with Balanced Draft Technology ("BDT") installed at its
17		San Juan Generating Station. ²⁵ The New Mexico Public Regulation Commission

²³ See Nevada Docket No. 11-06006, Application of Nevada Power Company d/b/a NV Energy for Authority to Increase its Annual Revenue Requirement for General Rates Charged to All Classes of Electric Customers and for Relief Properly Related Thereto, Order, Public Utilities Commission of Nevada, December 22, 2011, at 147-150.

See Massachusetts Docket No. D.P.U. 17-170, Petition of Boston Gas Company and Colonial Gas Company, each doing business as National Grid, pursuant to G.L. c. 164, § 94 and 220 CMR 5.00, for Approval of General Increases in Base Distribution Rates for Gas Service, Order, September 28, 2018, at 204-206.

²⁵ PNM Resources, Inc. 2019 10-K, at B-98.

1		("NMPRC") found that Public Service Company of New Mexico's ("PNM")
2		installation of BDT was not required and produced only limited environmental
3		benefits. ²⁶ While PNM requested approximately \$5.2 million in revenue requirement
4		associated with BDT, the NMPRC authorized just \$0.3 million. ²⁷
5		Therefore, while my analysis of non-return related revenue reductions does not directly
6		align with the costs directly shifted to shareholders, it does provide an indication of the
7		frequency and potential materiality of those costs. Please see Section 1.1 of the Risk
8		Catalog (provided as Exhibit No.NYT-0003) for further discussion of disallowance risk.
9	Q.	Can shareholders bear additional costs that are not reflected in your analysis?
10	A.	Yes, they can. Even if regulators authorize a utility to recover its costs through rates,
11		investors may be subject to "regulatory lag." As described in Section 1.2 of the Risk
12		Catalog (see Exhibit NYT-0003), regulatory lag refers to the time between when a utility
13		incurs a cost and when it can recover that cost through rates. Relatively long periods of
14		regulatory lag are a risk to investors because it is a time in which they cannot recover their
15		costs. Further, regulatory lag can be quite meaningful. For example, RRA characterized a
16		2015 rate case involving Jersey Central Power & Light as "somewhat restrictive from an
17		investor viewpoint" due, in part, to the extreme degree of regulatory lag it reflected.
18		Specifically, RRA noted:
19 20		The case was initiated in response to a complaint filed by the New Jersey Division of Rate Counsel (DRC) in 2011, and was to our

See New Mexico Case No. 15-00261-UT, In the Matter of the Application of Public Service Company of New Mexico for Revisions of its Retail Electric Rates Pursuant to Advice Notice No. 513, Final Order Partially Adopting Correct Recommended Decision, September 28, 2016, at 47-52.

See New Mexico Case No. 15-00261-UT, In the Matter of the Application of Public Service Company of New Mexico for Revisions of its Retail Electric Rates Pursuant to Advice Notice No. 513, Final Order Partially Adopting Correct Recommended Decision, September 28, 2016, at 42 and 52.

knowledge the only time in the last 30+ years that the BPU had taken such action. The proceeding was protracted, taking almost four years start to finish, heightening investor risk during this period. The BPU ordered a significant rate reduction, based on a stale test period, during a time when the company has been making significant expenditures to improve its reliability and strengthen its infrastructure.²⁸

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Do all regulators apply the same cost recovery standards?

- 8 A. No, they do not. Different regulators may apply different standards to different types of
- 9 cost recovery, which leads to further uncertainty when assessing regulatory risk. For
- 10 example, after the 2007 Witch, Guejito, and Rice fires, San Diego Gas and Electric
- 11 Company ("SDG&E") settled approximately \$2.4 billion of the \$4 billion in total damage
- 12 claims. While SDG&E was able to offset that liability with an insurance reimbursement of
- 13 \$1.1 billion, settlements with third parties of \$827 million, and FERC-authorized recovery
- 14 of \$80 million, the CPUC denied recovery of \$421 million of wildfire costs incurred by
- 15 SDG&E in the CPUC's Final Decision issued December 2017.²⁹ In this instance,
- 16 shareholders were liable for CPUC-jurisdictional costs, but not FERC-jurisdictional costs.
- 17 Following this ruling, S&P noted the following:

18 Weighing on the company's business risk profile is California's 19 theory of inverse condemnation holding the regulated utility liable for 20 damages caused by a utility's equipment without being found negligent. Recently, the CPUC denied SDG&E recovery of about 21 22 \$379 million in unrecovered costs from a 2007 wildfire. We view this 23 development as potentially weakening the credit quality for all of 24 California's regulated utilities. Under our base case scenario, we 25 expect that regulated utilities in California will continue effectively 26 managing regulatory risk by effectively working with legislators, 27 regulators, and the governor to reach a fair solution that does not

²⁸ Regulatory Research Associates, Final Report, April 26, 2015, at 1-2.

See California D.17-11-033. The total liability of SDG&E's California-jurisdictional operations totaled \$421 million. After applying a voluntary Company contribution of 10%, or \$42 million, the net amount was \$379 million. None of these costs were deemed recoverable by the CPUC.

1 2 3 4 5 6 7	adversely jeopardize the California utilities' credit quality. However, should the California utilities fail to resolve this predicament and they essentially remain responsible for wildfire damages without a sufficient means to consistently recover costs from ratepayers, we would expect to lower the ratings on the California utilities, reflecting a material longer-term weakening of California's regulatory compact. ³⁰
8	Similarly, in 2019, the Public Service Commission of South Carolina ("PSCSC")
9	disallowed recovery of Duke Energy Carolinas, LLC's ("DEC") costs incurred to comply
10	with North Carolina's Coal Ash Management Act ("CAMA"). The PSCSC found that it
11	would be inappropriate to subject South Carolina ratepayers to costs resulting from a North
12	Carolina law that it views as "unnecessary for the provision of power." Specifically, the
13	PSCSC indicated that:
14 15 16 17 18 19 20 21 22 23 24 25	The North Carolina General Assembly has the authority to create the laws that govern the business conducted in North Carolina. To subject South Carolina DEC customers to North Carolina laws which are neither necessary for the provision of power nor which confer benefits to South Carolina ratepayers would be inappropriate. The Commission cannot abdicate the sovereign nature of the South Carolina General Assembly, from which this Commission derives its authority. As a result, this Commission will not permit DEC to pass on increased expenses incurred as a result of North Carolina's CAMA. The Commission finds it just and reasonable to disallow recovery of additional expenses attributable to CAMA from South Carolina ratepayers. ³¹
26	RRA found the results of DEC's rate case to be "somewhat restrictive from an investor
27	perspective," noting that the disallowance reduced DEC's net operating income by

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S&P Global RatingsDirect, "Summary: San Diego Gas & Electric Co." December 20, 2017, at 4. Public Service Commission of South Carolina, Docket No. 2018-319-E, Order No. 2019-323, May 21, 2019, 31 at 25-26.

1		approximately \$37 million. ³² DEC appealed the PSCSC's decision before the Supreme
2		Court of South Carolina. ³³ DEC has disclosed to its investors that its "results of operations,
3		financial position and cash flows could be adversely impacted if coal ash costs are not
4		ultimately approved for recovery and/or deferral treatment."34
5	Q.	What does your analysis and research regarding regulatory risk suggest for the TOs?
6	A.	The rate cases and analysis I describe above illustrate what the TOs disclose to their
7		investors and what is recognized by Moody's and S&P: regulated utilities such as the TOs
8		bear the risk that they will be unable to recover some or all their costs through the
9		ratemaking process in a timely manner.
10	Q.	How might SUFs/SDUs affect the TOs' regulatory risk?
10 11	Q. A.	How might SUFs/SDUs affect the TOs' regulatory risk? Regardless of whether the TOs fund SUFs/SDUs, they will be responsible for operating
10 11 12	Q. A.	How might SUFs/SDUs affect the TOs' regulatory risk? Regardless of whether the TOs fund SUFs/SDUs, they will be responsible for operating and maintaining them consistent with good utility practice. The direct (<i>e.g.</i> , operation and
10 11 12 13	Q. A.	How might SUFs/SDUs affect the TOs' regulatory risk? Regardless of whether the TOs fund SUFs/SDUs, they will be responsible for operating and maintaining them consistent with good utility practice. The direct (<i>e.g.</i> , operation and maintenance) and indirect (<i>e.g.</i> , administrative support) costs the TOs incur while operating
10 11 12 13 14	Q. A.	How might SUFs/SDUs affect the TOs' regulatory risk? Regardless of whether the TOs fund SUFs/SDUs, they will be responsible for operating and maintaining them consistent with good utility practice. The direct (<i>e.g.</i> , operation and maintenance) and indirect (<i>e.g.</i> , administrative support) costs the TOs incur while operating and maintaining SUFs/SDUs are subject to regulatory risk because of the inherent
10 11 12 13 14 15	Q. A.	How might SUFs/SDUs affect the TOs' regulatory risk? Regardless of whether the TOs fund SUFs/SDUs, they will be responsible for operating and maintaining them consistent with good utility practice. The direct (<i>e.g.</i> , operation and maintenance) and indirect (<i>e.g.</i> , administrative support) costs the TOs incur while operating and maintaining SUFs/SDUs are subject to regulatory risk because of the inherent possibility that the regulator may deny recovery of some or all of those costs. Further, the
10 11 12 13 14 15 16	Q. A.	How might SUFs/SDUs affect the TOs' regulatory risk? Regardless of whether the TOs fund SUFs/SDUs, they will be responsible for operating and maintaining them consistent with good utility practice. The direct (<i>e.g.</i> , operation and maintenance) and indirect (<i>e.g.</i> , administrative support) costs the TOs incur while operating and maintaining SUFs/SDUs are subject to regulatory risk because of the inherent possibility that the regulator may deny recovery of some or all of those costs. Further, the multi-year rate plans frequently authorized by the NYPSC expose the Companies to the
10 11 12 13 14 15 16 17	Q. A.	How might SUFs/SDUs affect the TOs' regulatory risk? Regardless of whether the TOs fund SUFs/SDUs, they will be responsible for operating and maintaining them consistent with good utility practice. The direct (<i>e.g.</i> , operation and maintenance) and indirect (<i>e.g.</i> , administrative support) costs the TOs incur while operating and maintaining SUFs/SDUs are subject to regulatory risk because of the inherent possibility that the regulator may deny recovery of some or all of those costs. Further, the multi-year rate plans frequently authorized by the NYPSC expose the Companies to the potential that their actual O&M costs may exceed the levels established in their rate plans,

³² S&P Global Market Intelligence, RRA Regulatory Focus, Duke Energy Carolinas LLC, Case Evaluation, July 10, 2019.

³³ S&P Global Market Intelligence, RRA Regulatory Focus, Duke Appeals to SC Supreme Court to Allow Coal Ash Cleanup Cost Recovery, April 23, 2020.

³⁴ Duke Energy Corporation, 2019 10-K, at 45.
1	Q.	How are cost overruns in the construction of SUFs/SDUs treated?
2	A.	As described in Section 25.8.6.4 of the NYISO OATT, the TOs are at risk of bearing
3		certain cost overruns in their construction of SUFs/SDUs. Generally, cost overruns are
4		scrutinized most closely in the ratemaking process, and are thus subject to a high degree of
5		regulatory risk.
6	Q.	What do you conclude regarding regulatory risk?
7	A.	The TOs bear significant regulatory risk in the provision of service to customers.
8		Specifically, the TOs face the risk that some or all their costs may not be recovered through
9		the ratemaking process. That risk is acknowledged by investors, who are aware that the
10		Companies rely on regulators for the opportunity to earn fair rates of return. The
11		ownership and operation of SUFs/SDUs increases the TOs' exposure to that risk by
12		increasing the amount of cost the TOs must recover through the ratemaking process. That
13		risk is exacerbated by regulatory lag, the use of multi-year rate plans that lock in expense
14		estimates for several years, and the possibility that different regulators may apply different
15		cost recovery standards.
16		B. Reliability Risk
17	Q.	What types of penalties could be imposed on the TOs if they fail to provide reliable
18		service to their customers?
19	A.	As noted in the Ameren decision, "FERC's precedents do not provide compensation for
20		several of the classes of risks that Petitioners allege will accompany construction and
21		operation of the network upgrade facilities. For example, fines and penalties for violations
22		of mandatory reliability standards and environmental regulations are generally charged

	directly to the utility, not passed through to customers via rate increases."35 Consistent
	with this finding, the TOs can be penalized by state or federal regulators, or both, for lapses
	in service quality, including service interruptions. At the federal level, the NERC
	developed mandatory reliability standards that are approved and enforced by FERC. As
	owners of the bulk electric system, the TOs are required by the Energy Policy Act to meet
	those standards. The TOs could be subject to penalties of \$1.3 million per day per
	violation of NERC's mandatory reliability standards. At the state level, as regulated
	utilities operating in New York, many of the TOs are subject to strictly enforced customer
	service quality, electric reliability, and safety measures, where the utilities are required to
	achieve predetermined performance benchmarks or be subject to a negative revenue
	adjustment ("NRA") for any shortfall. While the discussion that follows focuses primarily
	on the reliability risks the TOs face, with limited discussion of examples outside of New
	York, all utilities operating in the US face some degree of reliability risk.
Q.	What do the TOs disclose regarding reliability risk to their investors?
A.	Avangrid, CEI, Fortis, and National Grid plc all indicate that they are exposed to
	potentially significant penalties if they fail to meet the reliability standards established by
	NERC. For example, CEI states:
	State utility regulators may seek to impose substantial penalties on the Utilities for violations of state utility laws, regulations or orders. In addition, the Utilities' rate plans usually include negative revenue adjustments for failing to meet certain operating and customer satisfaction standards. In January 2021, Governor Cuomo proposed legislation that, if enacted, would establish an automatic moratorium on disconnections of residential and small business customers by the
	Q. A.

³⁵ *Ameren*, 880 F.3d, at 583.

1 NYSPSC issued orders to show cause why substantial penalties 2 should not be imposed on the Utilities regarding their preparation for 3 and response to Tropical Storm Isaias and on CECONY regarding its 4 actions and/or omissions prior to, during, and after the July 2019 5 power outages on the west side of Manhattan and in the Flatbush area 6 of Brooklyn. The orders further indicated that should the NYSPSC 7 confirm that certain alleged violations demonstrate a failure by the 8 Utilities to continue to provide safe and adequate service, the 9 NYSPSC would be authorized to commence a proceeding to revoke or modify the Utilities' operating certificates. See Note B to the 10 11 financial statements in Item 8. FERC has the authority to impose 12 penalties on the Utilities, the Clean Energy Businesses and the 13 projects that Con Edison Transmission invests in, which could be 14 substantial, for violations of the Federal Power Act, the Natural Gas 15 Act or related rules, including reliability and cyber security rules.³⁶

16 Have any of the TOs been penalized by NERC for reliability standard violations? **Q**.

- 17 Yes. In 2019, Avangrid self-reported six violations of transmission operational reliability A.
- 18 standards by three of its subsidiaries. While the Northeast Power Coordinating Council
- 19 found that no harm was known to have occurred due to the violations, Avangrid agreed to
- 20 pay \$450,000 in penalties. Avangrid further committed to several mitigation activities
- intended to ensure future compliance with NERC's standards.³⁷ Con Edison, National 21
- Grid, and NYSEG have also been fined NERC.³⁸ 22
- 23
- The magnitude of penalties levied by NERC can be significant. For example, on January 24
- 25

^{25, 2019,} NERC provided public notice that it penalized an undisclosed party \$10 million

³⁶ Consolidated Edison, Inc., 2020 10-K, at 46.

³⁷ S&P Global Market Intelligence, "Avangrid Admits to Reliability Standard Violations, Agrees to Pay Fine," Jasmin Melvin, December 2, 2019.

³⁸ North American Electric Reliability Corporation, Searchable Notice of Penalty Spreadsheet, as of December 31, 2020, available here: https://www.nerc.com/pa/comp/CE/Pages/Enforcement-and-Mitigation.aspx.

1		for 127 security violations between 2015 and 2018. ³⁹ The press later identified the
2		penalized party as Duke Energy ("Duke"). ⁴⁰ In 2009, Florida Power & Light Co. ("FPL")
3		agreed to pay a civil penalty of \$25 million resulting from a 2008 blackout that affected
4		millions of Florida consumers. ⁴¹ In total, NERC has announced 7,600 instances of
5		noncompliance with total fines of more than \$140 million as of December 31, 2020. ⁴² This
6		illustrates the potential materiality of the risks described in Section 2.1 of the Risk Catalog
7		(see Exhibit NYT-0003). Further, this is one potential reason why utilities can, and often
8		do, earn less than their authorized rates of return, thus demonstrating the importance of
9		allowing utilities the opportunity to earn a return on all risk-bearing assets.
10	Q.	Please describe the state-level service quality standards imposed on the TOs.
11	A.	New York utilities subject to NYPSC regulation are held to strictly enforced standards for
12		customer service quality, electric reliability, and safety measures. For example, National
13		Grid operates under a multi-year rate plan that includes material NRAs if it fails to meet
14		any reliability performance metrics. Specifically, National Grid is subject to several
15		customer service quality, electric reliability, and safety performance metrics. Figure 3
16		below summarizes the potential annual exposure that National Grid may face if it fails to
17		meet these metrics and provides a list of the types of metrics in each of the three

³⁹ "NERC Full Notice of Penalty," January 25, 2019, available here: https://www.nerc.com/pa/comp/CE/Enforcement%20Actions%20DL/Public_FinalFiled_NOP_NOC-2605_Part%201.pdf

⁴⁰ Utility Dive, "Duke Fined \$10M for Cybersecurity Lapses Since 2015", Lulia Gheorghiu, February 4, 2019, https://www.utilitydive.com/news/duke-fined-10m-for-cybersecurity-lapses-since-2015/547528/.

⁴¹ FERC Docket No. IN08-5, "FERC Approves Settlement, \$25 Million Fine for FPL's 2008 Blackout," October 8, 2009, https://www.nerc.com/FilingsOrders/us/FERCOrdersRules/FERC%20Press%20Release.pdf

 ⁴² North American Electric Reliability Corporation, Searchable Notice of Penalty Spreadsheet, as of December
 31, 2020, available here: https://www.nerc.com/pa/comp/CE/Pages/Enforcement-and-Mitigation.aspx.

performance categories. Exhibit No. NYT-0005 provides the same table and similar tables
for Central Hudson, Con Edison, National Grid, NYSEG, O&R, and RG&E. The mostly
penalty-only structure, and magnitude of the downside, expose the Companies to
significant reliability risk. Notably, these are penalties that the Companies may incur, even
if they are not found to have been negligent.

6

Figure 3: Summary of Service Quality, Electric Reliability, and Safety Metrics

Performance Measure	Maximum Negative Revenue Adjustment	
Customer Service Quality Performance Measures – PSC Complaint Rate, Residential and Small/Medium Commercial and Industrial Customer Satisfaction Surveys, and % Calls Answered in 30 seconds	\$19.8 million	
Electric Reliability Performance Metrics – SAIFI, CAIDI, Estimating, Standardized Interconnection Requirements, and Inspection and Maintenance	\$14.0 million	
Electric Safety Standards – Stray Voltage Testing and Inspections	150 basis point revenue adjustment	

7

8 Q. Have any of the TOs experienced an NRA?

9 A. Yes, several of the TOs have recently recorded NRAs. For example, NYSEG has recorded

10 \$17.5 million in NRAs over just the last three years related to its performance relative to its

11 system average interruption frequency index ("SAIFI") and customer average interruption

12 duration index ("CAIDI") targets.⁴³ Similarly, Central Hudson's 2018 Rate Order changed

⁴³ Cases 19-E-0378 and 19-E-0380, NYSEG and RG&E Annual Electric Reliability Report for 2020; Cases 15-E-0283, 15-E-0285, NYSEG and RG&E Annual Electric Reliability Reports for 2018 and 2019.

1	various performance mechanisms for electric, natural gas and customer service. For
2	electric reliability, Central Hudson's SAIFI target was raised to 1.38 for 2018 and lowered
3	to 1.34 for 2019. In 2019, Central Hudson's shareholder saw a negative revenue
4	adjustment of \$2 million for the 2018 reliability performance. O&R recorded a negative
5	revenue adjustment of \$300,000 for its electric operations in 2019 due to a below-target
6	2018 call answer rate. ⁴⁴ Additionally, Con Edison recorded negative revenue adjustments
7	related to electric service interruptions in July 2019. Con Edison disclosed the following to
8	its investors regarding this event:
9 10 11 12 13 14 15 16 17 18 19 20 21 22 23	On July 13, 2019, electric service was interrupted to approximately 72,000 CECONY customers on the west side of Manhattan. The NYSPSC and the Northeast Power Coordinating Council, a regional reliability entity, are investigating the July 13, 2019 power outage. Pursuant to the major outage reliability performance provisions of its electric rate plan, as a result of the July 13, 2019 power outage, the company recorded a \$5 million negative revenue adjustment. The NYSPSC is also investigating other CECONY power outages that occurred in July 2019, primarily in the Flatbush area of Brooklyn. Primarily due to these outages, pursuant to the rate plan's annual non-network outage frequency and non-network outage duration reliability performance provisions, the company recorded a \$10 million negative revenue adjustment. The company is unable to estimate the amount or range of its possible additional loss related to these power outages. ⁴⁵
24	This is not an exhaustive inventory of every NRA paid by the TOs. Rather, the above
25	examples of recorded NRAs are intended to illustrate the potential materiality of the NRAs
26	the TOs may be subject to in the future.

⁴⁴ Cases 14-E-0493 and 14-G-0494, Orange and Rockland Electric & Gas Rate Cases Annual Customer Service Performance Report, February 15, 2019, at 2.

⁴⁵ Consolidated Edison, Inc., 2019 10-K, at 132.

1	Q.	Are there examples of recently adopted reliability penalties from other jurisdictions?
2	A.	Yes. For example, Connecticut recently enacted legislation that, among other things: (1)
3		requires utilities to credit residential customers \$25 per day without power, and (2) enabled
4		the Connecticut Public Utilities Regulatory Authority ("PURA") to levy civil penalties if
5		utilities do not meet certain predetermined response standards. ⁴⁶ Utilities are not allowed
6		to recover the cost of these penalties through rates.
7	Q.	What do these penalties indicate regarding the reliability risk faced by the TOs?
8	A.	The experiences of the TOs, Duke, FPL, and other utilities across the US substantiate the
9		TOs' risk disclosures. The payments, totaling millions of dollars, provide evidence that the
10		TOs face the possibility of incurring material penalties if they violate NERC's or the
11		NYPSC's reliability standards, as applicable. As the DC Circuit court acknowledged, these
12		penalties are generally charged to shareholders, not ratepayers. ⁴⁷
13	Q.	What effect might SUFs/SDUs have on the TOs' reliability risk?
14	A.	SUFs/SDUs are integrated with the remainder of the TOs' electric transmission system.
15		Accordingly, ownership of any particular SUF or SDU could contribute to a reliability or
16		performance issue for one or more of the TOs. That risk is only exacerbated when
17		generators elect to build the SUFs/SDUs themselves, where the Companies' have less
18		direct control over the construction process. Therefore, requiring the TOs' to own

⁴⁶ Hartford Courant, "A New Bill Requires Connecticut Utility Companies to Pay Up When The Power Is Out For an Extended Period; Here Are 7 Ways it Affects Customers," October 7, 2020, https://www.courant.com/politics/hc-pol-connecticut-utility-accountability-bill-20201007wiouqbrfsjdqlk264qc274yb7u-story.html.

⁴⁷ *Ameren*, 880 F.3d, at 583.

1		SUFs/SDUs increases reliability risk, particularly if those SUFs/SDUs exacerbate the
2		overall system's complexity, further increasing the chances of reliability issues.
3	Q.	What are your conclusions regarding the reliability risks faced by the TOs?
4	A.	The TOs face the possibility of incurring penalties at both the state and federal level if they
5		are found to have violated certain reliability and performance standards. The costs of a
6		violation are potentially material and likely not recoverable from ratepayers. Therefore,
7		requiring the TOs' to own SUFs/SDUs, which increases the degree of reliability risk,
8		without offering the opportunity to earn a return on those SUFs/SDUs would require the
9		TOs to bear risks without compensation.
10		C. Cybersecurity Risk
11	Q.	What is cybersecurity risk?
12	А.	As I use the term in this testimony, cybersecurity risk captures the possibility that an
13		electric transmission asset is the target of a cyber-attack, whether through hacking,
14		malware, viruses, or other means, that causes system failure, grid disturbance, property
15		damage, or the loss of critical data. Those impacts may then financially harm the TOs'
16		shareholders (or other sources of equity), either directly because of the attack itself or
17		indirectly due to the imposition of after-the-fact fines and penalties. Cybersecurity risk is
18		further described in Section 3 of the Risk Catalog (see Exhibit NYT-0003).
19	Q.	What cybersecurity-related disclosures do the TOs make to their investors?
20	A.	Avangrid, CEI, Fortis, and National Grid plc all make extensive investor disclosures
21		
		regarding the risks of a cyber-attack, noting that their equipment and data have a

As operators of critical energy infrastructure, the Corporation's utilities face the risk of cybercrime, which has increased in frequency, scope and potential impact in recent years. Their ability to operate effectively is dependent upon developing and maintaining complex information systems and infrastructure that: (i) support the operation of electric generation, transmission and distribution facilities, including gas facilities; (ii) provide customers with billing, consumption and load settlement information, where applicable; and (iii) support financial and general operations.

11 Information and operations technology systems may be vulnerable to 12 unauthorized access due to hacking, viruses, acts of war or terrorism, 13 acts of vandalism and other causes. This can result in the disruption of energy service and other business operations, system failures and 14 grid disturbances, property damage, corruption or unavailability of 15 16 critical data, and the misappropriation and/or disclosure of sensitive, confidential and proprietary business, customer and employee 17 18 information. 19

A material breach could adversely affect the financial performance of the Corporation, its reputation and standing with customers, regulators and financial markets, and expose it to claims for third-party damage. The resultant financial impacts may not be fully covered by insurance policies or, in the case of utilities, through regulatory cost recovery, and could have a Material Adverse Effect.⁴⁸

- 26 Q. Have the credit rating agencies acknowledged the cybersecurity risks that
- 27 transmission utilities face?

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28 A. Yes, they have. For example, Moody's has indicated that "cybersecurity preparedness is an

- 29 increasingly important component of credit analysis for electric utilities globally."⁴⁹
- 30 Moody's further suggested that vertically integrated utilities are better able to prepare for
- 31 cyber threats than transmission networks. Given the deregulated structure inherent in the
- 32 New York market and the lack of vertically integrated utilities, cybersecurity risk is

⁴⁸ Fortis, Inc., 2020 Management Discussion and Analysis, at 33.

⁴⁹ Moody's Investors Service, "Research Announcement: Moody's: Electric Utilities' Cybersecurity Readiness Tied to Scale and Business Model", November 4, 2020.

1		particularly relevant for the TOs. S&P characterized the financial consequences of a cyber-
2		attack as potentially "huge," noting that "2020 saw a step change in the complexity and
3		sophistication of cyber attacks and, therefore, in the nature of cyber risks."50
4	Q.	How is cybersecurity risk evolving?
5	A.	Generally, the risks and potential costs of a cyber-attack are increasing as electric
6		transmission grids are becoming more complex, "intelligent," and interconnected. Each
7		access point and piece of new technology creates a possible risk exposure. The Idaho
8		National Labs ("INL") recently analyzed the susceptibility of the electric sector in the US
9		to the cyber threat, finding:
10 11 12 13 14 15 16 17		Asset owners and operators understand that the effects of a coordinated cyber and physical attack on a utility's operations would threaten electric system reliability – and potentially result in large scale power outages. Utilities are routinely faced with new challenges for dealing with these cyber threats to the grid and consequently maintain a set of best practices to keep systems secure and up to date. Among the greatest challenges is a lack of knowledge or strategy to mitigate new risks that emerge as a result of an exponential rise in complexity of modern control systems. ⁵¹
18		INL's findings are corroborated by Deloitte Touche Tohmatsu Limited ("Deloitte"), who
19		similarly found that complexity is a risk multiplier for electric grids. In other words, the
20		more complex a system is, the more vulnerability it has to a potentially costly cyber-attack.
21 22 23 24 25 26		As grids become increasingly "smart," with information and communications technologies and devices embedded throughout, networks are being linked, the system is gaining complexity, and the number of access points is rising. In addition, as utilities introduce more commonly used software and information technologies into their operations, their systems may become more accessible to adversaries. And, as they increasingly automate functions,

⁵⁰ S&P Global Ratings RatingsDirect, "Cyber Risk in a New Era: Let's Not Be Quiet About Insurers' Exposure to Silent Cyber", March 2, 2021.

⁵¹ "Cyber Threat and Vulnerability Analysis of the U.S. Electric Sector", Mission Support Center Analysis Report, Prepared by Mission Support Center and Idaho National Laboratory, August 2016, at ii.

1 2		the impact of an attack is potentially magnified. Taken together, all of these factors spell increased vulnerability. ⁵²
3		One recent subject of a cyber-attack is SolarWinds Inc. ("SolarWinds"), a prominent
4		information technology firm in the US. The cyber-attack on SolarWinds went undetected
5		for months and spread to many of the firm's clients, including Fortune 500 companies and
6		multiple government agencies. ⁵³ According to Tom Bossert, previously the homeland
7		security advisor, the hackers could exploit the access they gained to "destroy or alter data,
8		and impersonate legitimate people."54 Bossert concluded that "the magnitude of this
9		national security breach is hard to overstate."55 As one of the most significant recent
10		cyber-attacks, this event illustrates the potential severity of a cyber-attack.
11	Q.	Have any utilities incurred costs resulting from a cyber-attack?
12	А.	Yes, they have. For example, on February 28, 2018, NERC announced a \$2.7 million
13		penalty against an unidentified utility connected with a self-reported data breach. ⁵⁶
14		Portions of the unnamed utility's data were inadvertently exposed publicly by a third-party

⁵² "Managing Cyber Risk in the Electric Power Sector: Emerging Threats to Supply Chain and Industrial Control Systems", Steve Livingston, Suzanna Sanborn, Andrew Slaughter, and Paul Zonneveld, January 31, 2019, https://www2.deloitte.com/us/en/insights/industry/power-and-utilities/cyber-risk-electric-powersector.html?id=gx:2sm:3tw:4CyberPow18::6er:20190206083000:&utm_source=tw&utm_campaign=CyberP ow18&utm_content=er&utm_medium=social&linkId=63047468

⁵³ Business Insider, "Here's a Simple Explanation of How the Massive SolarWinds Hack Happened and Why Its Such a Big Deal," February 25, 2021, https://www.businessinsider.com/solarwinds-hack-explainedgovernment-agencies-cyber-security-2020-12

⁵⁴ NY Times, "I Was the Homeland Security Advisor to Trump. We're Being Hacked." Thomas P. Bossert, December 16, 2020. https://www.nytimes.com/2020/12/16/opinion/fireeye-solarwinds-russiahack.html?action=click&module=Opinion&pgtype=Homepage

⁵⁵ NY Times, "I Was the Homeland Security Advisor to Trump. We're Being Hacked." Thomas P. Bossert, December 16, 2020. https://www.nytimes.com/2020/12/16/opinion/fireeye-solarwinds-russiahack.html?action=click&module=Opinion&pgtype=Homepage

⁵⁶ "NERC Full Notice of Penalty Regarding Unidentified Registered Entity," February 28, 2018, https://elibrary.ferc.gov/eLibrary/idmws/common/opennat.asp?fileID=14831147.

1		vendor, violating NERC's Critical Infrastructure Protection ("CIP") reliability standards.
2		This violation is notable because the utility did not directly cause the improper handling of
3		data. Instead, the offense was the result of vendor noncompliance. Nonetheless, the
4		Western Electricity Coordinating Council concluded that the utility's failure to implement
5		its protocols allowed the breach to occur. ⁵⁷
6	Q.	How do SUFs/SDUs affect the level of cybersecurity risk the TOs face?
7	A.	As components of the electric transmission system, SUFs/SDUs could be hacked or used to
8		expose critical data. In that sense, ownership of SUFs/SDUs increases the degree to which
9		the TOs are exposed to cybersecurity risk. Further, to the extent SUFs/SDUs increase the
10		complexity or interconnectedness of the TOs' electric grids, they may exacerbate the
11		Companies' exposure to cybersecurity risk.
12	Q.	What do you conclude regarding cybersecurity risk?
13	A.	As is widely acknowledged by the investment community, the TOs face the risk that their
14		electric transmission property and data could be the subject of a cyber-attack, creating
15		substantial costs to be borne by shareholders or otherwise impose burdens on equity.
16		SUFs/SDUs are integrated with the TOs' other transmission assets and therefore carry this
17		risk. In fact, SUFs/SDUs may increase the amount of cybersecurity risk that the TOs bear
18		by increasing their systems' complexity.

⁵⁷ Morgan Lewis, "Data Exposure by Vendor Leads to \$2.7 Million NERC Penalty for Utility," March 9, 2018, https://www.morganlewis.com/pubs/2018/03/data-exposure-by-vendor-leads-to-2-7-million-nerc-penalty-forutility.

1		D. Environmental Risk
2	Q.	What is environmental risk?
3	A.	I use the term environmental risk to capture two different types of risk. The first type of
4		risk is the possibility that the TOs' systems, including SUFs/SDUs, are damaged or
5		destroyed due to a weather event (e.g., a storm). The risks of such an event are increasing
6		due to climate change, which is a significant source of incremental risk for regulated
7		utilities generally, including the TOs. The expanding nature of climate risks has been seen
8		through more pronounced environmental trends, recognition of the effects of climate
9		change on the entire electric system, and recognition of the impact on financial markets.
10		Utilities' responses to these risks, whether to preemptively increase resilience or respond
11		after-the-fact to an event, can entail rising costs and reduced flexibility. For example, CEI
12		describes the substantial efforts that its subsidiary CECONY has been undertaking since
13		Superstorm Sandy in 2012 to evaluate the effects of climate change and increase resiliency
14		in the face of those effects, as well as some of the associated costs, as follows:
15		After Superstorm Sandy, CECONY invested \$1,000 million in its
16		infrastructure in order to improve its resilience against storms. In
17		December 2019, CECONY completed a study of climate change
18		vulnerability. The study evaluated present-day infrastructure, design
19 20		specifications and procedures under a range of potential climate
20 21		flooding from intense rainfall, hurricane-strength winds and extreme
22		heat to be CECONY's most significant climate-driven risks to its
23		electric, gas and steam systems. The study estimated that CECONY
24		might need to invest between \$1,800 million and \$5,200 million by
25		2050 on targeted programs in order to adapt to potential impacts from
26		climate change. During 2020, CECONY further evaluated its future
27		climate change adaptation strategies and developed a climate change
28		implementation plan that it filed with the NYSPSC in December 2020.
29		I he climate change implementation plan explains how CECONY will

1 2 3 4 5 6 7 8 9		incorporate climate change projections for heat, precipitation, and sea level rise from the 2019 Climate Change Vulnerability Study into its operations to mitigate climate change risks to its assets and operations and establishes an ongoing process to reflect the latest science in the company's planning. With respect to governance, CECONY is adopting a climate change planning and design guideline, creating an executive committee to oversee implementation of the plan, and is establishing a climate risk and resilience team to execute the day-to- day activities required by the plan. ⁵⁸
10		The second type of risk is the prospect that the TOs' are found responsible for an
11		environmental liability, for example related to issues such as investigatory and remediation
12		costs, releases from oil-filled equipment, or air emissions. The historical experience of the
13		utility industry demonstrates that the potential costs of such a finding are quite significant.
14		Both types of risk can result in costs to the TOs that may not be recoverable through the
15		ratemaking process and are described in more detail below.
16	Q.	Do the TOs disclose this risk to their investors?
17	A.	Yes, they do. Avangrid, CEI, Fortis, and National Grid plc all disclose some form of
18		environmental risk to their shareholders. For example, Avangrid indicates that it is
19		"subject to numerous environmental laws, regulations, and other standards, including rules
20		and regulations with respect to climate change, which could result in increased capital
21		expenditures, operating costs and various liabilities, and could require us to cancel or delay
22		planned projects or limit or eliminate certain operations, all of which could have an adverse
23		effect on our business and financial condition."59 Fortis identifies the risks that it faces
24		because of climate change more explicitly, stating:

Consolidated Edison Inc., 2020 10-K, at 39. Avangrid 2020 10-K, at 31. 58

⁵⁹

1 Climate change is predicted to lead to more frequent and intense 2 weather events, changing air temperatures, changing seasonal 3 variations, and regulatory responses (see "Environmental Matters" 4 on page 30), each of which could have a Material Adverse Effect. 5 Severe weather impacts the Corporation's service territories, 6 primarily when thunderstorms, flooding, wildfires, hurricanes and 7 snow or ice storms occur. Increased frequency of extreme weather 8 events could increase the cost of providing service. Changes in 9 precipitation that result in droughts could increase the risk of 10 wildfire caused by the Corporation's electricity assets or may cause water shortages that could adversely affect operations. Extreme 11 12 weather conditions in general require system backup and can 13 contribute to increased system stress, including service 14 interruptions. Changing air temperatures could also result in system 15 stress and decreased efficiencies to operating facilities over time. 16 Longer-term climate change impacts, such as sustained higher temperatures, higher sea levels and larger storm surges, could result 17 in service disruption, repair and replacement costs, and costs 18 19 associated with strengthened design standards and systems, each of 20 which could have a Material Adverse Effect if not resolved in a 21 timely and effective manner and/or mitigated through insurance 22 policies or regulatory cost recovery.⁶⁰

23 Similarly, National Grid plc notes:

24 The cost of future environmental remediation obligations is often 25 inherently difficult to estimate and uncertainties can include the 26 extent of contamination, the appropriate corrective actions and our 27 share of the liability. We are increasingly subject to regulation in 28 relation to climate change and are affected by requirements to 29 reduce our own carbon emissions as well as to enable reduction in 30 energy use by our customers. If more onerous requirements are 31 imposed or our ability to recover these costs under regulatory frameworks changes, this could have a material adverse impact on 32

⁶⁰ Fortis 2020 Management Discussion & Analysis, at 29.

1 2		our business, reputation, results of operations and financial position. ⁶¹
3	Q.	Please describe the climate risks faced by utilities operating in New York specifically.
4	A.	The effects of climate change on New York State are well-studied. For example, a 2014
5		study developed by the New York State Energy Research and Development Authority
6		("NYSERDA") projected that the frequency, intensity, and duration of extreme heat events
7		and coastal flooding would increase throughout the 21st century. NYSERDA further
8		anticipated that the increasing frequency of intense precipitation and steady increases in
9		average temperate would pose "unique challenges to New York State."62
10		
11		As discussed above, Con Edison developed, in collaboration with stakeholders, a Climate
12		Change Vulnerability Study to assess the risks it faces due to climate change and develop
13		strategies to increase system resilience and preparedness for those risks. That study
14		concluded Con Edison's systems, which would include SUFs/SDUs, face risks from
15		extreme weather events, noting:
16 17		This Study evaluates present-day infrastructure, design
18		better understand Con Edison's vulnerability to climate-driven
19		risks. This analysis identified sea level rise, coastal storm surge,
20		inland flooding from intense rainfall, hurricane-strength winds, and
21		extreme heat as the most significant climate-driven risks to Con
22		Edison's systems. Con Edison has unique energy systems, and
25 24		vulnerabilities vary across those systems. The utility's electric, gas,
2 4 25		coastal storms; workers across all commodities are vulnerable to

⁶¹ National Grid Plc., Annual Report and Accounts 2019/20, at 227.

⁶² New York State Energy Research and Development Authority, "Climate Change in New York State: Updating the 2011 ClimAID Climate Risk Information Supplement to NYSERDA Report 11-18", September 2014, at 15.

1 2		increasing temperatures; and the electric system is also vulnerable to heat events. ⁶³
3	Q.	Do investors consider climate risks when making investment decisions?
4	A.	Yes, they do. For example, S&P now incorporates environmental, social, and governance
5		("ESG") considerations into its credit rating analysis. At the same time, other investors
6		have adopted restrictions that prohibit them from owning the securities of companies that
7		are seen as contributing to climate change. For example, the investment manager
8		BlackRock sent its clients a letter in January 2020 announcing several initiatives designed
9		to make sustainability central to its investment approach, such as: making sustainability
10		integral to portfolio management, exiting investments with substantial sustainability-related
11		risk, and strengthening its commitment to sustainability in investment stewardship
12		activities.
13		
14		Further, investors, banks, and financial regulators are increasingly mindful of the risks that
15		climate change poses to utilities specifically. For instance, McKinsey and Company
16		published a report in 2019 noting that utilities are becoming increasingly vulnerable to
17		extreme weather events and that "unless utilities become more resilient to extreme weather
18		events, they put themselves at unnecessary risk, in both physical and financial terms.
19		Repairing storm damage and upgrading infrastructure after the fact is expensive and
20		traumatic."64 McKinsey further references a National Climate Assessment report from

 ⁶³ Con Edison, Climate Change Vulnerability Study, December 2019, at 1.
 ⁶⁴ McKinsey and Company "Why and how utilities should start to manage

McKinsey and Company, "Why, and how, utilities should start to manage climate change risk," April 2019, at 3.

1	2018 that stated "utilities could see negative impacts from increased temperatures and heat
2	waves, as well as sea level rises even in the absence of storms. This will increase the
3	financial cost to utilities of climate change and increase the benefits of being prepared." ⁶⁵
4	
5	The Commodity Futures Trading Commission ("CFTC"), the regulator overseeing the
6	trading of futures and options in the US, published a report that concludes that climate
7	change is a risk to the overall financial system. In particular, the CFTC noted the economic
8	risk of the changes required to mitigate climate change and the disruptive effect those
9	changes may have on the stability of the financial system. The CFTC report concluded:
10 11 12 13 14 15 16 17 18 19 20	Climate change poses a major risk to the stability of the U.S. financial system and to its ability to sustain the American economy. Climate change is already impacting or is anticipated to impact nearly every facet of the economy, including infrastructure, agriculture, residential and commercial property, as well as human health and labor productivity. Over time, if significant action is not taken to check rising global average temperatures, climate change impacts could impair the productive capacity of the economy and undermine its ability to generate employment, income, and opportunity.
21 22 23 24 25 26 27 28 29 30 31	This reality poses complex risks for the U.S. financial system. Risks include disorderly price adjustments in various asset classes, with possible spillovers into different parts of the financial system, as well as potential disruption of the proper functioning of financial markets. In addition, the process of combating climate change itself—which demands a large-scale transition to a net-zero emissions economy—will pose risks to the financial system if markets and market participants prove unable to adapt to rapid changes in policy, technology, and consumer preferences. Financial system stress, in turn, may further exacerbate disruptions in economic activity, for example, by limiting the availability of credit

1 2		or reducing access to certain financial products, such as hedging instruments and insurance. ⁶⁶
3	Q.	Have the TOs incurred costs responding to extreme weather events?
4	A.	Yes, they have. For example, NYSEG received authorization in its most recent rate case to
5		amortize approximately \$227 million of deferred storm costs. ⁶⁷ RG&E similarly received
6		authorization to amortize its deferred storm costs, which at the time were approximately
7		\$49 million. ⁶⁸ Con Edison's rates reflect more than \$20 million per year in contributions to
8		its major storm reserve. ⁶⁹ Further, Con Edison incurred more than \$500 million responding
9		to one single storm, Superstorm Sandy, which occurred in 2012. ⁷⁰ Central Hudson has
10		approximately \$1.6 million in funding for a Major Storm Reserve for each Rate Year. To
11		the extent that Central Hudson incurs incremental major storm damage costs in excess of
12		the amount accrued in the Major Storm Reserve over the term of the rate plan, it defers
13		expenses for future recovery from customers, and the rate allowance for the Major Storm
14		Reserve will be adjusted accordingly during its next rate proceeding. In the last 10 years,
15		there were several instances where storm recovery costs exceeded Central Hudson's storm
16		reserve. These amounts demonstrate both the reality and the materiality of major storm
17		costs for the TOs.

⁶⁶ S&P Global RatingsDirect, "Key Credit Factors For the Regulated Utilities Industry", November 19, 2013, p. 1.

⁶⁷ Cases 19-E-0378, 19-G-0379, 19-E-0380, and 19-G-0381, Order Approving Electric and Gas Rate Plans in Accordance With Joint Proposal, With Modifications, November 19, 2020, at 152.

⁶⁸ Cases 19-E-0378, 19-G-0379, 19-E-0380, and 19-G-0381, Order Approving Electric and Gas Rate Plans in Accordance With Joint Proposal, With Modifications, November 19, 2020, at 152-153.

⁶⁹ Cases 19-E-0065 and 19-G-0066, Order Adopting Terms of Joint Proposal and Establishing Electric and Gas Rate Plan, January 16, 2020, at 44-45.

⁷⁰ Consolidated Edison, Inc., 2014 10-K, at 99.

1	Q.	Are storm response costs always recoverable through rates?
2	A.	The costs utilities incur responding to storms or other extreme weather events are often, but
3		not always, recoverable through rates. As I described above, the Companies recover
4		significant amounts of storm response costs through rates. However, the possibility of
5		bearing some or all those costs still creates meaningful risk for investors. In some
6		instances, regulators deliberately assign portions of this risk to investors. For example, the
7		MADPU has found:
8 9 10 11 12 13 14 15 16 17 18	0	When a storm has occurred during the test year, a company may have to spend considerable funds to restore service. Under traditional Department ratemaking practice, if the test year level of storm-related expense is not extraordinary in relation to the company's distribution revenues, the cost of service would include the full amount of the expense. Alternately, if the test-year expense is extraordinary in relation to the company, the Department will permit the expense to be amortized over a three to five year period. The Department has stated that our intent here is not to shift the risk of unanticipated expenses such as extraordinary storm costs solely to ratepayers. Rather, the ROE is designed, in part, to recognize these business risks. ⁷¹
19 20	Q.	what environmental risks do the 10s face in the ordinary course of their business,
20	A.	Beyond the risk that their assets, including SUFs/SDUs, could be damaged or destroyed in
22		a severe weather event (and the attendant risk of power outages and storm response),
23		regulated utilities such as the TOs commonly encounter environmental contamination on
24		properties that must be dealt with to install, repair, or otherwise maintain their assets. In
25		these instances, the TOs costs may include expenses associated with specialized workers,
26		personal protective equipment, soil sampling, disposal of contaminants, and remediation,

⁷¹ Massachusetts Department of Public Utilities, D.P.U. 09-39, November 30, 2009, at 205.

1 among other items. National Grid recently incurred many of these types of costs while 2 completing an electric transmission line rebuild in Onondaga County, New York, in an area 3 with known PCB contamination. National Grid incurred costs for structure replacements, 4 multiple rounds of soil characterization testing, repair of a landfill cap, disposal of 5 contaminated soils, and legal costs. There are likely to be additional incrementally 6 increased environmental risks associated with individual SUFs/SDUs, with the amount of 7 the increased risk varying based on the project type, scale, and complexity. SUFs/SDUs 8 involve the installation of additional equipment that could involve soil-disturbing activities 9 and encounter previously unknown environmental conditions that require further 10 investigation and remediation activities beyond the scope of the project. Once put into 11 operation, such additional equipment may also have the potential to leak to the soil, water, 12 or air in the event of equipment failure. Larger-scale projects, such as new substations, 13 include more substantial soil disturbance and the installation and operation of large oil-14 filled equipment, such as transformers and phase angle regulators. Each of these increased 15 environmental risks attributable to the SUFs/SDUs also carry the potential risk for 16 regulatory enforcement actions due to the strict liability scheme of many environmental 17 statutes that may impose legal liabilities and penalties regardless of fault or intent. While 18 some of the above costs may be recoverable through the ratemaking process, recovery is 19 not guaranteed.

1	Q.	How do SUFs/SDUs affect the degree to which the TOs are exposed to the risks of
2		climate change and other environmental risks?
3	А.	Generally, the more assets that the TOs own and are responsible for, the more likely that
4		operation of some of these assets will be sited in areas that are subject to environmental
5		risks from climate change or otherwise present environmental risks or liabilities.
6		SUFs/SDUs are integrated into the remainder of the TOs' transmission system. Therefore,
7		SUFs/SDUs may experience both types of environmental risk that I identified.
8		Specifically, SUFs/SDUs, like the remainder of the Companies' assets, may be damaged or
9		destroyed in a storm. Additionally, ownership of SUFs/SDUs increases the chances that
10		environmental contamination may be encountered at one or more of those facilities or that
11		there may be releases from oil-filled equipment or additional air emissions, potentially
12		resulting in environmental liabilities to the Companies. Therefore, I conclude that
13		SUFs/SDUs increase the Companies' exposure to environmental risk.
14		E. Operational Risk
15	Q.	What is operational risk?
16	A.	I use the term operational risk to denote the possibility that the Companies may suffer
17		financial harm resulting from a physical accident involving their assets. While the
18		Companies take the safety of their employees, contractors, and the public quite seriously,
19		the operation of electric transmission property is inherently hazardous. Ownership of such
20		property introduces the risk of being held liable for a physical accident, such as a helicopter
21		crash, personal injury, automobile accident, or other damages. Operational risk is further
22		described in Section 5 of the Risk Catalog (see Exhibit NYT-0003).

Q.	Do the TOs disclose the operational risks they bear to investors?
A.	Yes, they do. Each of the TOs disclose a variety of operational risks to their investors. For
	example, CEI notes that the failure of, or damage to, its utilities' facilities (many of which
	are located in or near densely populated areas) "could result in bodily injury or death,
	property damage, the release of hazardous substances or extended service interruptions." ⁷²
	Avangrid discloses that a "physical security intrusion could potentially lead to theft and the
	release of critical operating information and could result in significant costs, fines and
	litigation. Theft, vandalism or damages to our facilities and equipment can cause
	significant disruption to operations and can lead to operating losses." ⁷³ Similarly, National
	Grid plc indicates:
	Aspects of the work we do could potentially harm employees, contractors, members of the public or the environment. Potentially hazardous activities that arise in connection with our business include: the generation, transmission and distribution of electricity; and the storage, transmission and distribution of gas. Electricity and gas utilities also typically use and generate hazardous and potentially hazardous products and by-products. In addition, there may be other aspects of our operations that are not currently regarded or proved to have adverse effects but could become so, such as the effects of electric and magnetic fields. A significant safety or environmental incident, or the failure of our safety processes or of our occupational health plans, as well as the breach of our regulatory or contractual obligations or our climate change targets, could materially adversely affect our results of operations and our reputation. ⁷⁴
	Q. A.

⁷² Consolidated Edison, Inc., 2019 10-K, at 47.

⁷³ Avangrid, Inc., 2020 10-K, at 31.

⁷⁴ National Grid Plc., Annual Report and Accounts 2019/20, at 227.

1	Q.	Does insurance protect the TOs from operational risks?
2	А.	Not completely, no. While the TOs may be able to procure insurance for some of the
3		operational risk they bear, the prohibitive cost of insurance against any operational risk
4		may result in a significant portion of their systems being uninsured, and some or all the cost
5		of insurance deductibles may be allocated to shareholders.
6	Q.	Do the TOs maintain insurance for operational risk?
7	A.	Yes, each of the TOs maintain insurance consistent with sound utility practice. However,
8		that does not mean that they are fully insured against operational risk. Many of the TOs
9		have noted publicly that the cost of doing so would be prohibitive. For example, Avangrid
10		states that it "is not able to insure against all potential risks which could adversely affect
11		our financial condition." ⁷⁵ Similarly, Fortis notes:
12 13 14		Insurance is maintained with reputable industry insurers for property damage, potential liabilities and business interruption for coverage considered appropriate and in accordance with industry practice.
13 16 17 18 19 20 21 22 23 24 25		A significant portion of transmission and distribution assets is uninsured, as is customary in North America, as the cost is prohibitive. Insurance is subject to coverage limits and deductibles as well as time- sensitive claims discovery and reporting provisions. There is no assurance that: (i) the amounts and types of actual damage, liabilities or business interruption will be fully covered; (ii) regulatory relief would be obtained for coverage shortfalls; (iii) adequate insurance at reasonable rates will continue to be available; or (iv) insurers will fulfill their obligations. Significant actual shortfalls could have a Material Adverse Effect. ⁷⁶
26		Therefore, the TOs face residual exposure to operational risk for the portions of their
27		systems that are not fully insured.

⁷⁵ 76

Avangrid, Inc., 2020 10-K, at 36. Fortis, Inc., 2020 Management Discussion and Analysis, at 34.

1	Q.	Are the TOs guaranteed to recover the cost of insurance deductibles through rates?
2	A.	No, they are not. As I described in more detail in Section IV.A above, the recovery of any
3		costs that is subject to the ratemaking process is inherently uncertain. Regulators have in
4		the past specifically excluded insurance deductibles for injuries and damages from rates.
5		For example, in a 2020 decision, the Arizona Corporation Commission ("ACC") found:
6 7 8 9 10 11 12 13 14 15		We acknowledge TEP's assertion that payment of deductibles for injuries and damages is typical for the utility industry. However, the parties opposed to the inclusion of a \$2 million deductible note that TEP did not provide any information regarding the cause of the accident, or whether the Company's negligence played a role in causing the accident. Without more information, we cannot determine whether the inclusion of the deductible in the calculation of a normalized expense is reasonable. Accordingly, we adopt Staff's, RUCO's, and AECC's adjustment to Injuries and Damages Expense and remove the \$2 million deductible. ⁷⁷
16	Q.	How do SUFs/SDUs affect operational risk?
17	A.	SUFs/SDUs integrated with the remainder of the TOs' electric transmission systems, and
18		therefore intrinsically carry similar operational risks. Additionally, if interconnecting
19		generators elect the option to build SUFs/SDUs, that may make it more difficult for the
20		Companies to pursue warranty claims in the event of operational issues, as I described
21		above.
22	Q.	What do you conclude regarding SUFs/SDUs and operational risk?
23	A.	All electric utilities face some degree of operational risk in the provision of service to

24 customers because the operation and maintenance of electric utility assets is inherently

⁷⁷ Docket No. E-01933A-19-0028, In the Matter of the Application of Tucson Electric Power Company for the Establishment of Just and Reasonable Rates and Charges Designed to Realize a Reasonable Rate of Return on the Fair Value of the Properties on Tucson Electric Power Company Devoted to its Operations Throughout the State of Arizona and for Related Approvals, Decision No. 77856, December 31, 2020, at 76.

1		hazardous. The TOs, and SUFs/SDUs, are no different. Insurance mitigates, but does not
2		eliminate, this risk. Therefore, I conclude that ownership of SUFs/SDUs increases the
3		amount of operational risk the TOs bear.
4		F. Other Risks
5	Q.	Are the risks you described above a comprehensive list of all the risks the TOs bear
6		when owning, operating, and maintaining SUFs/SDUs?
7	А.	No, they are not. The regulatory, reliability, cybersecurity, environmental, and operational
8		risks discussed throughout my testimony are examples of business risks borne by the TOs.
9		Historical experience with utility operations may instruct investors' assessment of these
10		types of risks. In other words, these risks are examples of the "known unknowns" faced by
11		utility asset owners. However, there is also a real possibility that utility operations will be
12		affected by "unknown unknowns." That is, it is possible, if not likely, that there will be a
13		future event without precedent that creates substantial risk for investors. There are multiple
14		examples within recent years of utility companies' operations being materially affected by
15		events that were, at the time, unprecedented. Requiring the TOs to own, operate, and
16		maintain SUFs/SDUs has the potential to increase the Companies' exposure to such events.
17	Q.	Are there any examples of such unprecedented events?
18	A.	Yes, there are. For example, millions of Texans were recently left without power as record
19		low temperatures intensified demand, exacerbated natural gas supply issues, and caused
20		other power generation issues. ⁷⁸ The February 2021 cold snap highlighted threats to the

⁷⁸ National Aeronautics and Space Administration, "Extreme Winter Weather Causes US Blackouts," February

1	reliability and resilience of the electric grid in Texas. ⁷⁹ In an unprecedented move, all three
2	commissioners of the Public Utility Commission of Texas ("PUCT") resigned in the
3	aftermath of the extreme weather event. RRA notes that their resignations "and ongoing
4	controversy surrounding the PUC's response to a February weather event are creating
5	increasing uncertainty for utility investors."80 RRA further indicates that the new
6	commissioners: (1) will have varying degrees of utility experience and are unlikely to be
7	familiar with PUCT policy; (2) may not have sufficient time to develop reasoned decisions
8	on cases that are already close to being completed; and (3) will be unknown quantities,
9	making it difficult to predict their stances on specific issues. ⁸¹
10	
11	Another such example is Superstorm Sandy. In October 2012, Superstorm Sandy caused
12	extensive damage to utility assets in New York, including electric transmission assets
13	owned by the TOs. Both CEI and Public Service Enterprise Group Incorporated ("PEG")
14	disclosed to their investors that Superstorm Sandy resulted in the highest level of customer
15	outages in their histories. ⁸² CEI and PEG further disclosed that their storm response costs
16	were approximately \$500 million ⁸³ and \$300 million, ⁸⁴ respectively. In general, protracted
17	power outages, such as those caused by Superstorm Sandy, can contribute to a regulatory

^{16, 2021,} https://earthobservatory.nasa.gov/images/147941/extreme-winter-weather-causes-us-blackouts.

⁷⁹ S&P Global Market Intelligence, "S&P Podcast: The Mess With Texas," March 16, 2021.

⁸⁰ Regulatory Research Associates, "Update: Texas Political Divide Widens as 3rd and Last PUCT Commissioner Resigns," March 17, 2021.

⁸¹ Regulatory Research Associates, "Update: Texas Political Divide Widens as 3rd and Last PUCT Commissioner Resigns," March 17, 2021.

⁸² Consolidated Edison, Inc. 2013 10-K, at 27; Public Service Enterprise Group Incorporated, 2013 10-K, at 20.

⁸³ Consolidated Edison, Inc., 2014 10-K, at 99.

⁸⁴ S&P Global Market Intelligence, "PSEG Says Restoration Costs for Sandy, Nor'easter Could Total \$300M", December 4, 2012.

1		and political climate that diminishes a utility's regulatory and financial flexibility, which
2		could hinder a utility's ability to make other investments.
3		
4		Lastly, as discussed in Section IV.A above, SDG&E's shareholders bore \$421 million in
5		wildfire costs related to 2007 wildfires due to California's policies regarding inverse
6		condemnation. S&P noted that the CPUC's decision "as potentially weakening the credit
7		quality for all of California's regulated utilities,"85 as they could now be held liable for
8		wildfire damages even without a negligence finding. More recently, under more extreme
9		conditions with a greater probability for wildfire incidents, PG&E Corporation ("PG&E")
10		filed for bankruptcy due to potentially material liabilities following a series of wildfires in
11		2017 and 2018. ⁸⁶
12	Q.	What do you conclude regarding unanticipated risks and SUFs/SDUs?
13	A.	The Texas cold spell, the east coast's Superstorm Sandy, and California wildfires illustrate
14		that utility investors are not only subject to risks that with a measurable history of
15		consequences. Instead, they are also subject to a variety of risks that are difficult to predict
16		before they materialize. While the three historical examples I identified are all climate-
17		related to some degree, the nature of the next significant event is inherently uncertain (e.g.,
18		it could be a cyber-attack, pandemic, or any other type of event). It is precisely that
19		uncertainty (i.e., the "unknown unknowns") that comes from owning, operating, and

⁸⁵ S&P Global RatingsDirect, "Summary: San Diego Gas & Electric Co." December 20, 2017, at 4.

 ⁸⁶ S&P Global RatingsDirect, "Research Update: PG&E Corp. and Subsidiary Downgraded to 'CC' On Expected Bankruptcy Filing; Ratings Remain on CreditWatch Negative," January 14, 2019.

maintaining SUFs/SDUs that creates risk, and represents a downside-only proposition, to
 investors.

3 V. NONPROFIT OPERATIONS AND CAPITAL ATTRACTION

4 Q. Please describe the nature of the TOs relationship with the transmission assets at issue 5 in the proceeding.

6 A. SUFs/SDUs are owned, operated, and maintained by the TOs, but funded by generators.

7 TO Funding would allow the TOs to continue to construct (subject to a developer's right to

8 construct stand-alone upgrades), own, operate, and maintain these facilities, but by being

9 allowed to self-fund, the TOs would then be enabled to earn a return on the value of the

10 transmission assets. As discussed in Section II, in *Bluefield*, the Supreme Court found that

11 for a regulated enterprise, "A public utility is entitled to such rates as will permit it to earn a

12 return on the value of the property which it employs for the convenience of the public...⁸⁷

13 Absent the opportunity for the transmission owner to fund SUFs/SDUs, the TOs are denied

14 their opportunity to earn a return on the value of SUFs/SDUs granted under *Bluefield*.

15 Q. Have the TOs earned a return on any of the generator-funded assets owned from

16 SUFs/SDUs?

17 A. No, they have not. While the TOs continue to construct, own, operate, and maintain

18 SUFs/SDUs, they have not earned a return on the assets. By owning the facilities, and

19

servicing the facilities, they are effectively a nonprofit portion of the Companies' overall

⁸⁷ Bluefield Waterworks and Improvement Company v. Public Service Commission of West Virginia, 262 U.S. 679 (1923)

1		enterprise. This issue was recognized in the recent Ameren decision in describing the effect				
2		of a FERC order denying transmission owners the option to self-fund, "FERC's orders				
3		require them to act, at least in part, as a nonprofit business."88 Requiring transmission				
4		owners to function, in part, as a nonprofit entity represents a fundamental change in the				
5		investor-owned utility model. Further, it does nothing to address the fact that investors are				
6		not able to limit their investments to specific assets - they invest in the entire enterprise and				
7		therefore must include the effect of nonprofit operations in their assessment of a required				
8		return.				
9	Q.	What is the effect of denying the TOs the option to self-fund SUFs/SDUs?				
10	A.	As noted in Hope, for a utility company "the return to the equity owner should be				
11		commensurate with returns on investments in other enterprises having corresponding				
12		risks." Since SUFs/SDUs constructed on the TOs' systems are not included in rate-				
13		regulated rate base, the authorized rate of return for each of the TOs does not reflect the				
14		incremental risks associated with SUFs/SDUs and discussed extensively in Section IV.				
15		The authorized rate of return on rate base is insufficient relative to the risks borne by				
16		investors for both rate base and SUFs/SDUs.				
17	Q.	How does this effect the TOs' ability to attract capital?				
18	A.	As described in Section III, denying the TOs the option to self-fund SUFs/SDUs represents				
19		a downside-only proposition to investors. Without an ability to earn a return on these				
20		assets, and the potential for financial loss from the risks described in Section IV				

⁸⁸ Ameren, 880 F.3d, at 581

1		SUFs/SDUs, there is no benefit to investors in TOs. In fact, investors in TOs can only		
2		expect the SUFs/SDUs to reduce their expected returns on investments in the TOs.		
3				
4		If the Companies do not offer sufficient rates of return relative to other comparable		
5		investments of commensurate risks, it could inhibit their ability to raise capital on		
6		reasonable terms. That is, if the rate of return is insufficient, investors will seek alternative		
7		investments that offer comparable returns for lower levels of risk. The risks associated		
8		with SUFs/SDUs represent incremental risks relative to other comparable utilities that do		
9		not bear the risks associated with comparable nonprofit operations. As recognized in the		
10		recent Ameren decision in a comparable scenario, investors do not expect "to underwrite		
11		the prospect of potentially large non-profit appendages with no compensatory incremental		
12		return." ⁸⁹ Further, "FERC's orders attack their very business model and thereby create a		
13		risk that new capital investment will be deterred."90 The TOs' ability to raise capital is		
14		necessary for the Companies to continue to provide safe and reliable service and maintain		
15		the financial soundness of the Companies' operations. The presence of uncompensated		
16		risks inhibits the TOs' ability to attract capital on reasonable terms and reasonable rates.		
17	Q.	Are the amount and overall magnitude of SUFs/SDUs increasing on each of the TOs'		
18		systems?		
19	A.	Yes, they are. With the ambitious policy goals to increase access to renewable energy		
20		resources, significant expansion of the transmission system is required. As shown in		

⁸⁹ *Ibid.*

⁹⁰ *Ibid*.

1 Figure 4 below, there has been a significant increase in the number of generator

2 interconnection requests and the resulting SUFs/SDUs to the TOs' systems.

3





4

5 This suggests that the nonprofit operations will only increase for the TOs if TO Funding for 6 SUFs/SDUs is not adopted. An increase in the level of nonprofit operations will only serve 7 to exacerbate the issues related to capital attraction and financial integrity discussed above.

⁹¹ Figure 4 represents the initial cost estimations and number of System Upgrade projects from Class Year 2009 to 2019. It does not reflect the final costs of SDUs and SUFs accepted by project developers. For Class Year 2019, the initial cost estimates for SDUs were not studied in the initial 2019 Class Year report, therefore the values used are from the latest SDU reports presented at NYISO as of 3/10/2021. To date, the Interconnection Customers have accepted responsibility for \$248,797,424 of the SUFs and associated headroom identified for Class Year 2019. See NYISO, Notice of Class Year 2019 Completion (Feb. 9, 2021). Information regarding the commitments for SDUs (and their associated SUFs) for Class Year 2019 has not yet been made available.

1	Q.	What are your conclusions regarding the effect of nonprofit operations on a					
2		company's ability to raise capital?					
3	A.	As discussed in Section IV, SUFs/SDUs increase the TOs' exposure to potential financial					
4		losses or liabilities. Even if the probability and magnitude of a potential loss were					
5		minimized, no rational investor would willingly put capital at risk where there is an					
6		incremental risk of incurring a financial loss without compensation. The Existing Funding					
7		Approach is therefore unjust and unreasonable.					
8							
9		TO Funding would allow the TOs to earn a rate of return on SUFs/SDUs, and the					
10	incremental return compensates investors for the potential financial losses associated with						
11	the incremental risks that they bear. Denying TO Funding increases investors' required						
12	returns by requiring them to bear the risks associated with an increasing amount of						
13		SUFs/SDUs, which inhibits the TOs' ability to raise capital at reasonable rates and on					
14	reasonable terms.						
15		VI EFFECTS ON COMPARATIVE COSTS					
15	0						
16	Q.	What effect, if any, will allowing the TOs the option to fund SUFs/SDUs have on the					
17		costs of those projects?					
18	A.	Generally, the operating and capital cost of SUFs/SDUs will not be materially affected if					
19		the TOs are allowed the option of funding them. Regardless of how the SUFs/SDUs are					
20	funded, they require capital to be constructed, and the TOs incur expenses while operating						
21	and maintaining them. However, on a net present value basis, I expect the TOs' funding						

1 option to be less costly from a generator's perspective because of differences in the cost of 2 capital between TOs and generators. 3 How does the cost of capital affect the cost of SUFs/SDUs? Q. 4 A. Under the generator funding option, the generator incurs the SUFs/SDUs' entire capital 5 cost upfront. However, under the proposed TO Funding, the utility invests the capital and 6 then recovers a return on and of that capital from the generator over 20 years. Therefore, 7 the cost of TO Funding must be expressed on a net present value basis to account for the 8 time value of money (*i.e.*, the principle that a dollar today is worth more than a dollar 9 tomorrow). For example, if the generator's cost of capital is higher than the TOS' 10 authorized rate of return, then the generator saves under the TO Funding because it can 11 access capital at a lower cost. 12 Q. How do the costs of capital for generators and the TOs compare? 13 Market evidence suggests that generators generally have higher costs of equity and debt A. 14 than transmission owners. The difference in costs of capital is primarily because 15 generators do not benefit from the regulatory construct under which regulated utilities 16 operate. While regulatory risks remain, regulated entities can expect a reasonable level of 17 assurance of cost-recovery and an opportunity to earn a return. 18 Q. What evidence did you review to gauge the cost of capital for generators and the TOs? 19 A. The TOs' costs of capital are determined by their regulators, including FERC, in the 20 ordinary course of the ratemaking process. The cost of capital for generators, though, is 21 not established in the same way and generally is not public information. Therefore, I 22 reviewed three types of information to assess the generator cost of capital: (1) studies

1		developed by independent system operators ("ISOs") to support capacity auctions; (2) the				
2		Beta coefficients of publicly-traded generators; and (3) indications from the credit rating				
3		agencies, including the credit ratings of generators.				
4	Q.	How are studies developed by the ISOs relevant to generators' cost of capital?				
5	A.	ISOs, including the NYISO, PJM Interconnection, LLC ("PJM"), and ISO New England				
6		Inc. ("ISO-NE"), develop estimates of the capacity revenue that a new generator would				
7		require in its first year of operation to be economically viable to construct a power plant.				
8		These estimates are referred to as the net cost of new entry ("CONE"). The weighted				
9		average cost of capital ("WACC") reflected in the ISOs' calculation of net CONE reflects				
10		an estimate of the return that a merchant generator would require based on its interest				
11		expense and profit expectations. As independent third parties, the ISOs' net CONE studies				
12		serve as an independent benchmark of the cost of capital for generators.				
13	Q.	What costs of capital do the ISOs report for generators?				
14	A.	Figure 5 below summarizes the costs of capital reflected in the most recently developed net				
15		CONE studies from NYISO, PJM, and ISO-NE. As shown in Figure 5, all three ISOs				
16		report costs of capital for generators that greatly exceed the authorized rates of return				
17		reflected in the rates of the TOs. For context, the authorized FERC rates of return are 7.25				
18		percent for National Grid, ⁹² and 7.66 percent for New York Power Authority ("NYPA"), ⁹³				

⁹² FERC Docket No. ER08-552, Informational Filing of Niagara Mohawk Power Corporation of the Annual Update to the Formula Transmission Service Charge Under the NYISO Open Access Transmission Tariff, June 15, 2020, Attachment 1, Schedule 8, Line 21.

⁹³ NYPA is a New York State instrumentality not participating in this filing. In addition, NYPA is a public power entity owned by New York State and does not issue stock. However, FERC recognizes that NYPA has investment risk just like any investor-owned utility, as it has granted NYPA an equity return as part of its transmission rate authorizations. See, e.g., N.Y. Independent Sys. Operator, Inc., 154 FERC ¶ 61,268 (2016); N.Y. Independent Sys. Operator, Inc., 140 FERC ¶ 61,240 (2012).

respectively. These FERC rates of return are the FERC-authorized weighted average costs
 of capital for National Grid and NYPA and are thus comparable to the ISO-reported costs
 of capital summarized in the table below.

4

Figure 5: ISO-Reported Costs of Capital for Generators

ISO	Cost of Equity	Cost of Debt	Equity Ratio	WACC
NYISO ⁹⁴	13.00%	6.70%	45.00%	9.54%
PJM ⁹⁵	12.80%	6.50%	35.00%	8.71%
ISO-NE ⁹⁶	13.00%	6.00%	45.00%	9.15%

Q. Is there any market data that demonstrates the relative cost of capital faced by generators and the TOs?

- 7 A. Yes, there is. According to the theory underlying the Capital Asset Pricing Model
- 8 ("CAPM"), since unsystematic risk can be diversified away, investors should only be
- 9 concerned with systematic or non-diversifiable risk. Non-diversifiable risk is measured by
- 10 Beta, which is defined as:

$$\beta = \frac{Covariance(r_e, r_m)}{Variance(r_m)}$$
 Equation [6]

11 The variance of the market return (*i.e.*, Variance (r_m)) is a measure of the uncertainty of the

12 general market, and the covariance between the return on a specific security and the general

13 market (*i.e.*, Covariance (r_e, r_m)) reflects the extent to which the return on that security will

⁹⁴ New York ISO, "Proposed NYISO Installed Capacity Demand Curves for the 2021-2022 Capability Year and Annual Update Methodology and Inputs for the 2022-2023, 2023-2024, 2024-2025 Capability Years," August 2020, at 22-23.

⁹⁵ PJM, "PJM Cost of New Entry, Combustion Turbines and Combined-Cycle Plants with June 1, 2022 Online Date," April 19, 2018, at iv.

⁹⁶ ISO-New England, "ISO-NE Net CONE and ORTP Analysis: An Evaluation of the Net Cost of New Entry and Offer Review Trigger Price Parameters to be Used in Forward Capacity Auction FCA-16 and Forward" September 3, 2020, at 54.
1		respond to a given change in the general market return. Accordingly, Beta coefficients
2		represent the risk of the security relative to the general market (<i>i.e.</i> , the higher the Beta
3		coefficient, the greater the non-diversifiable risk). In other words, the higher the Beta
4		coefficient, the riskier the security. Therefore, the Beta coefficients of electric utilities and
5		generators can be compared to assess the two types of business enterprise's relative risks.
6	Q.	How did you measure the Beta coefficients of electric utilities and generators?
7	A.	The calculation of a Beta coefficient for a given company requires that company to be
8		publicly traded because the calculation relies on regular (e.g., weekly or monthly) stock
9		price data. Generally, however, the TOs' operations and those of generators do not make
10		up the entirety of publicly-traded companies. Therefore, it is necessary to establish a group
11		of publicly traded companies comparable in certain fundamental business and financial
12		respects to serve as proxies for both types of business enterprises for this analysis.
13		
14		As a proxy for the operations of the TOs, I studied the 10-year Bloomberg Beta coefficients
15		for the companies currently identified by Value Line as electric utilities ("Utility Proxy
16		Group"). These companies include the corporate parents of some of the TOs (<i>i.e.</i> , CEI and
17		Avangrid), and they are generally engaged in the provision of regulated electric utility
18		services to customers. In ratemaking proceedings, it is typically necessary to refine this
19		group for purposes of establishing the authorized ROE. However, for the limited purposes
20		of this illustrative Beta coefficient comparison, I have not excluded any of the 37 Value
21		Line electric utilities.

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1		
2		As a proxy for generators' operations, I studied the 10-year Bloomberg Beta coefficients of
3		Atlantic Power Corporation, Clearway Energy, Inc., NextEra Energy Partners, LP, and
4		Vistra Corp ("Generator Proxy Group"). These companies derive more than 50.00 percent
5		of their assets and revenues from merchant generation business activities in the United
6		States. Collectively, these four companies own more than 5,000 MW of operating capacity
7		from renewable sources (e.g., wind, solar, and hydro power). Thus, these four publicly-
8		traded entities are a reasonable proxy for generators.
9	Q.	What were the results of your analysis?
10	A.	As of March 1, 2021, the average Beta coefficient for the Utility Proxy Group was 0.79. In
11		contrast, the average Beta coefficient for the Generator Proxy Group was 0.92, or more
12		than 15.00 percent higher than the Utility Proxy Group. This is additional evidence that the
13		market views generators as riskier than regulated utilities, and therefore investors require a
14		higher cost of capital for generators.
15	Q.	How do the credit ratings of merchant generators compare to the credit ratings of
16		regulated electric utilities?
17	A.	Of the 37 companies identified by Value Line as electric utilities, 35 currently maintain
18		investment-grade credit ratings from either S&P or Moody's. The two Value Line electric
19		utilities with below investment-grade credit ratings are FirstEnergy Corporation
20		("FirstEnergy") and PG&E. FirstEnergy's credit ratings were downgraded below
21		investment grade following the termination of three of its executives, including its CEO,

1		for misconduct. ⁹⁷ PG&E's credit ratings remain below investment grade primarily because			
2		of its exposure to wildfire-related liabilities.			
3					
4		In contrast, all four publicly traded generators I identified earlier maintain credit ratings			
5		that are below investment-grade. All else equal, a lower credit rating results in a higher			
6		cost of debt. Thus, generators' relatively lower credit ratings are evidence that debt			
7		investors generally require higher returns to invest in a merchant generator than they			
8		require to invest in a regulated utility.			
9	Q.	Have the credit rating agencies opined on the relative risk of merchant generators and			
10		regulated utilities?			
11	A.	Yes, they have. S&P classifies merchant generation as "moderately high risk." ⁹⁸ That is			
12		three notches higher than the rating S&P gives regulated utility operations, which it			
13		classifies as "very low risk."99 This is generally attributable to the fact that merchant			
14		generators are subject to market dynamics of supply and demand while regulated utilities			
15		benefit from the regulatory construct. For example, S&P notes the following with respect			
16		to unregulated power and gas companies:			
17 18 19 20		While ultimately subject to evolving energy policies, most clearly in the case of renewable producers and sellers, these entities are subject to competitive dynamics and market supply and demand in getting their earnings and cash flow. As such, they do notlike			
21		regulated utilitiesbenefit from rate regulation of tariffs that are			

⁹⁷ S&P Global Ratings, "FirstEnergy Corp. Downgraded to 'BB+' On Termination of CEO; Ratings Remain on CreditWatch Negative," October 30, 2020.

⁹⁸ S&P Global RatingsDirect, "Key Credit Factors For the Unregulated Power and Gas Industry", March 28, 2014, p. 2.

⁹⁹ *Ibid*.

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1 2		typically designed at a minimum to ensure cost recovery and some level of profit. ¹⁰⁰				
3	Q.	Please discuss the effect, if any, that the cost of security has on the cost of TO Funding				
4		for SUFs/SDUs.				
5	A.	As an initial matter, generators are likely to incur the cost of security regardless of whether				
6		the TOs are offered the option to fund SUFs/SDUs. As noted in Ameren, "if the generator				
7		had found another source of capital to cover the costs of the upgrade, we can't imagine that				
8		the generator wouldn't have to provide the same kind of security to that third party –				
9		covering the risk of default – that it does for transmission owners." ¹⁰¹ However, even if				
10		there is a difference in the cost of security between the two funding options, that				
11		differential is unlikely to outweigh the cost of capital differentials I described earlier.				
12	Q.	Would generators posting security mitigate the risks to the TOs of owning and				
13		operating SUFs/SDUs that you described in Section IV?				
14	A.	No, it would not. Posting security mitigates counterparty risk (<i>i.e.</i> , the risk that a generator				
15		defaults on its payment obligations) borne by the TOs. That is a wholly distinct category of				
16		risk from the uncompensated risks outlined in Section IV above.				
17	Q.	What do you conclude regarding the costs of allowing TOs to fund SUFs/SDUs?				
18	A.	I do not expect that TO Funding will have a significant effect on the operating or capital				
19		costs of SUFs/SDUs in most instances. However, if one of the TOs funds a particular SUF				
20		or SDU, they will recover a return on and of their investment from the generator over 20				

¹⁰⁰ S&P Global RatingsDirect, "Key Credit Factors For the Regulated Utilities Industry", November 19, 2013, p. 1. Ameren, 880 F.3d, at 579.

¹⁰¹

1	years. That 20-year collection period introduces the possibility that the generator may be
2	better or worse off under TO Funding, depending on their relative costs of capital (after
3	accounting for the cost of security, if appropriate). Market evidence indicates that
4	generators typically have substantially higher equity and debt costs than regulated utilities
5	such as the TOs. Therefore, generators are not likely to experience a significant cost
6	impact under TO Funding relative to the Existing Funding Approach.

7

VII. SUMMARY AND CONCLUSIONS

8 Q. What are your conclusions with regard to the proposed TO Funding?

9 A. Under the Existing Funding Approach applied under the NYISO OATT, the TOs are 10 required to own, operate, and maintain SUFs/SDUs caused by generator interconnections 11 but are not allowed to earn a return for those assets. The foundations of public utility 12 regulation require that utilities receive a fair rate of return sufficient to attract needed 13 capital to maintain important infrastructure for customers at reasonable rates. The Existing 14 Funding Approach violates this principle by requiring the TOs to maintain nonprofit 15 operations for which it does not earn a return. Further the TOs remain exposed to 16 significant risks caused by the SUFs/SDUs that include: regulatory risks; reliability risks; cybersecurity risks; environmental risks; and operational risks. Without the ability to earn 17 18 a return on SUFs/SDUs, these risks are uncompensated inhibiting the TOs' ability to raise 19 capital on reasonable terms. The Existing Funding Approach is therefore unjust and 20 unreasonable.

21

7	Q.	Does this conclude your Prepared Direct Testimony in this proceeding?
6		their financial integrity.
5		reasonable terms to enables them to provide safe, reliable utility service while maintaining
4		operate, and maintain. This will allow the TOs to attract capital at reasonable rates and on
3		an opportunity to earn a return on SUFs/SDUs that the Companies are required to own,
2		compensate investors for the risks they bear. This would ensure that the TOs are allowed
1		The proposed TO Funding provides an opportunity to earn a return on SUFs/SDUs and

8 A. Yes

VERIFICATION

Pursuant to 28 U.S.C. § 1746, I state under penalty of perjury that the foregoing testimony is true and correct to the best of my knowledge, information, and belief.

Executed this ____ day of April, 2021.

Joshua C. Nowak Assistant Vice President Concentric Energy Advisors, Inc.

Joshua Nowak

Professional and Educational Background

Exhibit NYT-0002



JOSHUA C. NOWAK

Assistant Vice President

Mr. Nowak is a financial and economic consultant with more than ten years of experience in the energy industry. He has provided expert testimony on regulatory issues in several proceedings before the Federal Energy Regulatory Commission and regulatory commissions in Alaska, New Hampshire, New York, and Texas. Mr. Nowak specializes in providing rate case services on cost of capital matters related to return on equity and financial market issues. He is also experienced in providing strategic direction on financing activities including bond offerings, credit rating analysis, and investor relations. Previously, Josh was the Director of Regulatory Strategy & Integrated Analytics at National Grid where he was responsible for issues related to the cost of capital across its federal and state jurisdictional operating companies. He holds a Bachelor's Degree in Economics and History from Boston College.

REPRESENTATIVE EXPERIENCE

Expert Testimony and Litigation Support

Mr. Nowak's work includes regulatory project management, research, and analysis for expert witness testimony. His work has included:

- Expert testimony on cost of capital, return on equity, capital structure, and debt financing issues
- Regulatory strategy in return on equity proceedings, including coordination across several utilities in joint-party proceedings
- Extensive support for expert testimony in cost of capital and return on equity proceedings through research, financial analysis, and testimony development
- Expert testimony, sponsoring lead-lag studies, in support of utility cash working capital requirements
- Project management of expert testimony assignments, including all phases of the regulatory schedule
- Performing analysis to support expert testimony regarding affiliate expenses and allocations

Policy Analysis

Mr. Nowak has contributed to projects related to policy review including:

- A review of natural gas capacity options and a cost-benefit analysis for state regulators seeking to reduce energy costs for ratepayers
- Analysis of the economic and environmental benefits of changes to natural gas ratemaking/expansion policy



Management and Operations Consulting

Mr. Nowak has taken a lead analytical role in developing benchmarking analyses and process reviews. Specifically, he has:

- Developed benchmarking analyses, in support of expert testimony, comparing electric and gas utilities' cost and operational efficiency, taking into account a situational assessment of exogenous factors
- Performed a process review of a gas utility's expansion projects, including an evaluation of policies, procedures, and financial models
- Supported analysis for a report of the reasonableness of a shared service company's administrative and general costs

Financial Analysis

Other financial analysis Mr. Nowak has conducted include:

- Extensive analysis on issues related to utilities' cost of capital
- Developing dispatch models to estimate revenues for a merchant power plants
- Estimating damages for breach of contract in fuel delivery commitment
- Researching strategic investment opportunities for merchant generators
- A report on the profitability of various generation technologies in a deregulated energy market
- Reviewing internal financial models used by utility clients
- Supporting utility asset appraisals, including research and analysis for income approach, cost approach, and sales comparison approach

Other Experience

In his previous work, Mr. Nowak contributed to the evaluation of regulatory policy for government clients. His experience included performing policy analysis, including economic impact assessments, for federal regulations.

PROFESSIONAL HISTORY

Concentric Energy Advisors, Inc. (2018 – Present) Assistant Vice President

National Grid USA (2017 – 2018) Director, Regulatory Strategy & Integrated Analytics

ScottMadden, Inc. (formerly Sussex Economic Advisors, LLC) (2012 – 2016) Director

Principal



Concentric Energy Advisors, Inc. (2007 – 2012)

Senior Consultant Consultant Assistant Consultant Analyst

RTI International (2006 – 2007)

Economist

EDUCATION

Boston College B.A., Economics and History, 2006



SPONSOR	DATE	CASE/APPLICANT	DOCKET	SUBJECT	
Regulatory Commission of Alaska					
ENSTAR Natural Gas Company, a Division of Semco Energy, Inc.	06/16	ENSTAR Natural Gas Company, a Division of Semco Energy, Inc.	TA 285-4 / U-16- 066	Cash Working Capital	
Federal Energy Regulatory Commission					
Central Hudson Gas & Electric Corporation	12/19	Central Hudson Gas & Electric Corporation	ER20-715-000	Return on Equity	
Public Utilities Commission of	f New Hai	npshire			
Liberty Utilities (Granite State Electric) Corp. d/b/a Liberty Utilities	04/16	Liberty Utilities (Granite State Electric) Corp. d/b/a Liberty Utilities	Docket No. DE 16-383	Cash Working Capital	
New York Public Service Com	mission				
Niagara Mohawk Power Corporation d/b/a National Grid	07/20	Niagara Mohawk Power Corporation d/b/a National Grid	Case 17-E-0380/ Case 17-G-0381	Return on Equity	
Niagara Mohawk Power Corporation d/b/a National Grid	07/17	Niagara Mohawk Power Corporation d/b/a National Grid	Case 17-E-0238 / Case 17-G-0239	Capital Structure and Overall Cost of Capital	
Public Utility Commission of T	'exas				
Wind Energy Transmission Texas, LLC	05/15	Wind Energy Transmission Texas, LLC	Docket No. 44746	Cash Working Capital	
Lone Star Transmission, LLC	05/14	Lone Star Transmission, LLC	Docket No. 42469	Cash Working Capital	
Railroad Commission of Texas	5				
CenterPoint Energy Resources Corp., d/b/a CenterPoint Energy Entex and CenterPoint Energy Texas Gas	03/14	CenterPoint Energy Resources Corp., d/b/a CenterPoint Energy Entex and CenterPoint Energy Texas Gas	GUD No. 10432	Cash Working Capital	
Texas Gas Service Company, a Division of One Gas, Inc.	12/15	Texas Gas Service Company, a Division of One Gas, Inc.	GUD No. 10488	Cash Working Capital	
Texas Gas Service Company, a Division of One Gas, Inc.	03/16	Texas Gas Service Company, a Division of One Gas, Inc.	GUD No. 10506	Cash Working Capital	
Texas Gas Service Company, a Division of One Gas, Inc.	06/16	Texas Gas Service Company, a Division of One Gas, Inc.	GUD No. 10526	Cash Working Capital	

Catalog of Risks

Exhibit NYT-0003

Risk Catalog for the Transmission Owners

The risks identified herein are based on my evaluation of risks that could affect the revenues, operating expenses, or financial performance of the Transmission Owners ("TOs", or "Companies") that are exacerbated by ownership of System Upgrade Facilities ("SUFs") and System Deliverability Upgrades ("SDUs") (collectively, "SUFs/SDUs"). These are not forecasts or projections of outcomes but instead are intended to help identify the range of circumstances that the Companies may encounter and must be prepared to manage (to the extent they are within the TOs control). Risk catalogs (or risk registers) are often used to effectively plan for and develop potential responses to circumstances that could materially affect an enterprise or project's success. The risk catalog below should not be interpreted as an expectation that one or any combination of the events captured herein will occur. This catalog is not an exhaustive list of risks faced by companies that operate electric transmission infrastructure. That business enterprise involves numerous potential unforeseen circumstances that may adversely affect financial results.

- 1. Regulatory Risk
 - 1.1. Disallowances
 - 1.1.1. All costs that regulated utilities incur are subject to the risk that those costs may not be recovered.
 - 1.1.2. Regulators routinely deny portions of utility rate requests due to a wide variety of factors. For that reason, investors are acutely aware of utilities' regulatory environment.
 - 1.1.3. Regulated utilities may experience cost disallowances even if they are not found to have acted imprudently. For example, in case D.P.U. 17-170 before the Massachusetts Department of Public Utilities ("MADPU"), the MADPU reduced National Grid's cost of service by more than \$4 million because National Grid did not provide sufficient evidence it had incurred certain costs that fell outside of the historical test year.
 - 1.1.4. SUFs/SDUs affect the degree to which the TOs are vulnerable to regulatory risk because they require the TOs to incur additional O&M expense
 - 1.2. Regulatory Lag
 - 1.2.1. Regulatory lag refers to the time between when a utility incurring costs and when a utility begins recovering those costs through its rates.
 - 1.2.2. Regulatory lag is a risk to investors because it is a time during which they cannot recover their costs.
 - 1.2.3. While the Federal Energy Regulatory Commission ("FERC") and some statelevel regulators employ measures to mitigate regulatory lag, various jurisdictions continue to use historical test years and other practices that exacerbate regulatory lag.
 - 1.2.3.1. For example, Jersey Central Power & Light received an order in Case D-ER-12111052 in 2015, nearly four years after the beginning of the case.

Rates established in that case reflected a test year that was significantly stale by the time rates took effect.

- 1.2.4. To the extent the Companies operate in jurisdictions with regulatory lag, SUFs/SDUs may exacerbate the effect of regulatory lag because they increase the amount of O&M that shareholders are required to fund while waiting for ratemaking recovery.
- 2. Reliability Risk
 - 2.1. NERC Penalties
 - 2.1.1. The Companies are subject to potentially severe penalties if they are found to have violated the mandatory reliability standards established by NERC.
 - 2.1.2. NERC fines of \$10 million and \$25 million for violations of its system standards demonstrate these fines' potential materiality.
 - 2.2. Negative Revenue Adjustments ("NRAs")
 - 2.2.1. Regulated utilities operating in New York are subject to strictly enforced customer service quality, electric reliability, and safety standards. If they fail to reach predetermined performance benchmarks, they may be subject to negative revenue adjustments for any shortfall.
 - 2.2.2. Several of the TOs have recently recorded material NRAs.
- 3. Cybersecurity Risk
 - 3.1. Cyber Attacks
 - 3.1.1. As operators of critical energy infrastructure, the Companies bear the risk that their equipment could be the target of a cyber-attack through hacking, malware, viruses, or other means
 - 3.1.2. Attacks may disrupt service, damage the Companies' property, interrupt the Companies' business operations, or be costly to fix. The costs of responding to a cyberattack may not be fully recoverable through the ratemaking process.
 - 3.1.3. The increasing complexity of the TOs systems exacerbates their exposure to this risk by increasing the number of access points vulnerable to attack. SUFs/SDUs will only increase that complexity.
 - 3.1.4. Even if the attack itself is not harmful, the Companies may be fined or penalized after the fact
 - 3.1.4.1. For example, NERC fined an unidentified party \$2.7 million in 2018 following a self-reported data breach caused by vendor non-compliance.
- 4. Environmental Risk
 - 4.1. Severe Weather Events
 - 4.1.1. The Companies' property could be damaged or destroyed during a severe weather event, requiring the Companies to incur potentially material costs to maintain or restore service to customers.
 - 4.1.2. These events may also impact the Companies' ability to provide service.
 - 4.1.2.1. Outages may harm utility revenues because the utility is unable to sell energy to customers during those times.
 - 4.1.2.2. Utilities may incur fines, penalties, or other costs in the course of responding to severe weather events.

- 4.1.3. Investors are aware that climate change may exacerbate the frequency and intensity of severe weather events such as hurricanes, wildfires, winter storms, thunderstorms, etc.
 - 4.1.3.1. For example, the Commodity Futures Trading Commission (i.e., the regulator overseeing the trading of futures and options in the U.S.) noted that climate change "poses a major risk to the stability of the U.S. financial system."
- 4.1.4. Environmental changes may affect the TOs ability to operate their systems efficiently
- 4.1.5. The Companies could be required to incur unrecoverable costs to harden or otherwise prepare their systems to withstand severe weather events.
- 4.2. Environmental Liabilities
 - 4.2.1. The Companies commonly encounter environmental contamination on properties in the ordinary course of installing, repairing, replacing, and maintaining their assets. These encounters increase the Companies' costs as they incur expenses associated with specialized workers, personal protective equipment, soil sampling, disposal of contaminants, or other required safety measures.
 - 4.2.2. The potential costs of being found liable for an environmental issue are quite material
- 5. Operational Risk
 - 5.1. The ownership, operation, and maintenance of electric transmission property is inherently hazardous.
 - 5.2. The Companies are at risk of being held liable for a physical accident, such as a helicopter crash, personal injury, automobile accident, or other damage.
 - 5.3. Insurance mitigates, but does not completely eliminate, this risk.
 - 5.3.1. Insurance market restrictions generally prevent the TOs from fully insuring against this risk.
 - 5.3.2. The TOs may not be able to recover insurance deductibles through rates.
 - 5.3.3. Insurers may not be able to fulfill their obligations.

Risk Disclosures of the TOs

Exhibit NYT-0004

UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

Form 10-K

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2020

Or

□ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from to

Commission File No. 001-37660



Avangrid, Inc.

(Exact name of registrant as specified in its charter)

Securities registered pursuant to Section 12(b) of the Act:

New York (State or other jurisdiction of incorporation or organization) 180 Marsh Hill Road

(I.R.S. Employer Identification No.)

06477 (Zip Code)

14-1798693

Orange, Connecticut (Address of principal executive offices)

Registrant's telephone number, including area code: (207) 629-1190

Name of exchange on which registered **Trading Symbol Title of each class** Common Stock, par value \$0.01 per share AGR New York Stock Exchange Securities registered pursuant to Section 12(g) of the Act: None Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes 🗵 No 🗆 Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Exchange Act. Yes 🗆 No 🗵

 \boxtimes

Indicate by check mark whether the registrant is not required to the reports pursuant to Section 13 or 15(d) of the Exchange Act. Yes \square No \boxtimes Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes \boxtimes No \square Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes \boxtimes No \square Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large Accelerated Filer

Non-accelerated Filer

Securities registered pursuant to Section 12(b) of the Act:

Emerging Growth Company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report.

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes 🗆 No 🖾

The aggregate market value of the Avangrid, Inc.'s voting stock held by non-affiliates, computed by reference to the price at which the common equity was last sold as of the last business day of Avangrid, Inc.'s most recently completed second fiscal quarter (June 30, 2020) was \$2,374 million based on a closing sales price of \$41.98 per share. Indicate the number of shares outstanding of each of the registrant's classes of common stock, as of the latest practicable date: 309,371,591 shares of common stock, par value \$0.01, were outstanding as of February 26, 2021.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the documents listed below have been incorporated by reference into the indicated parts of this report, as specified in the responses to the item numbers involved. Designated portions of the Proxy Statement relating to the 2021 Annual Meeting of the Shareholders are incorporated by reference into Part III to the extent described therein.

Accelerated Filer

Smaller Reporting Company

Exhibit NYT-0004 Page 2 of 36

Information about AVANGRID's environmental, social and governance performance and sustainability reporting is also available on our website www.avangrid.com. under the heading "Sustainability." Information contained on our website is not incorporated herein.

The Company may use its website and/or social media outlets, such as Facebook and Twitter, as distribution channels of material company information. Financial and other important information regarding the Company is routinely posted on and accessible through the Company's website at <u>www.avangrid.com</u>, its Facebook page at <u>https://www.facebook.com/Avangrid/</u> and its Twitter account @AVANGRID. In addition, you may automatically receive email alerts and other information about the Company when you enroll your email address by visiting the Investor Relations section of www.avangrid.com.

Item 1A. Risk Factors

PNMR Merger Risk Factors

There is no assurance when or if the proposed PNMR Merger will be completed.

Completion of the proposed Merger is subject to the satisfaction or waiver of a number of conditions as set forth in the Merger Agreement, including certain regulatory approvals and other customary closing conditions. There can be no assurance that the conditions to completion of the proposed Merger will be satisfied or waived or that other events will not intervene to delay or result in the failure to close the proposed Merger. In addition, each of AVANGRID and PNMR may unilaterally terminate the Merger Agreement under certain circumstances set forth in the Merger Agreement, and AVANGRID and PNMR may agree at any time to terminate the Merger Agreement, even though PNMR's shareholders have already approved the proposed Merger and the other transactions contemplated by the Merger Agreement. The Merger Agreement provides for certain customary termination rights. If we were to terminate the Merger Agreement under certain circumstances, we could incur significant costs (including, without limitation, the payment of the termination fee and out-of-pocket fees and expenses).

AVANGRID and PNMR may be unable to obtain the regulatory approvals required to complete the proposed Merger.

In addition to other conditions set forth in the Merger Agreement, completion of the proposed Merger is conditioned upon the receipt of various state and U.S. federal regulatory approvals including, but not limited to, approval by the Public Utility Commission of Texas, or PUCT, the New Mexico Public Regulation Commission, or NMPRC, the FERC, the Federal Communications Commission, or FCC, the Committee on Foreign Investment in the United States, or CFIUS, the Nuclear Regulatory Commission, or NRC, and under the Hart-Scott-Rodino Antitrust Improvements Act of 1976. AVANGRID and PNMR have made or will make various filings and submissions and are pursuing all required consents, orders and approvals in accordance with the Merger Agreement. These consents, orders and approvals may impose conditions on or require divestitures relating to the divisions, operations or assets of AVANGRID and PNMR or may impose requirements, limitations or costs or place restrictions on the conduct of the combined company's business, and if such consents, orders and approvals require an extended period of time to be obtained, such extended period of time could increase the chance that an event occurs that constitutes a material adverse effect with respect to PNMR and thereby may allow AVANGRID an opportunity not to consummate the proposed Merger. Such extended period of time also may increase the chance that other adverse effects with respect to AVANGRID or PNMR could occur, such as the loss of key personnel.

The Merger Agreement requires AVANGRID and PNMR, among other things, to accept conditions, divestitures, requirements, limitations, costs or restrictions that may be imposed by regulatory entities, subject to the burdensome effect provisions in the Merger Agreement. Such conditions, divestitures, requirements, limitations, costs or restrictions may jeopardize or delay consummation of the proposed Merger, reduce the benefits that may be achieved from the proposed Merger or result in the abandonment of the proposed Merger. Further, no assurance can be given that the required consents, orders and approvals will be obtained or that the required conditions to closing the proposed Merger will be satisfied, and, even if all such consents, orders and approvals are obtained and such conditions are satisfied, no assurance can be given as to the terms, conditions and timing of such consents, orders and approvals.

The announcement and pendency of the proposed Merger could have an adverse effect on AVANGRID's businesses, results of operations, financial condition, cash flows or the market value of AVANGRID's common stock and debt securities.

The announcement and pendency of the proposed Merger could disrupt AVANGRID's businesses, and uncertainty about the effect of the proposed Merger may have an adverse effect on AVANGRID or the combined company following the proposed Merger. AVANGRID's employees may experience uncertainty regarding their roles after the proposed Merger, for example, employees may depart either before or after the completion of the proposed Merger because of such uncertainty and issues relating to the difficulty of coordination or a desire not to remain following the proposed Merger; and the pendency of the proposed Merger may adversely affect AVANGRID's ability to retain, recruit and motivate key personnel. Additionally, the attention of AVANGRID's management may be directed towards the completion of the proposed Merger including obtaining regulatory approvals and other transaction-related considerations and may be diverted from the day-to-day business operations

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of AVANGRID and matters related to the proposed Merger may require commitments of time and resources that could otherwise have been devoted to other opportunities that might have been beneficial to AVANGRID. Additionally, the Merger Agreement requires AVANGRID to obtain PNMR's consent prior to taking certain specified actions while the proposed Merger is pending. These restrictions may prevent AVANGRID and PNMR from pursuing otherwise attractive business opportunities and executing certain of its business strategies prior to the consummation of the proposed Merger. Further, the proposed Merger may give rise to potential liabilities, including as a result of pending and future shareholder lawsuits relating to the proposed Merger. Any of these matters could adversely affect the businesses of, or harm the results of operations, financial condition or cash flows of AVANGRID and the market value of AVANGRID common stock and debt securities.

AVANGRID will incur substantial transaction fees and costs in connection with the proposed PNMR Merger.

AVANGRID has incurred, and expects to incur additional, material non-recurring expenses in connection with the proposed Merger and consummation of the transactions contemplated by the Merger Agreement. Additional unanticipated costs may be incurred in the course of coordinating the businesses of AVANGRID and PNMR after consummation of the proposed Merger. Even if the proposed Merger is not consummated, AVANGRID may need to pay certain pre-tax costs relating to the proposed Merger incurred prior to the date the proposed Merger was abandoned, such as legal, accounting, financial advisory and filing fees. Additionally, if the proposed Merger is not consummated within the expected timeframe, such delay may materially adversely affect the benefits that AVANGRID may achieve as a result of the proposed Merger and could result in additional pre-tax transaction costs, loss of revenue or other effects associated with uncertainty about the proposed Merger. Satisfying the conditions to, and consummation of, the proposed Merger may take longer than, and could cost more than, AVANGRID expects.

AVANGRID may be unable to integrate PNMR successfully, and AVANGRID may not experience the growth being sought from the proposed Merger.

AVANGRID and PNMR have operated and, until the consummation of the proposed Merger will continue to operate, independently. Coordinating certain aspects of the operations and personnel of PNMR with AVANGRID after the consummation of the proposed Merger will involve complex operational, technological and personnel-related challenges, which may be made more difficult in light of the COVID-19 pandemic. This process will be time-consuming and expensive, may disrupt the businesses of either or both of the companies and may reduce the growth opportunities sought from the Merger. The potential difficulties, and resulting costs and delays, include examples such as:

- managing a larger combined company;
- coordinating corporate and administrative infrastructures;
- unanticipated issues in coordinating information technology, communications, administration and other systems;
- · difficulty addressing possible differences in corporate cultures and management philosophies;
- · unforeseen and unexpected liabilities related to the proposed Merger or PNMR's business; and
- a deterioration of credit ratings.

While AVANGRID can refuse to consummate the proposed Merger if there is a material adverse effect (as defined in the Merger Agreement) affecting PNMR prior to the consummation of the proposed Merger, certain types of changes do not permit AVANGRID to refuse to consummate the proposed Merger, even if such changes would have a material adverse effect on PNMR. If adverse changes occur but AVANGRID must still consummate the proposed Merger, the market price of AVANGRID common stock may suffer. There can be no assurance that, if the proposed Merger is not consummated, these risks will not materialize and will not materially adversely affect the business and financial results of AVANGRID.

AVANGRID may be materially adversely affected by negative publicity related to the proposed PNMR Merger and in connection with other matters.

From time to time, political and public sentiment in connection with the proposed Merger and in connection with other matters may result in a significant amount of adverse press coverage and other adverse public statements affecting AVANGRID. Adverse press coverage and other adverse statements, whether or not driven by political or public sentiment, may also result in investigations by regulators, legislators and law enforcement officials or in legal claims. Responding to these investigations and lawsuits, regardless of the ultimate outcome of the proceeding, can divert the time and effort of senior management from the management of AVANGRID's businesses. Addressing any adverse publicity, governmental scrutiny or enforcement or other legal proceedings is time consuming and expensive and, regardless of the factual basis for the assertions being made, can have a negative impact on the reputation of AVANGRID, on the morale and performance of its employees and on its relationship with regulators. It may also have a negative impact on AVANGRID's ability to take timely advantage of various business and market opportunities. The direct and indirect effects of negative publicity, and the demands of responding to and addressing it, may have a material adverse effect on AVANGRID's business, financial condition, results of operations and cash flows and the market value of AVANGRID common stock and debt securities.

Failure by PNMR to successfully execute its business strategy and objectives may materially adversely affect the future results of the combined company and, consequently, the market value of AVANGRID's common stock and debt securities.

The success of the Merger will depend, in part, on the ability of PNMR to successfully execute its business strategy, including delivering electricity in a safe and reliable manner, minimizing service interruptions and investing in its transmission and distribution infrastructure to maintain its system, serve its growing customer base with a modernized grid and support energy production. These objectives are capital intensive. If PNMR is not able to achieve these objectives, is not able to achieve these objectives on a timely basis, or otherwise fails to perform in accordance with AVANGRID's expectations, the anticipated benefits of the Merger may not be realized fully or at all, and the Merger may materially adversely affect the results of operations, financial condition and prospects of the combined company and, consequently, the market value of AVANGRID common stock and debt securities.

The market value of AVANGRID common stock could decline if its existing shareholders sell large amounts of its common stock in anticipation of or following the PNMR Merger, and the market prices of AVANGRID common stock and debt securities may be affected by factors following the Merger that are different from those affecting the market prices for AVANGRID's common stock and debt securities prior to the Merger.

Current shareholders of AVANGRID may not wish to continue to invest in the combined company, or may wish to reduce their investment in the combined company, for a number of reasons, which may include loss of confidence in the ability of the combined company to execute its business strategies, to comply with institutional investing guidelines or to increase diversification. If, before or following the Merger, large amounts of AVANGRID common stock are sold, the market price of its common stock could decline. If the Merger is consummated, the risks associated with the combined company may affect the results of operations of the combined company and the market prices of AVANGRID common stock and debt securities following the Merger differently than they affected such results of operations and market prices prior to the Merger. Additionally, the results of operations of the combined company may be affected by additional or different risks than those that currently affect the results of operations of AVANGRID common stock and debt securities following markets additional or different risks than those that currently affect the results of operations of AVANGRID. Any of the foregoing matters could materially adversely affect the market prices of AVANGRID common stock and debt securities following the Merger.

The PNMR Merger may not positively affect AVANGRID's results of operations and/or may cause a decrease in its earnings per share, which may negatively affect the market price of AVANGRID common stock and debt securities.

AVANGRID anticipates that the Merger, if consummated on the terms, will have a positive impact on its consolidated results of operations. This expectation is based on current market conditions and is subject to a number of assumptions, estimates, projections and other uncertainties, including assumptions regarding the results of operations of the combined company after the Merger, and the financing necessary to fund the Merger Consideration. This expectation also assumes that PNMR will perform in accordance with AVANGRID's expectations, and there can be no assurance that this will occur. In addition, AVANGRID may encounter additional transaction costs and costs to manage its investment in PNMR, may fail to realize some or any of the benefits anticipated in the Merger, may be subject to currently unknown liabilities as a result of the Merger, or may be subject to other factors that affect preliminary estimates. As a result, there can be no assurance that the Merger will positively impact AVANGRID's results of operations, and it is possible that the Merger may have an adverse effect, which could be material, on AVANGRID's results of operations, financial condition and prospects and/or may cause its earnings per share to decrease, any of which may materially adversely affect the market price of AVANGRID common stock and debt securities.

AVANGRID may incur additional indebtedness in connection with the PNMR Merger. As a result, it may be more difficult for AVANGRID to pay or refinance its debts or take other actions, and AVANGRID may need to divert cash to fund debt service payments.

AVANGRID may incur significant additional indebtedness to finance the Merger Consideration and related transaction costs. AVANGRID expects to fund all or a portion of the Merger Consideration through sales of its common stock and, possibly, other equity securities, and to the extent it is unable to do so the amount of indebtedness it may incur to finance the Merger and associated transaction costs will likely increase, perhaps substantially. If AVANGRID is required to obtain more debt financing than anticipated to finance the Merger Consideration and associated transaction costs, whether through the issuance of debt securities or borrowings under the committed financing or otherwise, the required regulatory approvals to complete the Merger may be more difficult to obtain and the combined company's credit ratings and ability to service its debt could be materially adversely affected. The increase in AVANGRID's debt service obligations resulting from this additional indebtedness could have a material adverse effect on the results of operations, financial condition and prospects of AVANGRID.

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AVANGRID's increased indebtedness could:

- make it more difficult and/or costly for AVANGRID to pay or refinance its debts as they become due, particularly during adverse economic and industry
 conditions, because a decrease in revenues or increase in costs could cause cash flow from operations to be insufficient to make scheduled debt service
 payments;
- limit AVANGRID's flexibility to pursue other strategic opportunities or react to changes in its business and the industry sectors in which it operates and, consequently, put AVANGRID at a competitive disadvantage to its competitors that have less debt;
- require a substantial portion of AVANGRID's available cash to be used for debt service payments, thereby reducing the availability of its cash to fund
 working capital, capital expenditures, development projects, acquisitions, dividend payments and other general corporate purposes, which could harm
 AVANGRID's prospects for growth and the market price of its common stock and debt securities, among other things;
- result in a downgrade in the credit ratings on AVANGRID's indebtedness, which could limit AVANGRID's ability to borrow additional funds, increase
 the interest rates under its credit facilities and under any new indebtedness it may incur, and reduce the trading prices of its outstanding debt securities and
 common stock;
- make it more difficult for AVANGRID to raise capital to fund working capital, make capital expenditures, pay dividends, pursue strategic initiatives or for other purposes;
- result in higher interest expense in the event of increases in interest rates on AVANGRID's current or future borrowings subject to variable rates of interest; and
- require that additional materially adverse terms, conditions or covenants be placed on AVANGRID under its debt instruments.

Based on the current and expected results of operations and financial condition of AVANGRID and its subsidiaries, AVANGRID believes that its cash flow from operations, together with the proceeds from borrowings, issuances of debt securities in the capital markets, distributions from its equity method investments, project financing and equity sales (including tax equity and partnering in joint ventures) will generate sufficient cash on a consolidated basis to make all of the principal and interest payments when such payments are due under AVANGRID's and its current subsidiaries' existing credit facilities, indentures and other instruments governing its outstanding indebtedness and under the indebtedness incurred to fund the Merger Consideration. However, AVANGRID's expectation is subject to numerous estimates, assumptions and uncertainties, and there can be no assurance that AVANGRID will be able to repay or refinance such borrowings and obligations when due. PNMR and its subsidiaries will not guarantee any indebtedness of AVANGRID, nor will any of them have any obligation to provide funds, whether in the form of dividends, loans or otherwise, to enable AVANGRID and its other subsidiaries to make required debt service payments. As a result, the Merger may substantially increase AVANGRID's debt service obligations without any assurance that AVANGRID will receive any cash from PNMR or any of its subsidiaries to assist AVANGRID in servicing its indebtedness or other cash needs.

The Merger will increase our goodwill and other intangible assets.

Following the Merger, we may have a significant amount of goodwill and other intangible assets on our consolidated financial statements that could be subject to impairment based upon future adverse changes in our business or prospects. The impairment of any goodwill and other intangible assets may have a negative impact on our consolidated results of operations.

Any litigation filed against PNMR and the members of the PNMR board of directors could result in the payment of damages following completion of the Merger or prevent or delay completion of the Merger.

In connection with the Merger, purported shareholders of PNMR have filed lawsuits against PNMR and the members of the PNMR board of directors under the federal securities laws, challenging the adequacy of the disclosures made in PNMR's proxy statement in connection with the Merger or otherwise.

The outcome of any such litigation is uncertain. If a dismissal is not granted or a settlement is not reached, the lawsuits could prevent or delay completion of the Merger and result in substantial costs to AVANGRID, including any costs associated with indemnification of PNMR's directors and officers. Additional lawsuits may be filed against PNMR or the directors and officers of PNMR in connection with the Merger. The defense or settlement of any lawsuit or claim that remains unresolved at the time the Merger is consummated may adversely affect the combined company's business, financial condition, results of operations and cash flows.

The impact of severe weather conditions could negatively affect PNMR.

PNMR has large networks of electric transmission and distribution facilities. Weather conditions in the U.S. Southwest region and Texas vary and could contribute to severe weather conditions, such as wildfires or the recent severe winter weather events in Texas, in or near PNMR's service territories. While PNMR may take certain proactive steps to mitigate the risks caused by severe weather conditions, such risks are always present and PNMR could be held liable for damages incurred as a result of severe weather conditions or as a result of wildfires caused, or allegedly caused, by their transmission and distribution



systems. In addition, wildfires could cause damage to PNMR's assets that could result in loss of service to customers or make it difficult to supply power in sufficient quantities to meet customer needs. These events could adversely affect PNMR and may materially adversely affect the results of operations, financial condition and prospects of the combined company and, consequently, the market value of AVANGRID's common stock and debt securities.

Costs of decommissioning, remediation and restoration of nuclear and fossil-fueled power plants, as well as reclamation of related coal mines, could exceed the estimates of PNMR as well as the amounts PNMR recovers from its ratepayers, which could negatively impact PNMR.

PNMR has interests in a nuclear power plant, two coal-fired power plants and several natural gas-fired power plants and is obligated to pay its share of the costs to decommission these facilities. PNMR is also obligated to pay for its share of the costs of reclamation of the mines that supply coal to the coal-fired power plants. Likewise, other owners or participants are responsible for their shares of the decommissioning and reclamation obligations and it is important to PNMR that those parties fulfill their obligations. Rates charged by PNMR to its customers, as approved by the NMPRC, include a provision for recovery of certain costs of decommissioning, remediation, reclamation and restoration. The NMPRC has established a cap on the amount of costs for the final reclamation of the surface coal mines that may be recovered from customers. PNMR records estimated liabilities for its share of the legal obligations for decommissioning and reclamation in accordance with GAAP. These estimates include many assumptions about future events and are inherently imprecise. In the event the costs to decommission those facilities or to reclaim the mines serving the plants exceed current estimates, or if amounts are not approved for recovery by the NMPRC, they could materially and adversely affect PNMR and may materially adversely affect the results of operations, financial condition and prospects of the combined company and, consequently, the market value of AVANGRID's common stock and debt securities.

The costs of decommissioning any nuclear or fossil power plant are substantial. PNMR is responsible for all decommissioning obligations related to its entire proportionate interest in Palo Verde Nuclear Generating Station, or PVNGS, San Juan Generating Station, or SJGS, and Four Corners Power Plant, or FCPP, including portions under lease both during and after termination of the leases, other than amounts after the consummation of PNMR's sale of its interest in the Four Corners Power Plant (assuming that transaction closes pursuant to the purchase and sale agreement on December 31, 2024). A delay or termination of the sale of PNMR's interest in the FCPP could have a negative impact on AVAGRID's sustainability reputation.

PNMR maintains trust funds and escrow accounts designed to provide adequate financial resources for decommissioning PVNGS, SJGS and FCPP and for reclamation of the coal mines serving SJGS and FCPP at the end of their expected lives. However, because the funds and accounts grow over time to meet decommissioning and reclamation responsibilities, if the PVNGS, SJGS or FCPP units are decommissioned before their planned dates or the coal mines are shut down sooner than expected, these funds may prove to be insufficient, which may materially adversely affect the results of operations, financial condition and prospects of the combined company and, consequently, the market value of AVANGRID's common stock and debt securities.

There are inherent risks in the ownership and operation of nuclear facilities.

While PNMR does not operate PVNGS, PNMR has an indirect 10.2% undivided interest in PVNGS, including interests in Units 1 and 2 held under leases. PVNGS is subject to environmental, health, and financial risks, including, but not limited to, the ability to obtain adequate supplies of nuclear fuel and water, the ability to dispose of spent nuclear fuel, decommissioning of the plant, securing the facilities against possible terrorist attacks, and unscheduled outages due to equipment failures.

The NRC has broad authority under federal law to impose licensing and safety-related requirements for the operation of nuclear generation facilities. Events at nuclear facilities of other operators or which impact the industry generally may lead the NRC to impose additional requirements and regulations on all nuclear generation facilities, including PVNGS. A major incident at a nuclear facility anywhere in the world could cause the NRC to limit or prohibit the operation or licensing of any domestic nuclear unit and to promulgate new regulations that could require significant capital expenditures and/or increase operating costs.

In the event of noncompliance with its requirements, the NRC has the authority to impose a progressively increasing inspection regime that could ultimately result in the shutdown of a unit, civil penalties or both, depending upon the NRC's assessment of the severity of the situation, until compliance is achieved. Increased costs resulting from penalties, a heightened level of scrutiny, and/or implementation of plans to achieve compliance with NRC requirements could adversely affect the financial condition, results of operations, and cash flows of PNMR. Although PNMR has no reason to anticipate a serious nuclear incident at PVNGS, if an incident did occur, it could materially and adversely affect PNMR and may materially adversely affect the results of operations, financial condition and prospects of the combined company and, consequently, the market value of AVANGRID's common stock and debt securities.

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Strategic Risk Factors

The success of AVANGRID depends on achieving our strategic objectives, which may be through acquisitions, joint ventures, dispositions and restructurings and failure to achieve these objectives could adversely affect our business, financial condition and prospects.

We are continuously reviewing the alternatives available to ensure that we meet our strategic objectives, which include, among other things, acquisitions, joint ventures, dispositions and restructuring. With respect to potential acquisitions, joint ventures and restructuring activities, we may not achieve expected returns, cost savings and other benefits as a result of various factors including integration and collaboration challenges such as personnel and technology. We also may participate in joint ventures with other companies or enterprises in various markets, including joint ventures where we may have a lesser degree of control over the business operations, which may expose us to additional operational, financial, legal or compliance risks. We also continue to evaluate the potential disposition of assets and businesses that may no longer help us meet our objectives or sell a stake of these assets as a way of maximizing the value of AVANGRID. When we decide to sell assets or a business, we may encounter difficulty in finding buyers or executing alternative exit strategies on acceptable terms in a timely manner, which could delay the accomplishment of our strategic objectives or be on terms less favorable than we anticipated.

We expect to invest in development opportunities in all segments of AVANGRID, but such opportunities may not be successful, projects may not commence operation as scheduled and/or within budget or at all, which could have an adverse effect on our business, financial condition and prospects.

We are pursuing additional development investment opportunities related to all segments of AVANGRID with a particular focus on additional opportunities in electric transmission, renewable energy generation and interconnections to generating resources. The development, construction and expansion of such projects involve numerous risks. Various factors could result in increased costs or result in delays or cancellation of these projects. Risks include regulatory approval processes, permitting, new legislation, citizen referendums or ballot initiatives, economic events, foreign currency risk, environmental and community concerns, negative publicity, design and siting issues, difficulties in obtaining required rights of way, construction delays and cost overruns, including delays in equipment deliveries, particularly of wind turbines or transformers, severe weather, competition from incumbent facilities and other entities, and actions of strategic partners. There may be delays or unexpected developments in completing current and future construction projects. For example, we have spent approximately \$180 million and expect to invest approximately \$1 billion in our NECEC project. Delays in the regulatory approval and permitting process, new legislation or citizen referendums or ballot initiatives impacting or challenging the necessary approvals and permits, and cost overruns could impact our ability to make these investments and have an adverse effect on the success of the NECEC project and our financial condition and prospects. While most of Renewables' construction projects are constructed under fixed-price and fixed-schedule contracts with construction and equipment suppliers, these contracts provide for limitations on the liability of these contractors to pay liquidated damages for cost overruns and construction delays. These circumstances could prevent Renewables' construction projects from commencing operations or from meeting original expectations about how much electricity it will generate or the returns it will achieve. In addition, for Renewables' projects that are subject to PPAs, substantial delays could cause defaults under the PPAs, which generally require the completion of project construction by a certain date at specified performance levels. A delay resulting in a wind project failing to qualify for federal PTCs or ITCs could result in losses that would be substantially greater than the amount of liquidated damages paid to Renewables.

Regulatory and Legislative Risk Factors

AVANGRID is subject to substantial regulation by federal, state and local regulatory agencies and our business, results of operations and prospects may be adversely affected by legislative or regulatory changes, as well as liability under, or any future inability to comply with, existing or future regulations or requirements.

The operations of AVANGRID are subject to, and influenced by, complex and comprehensive federal, state and local regulation and legislation, including regulations promulgated by state utility commissions and the FERC. This extensive regulatory and legislative framework regulates the industries in which our subsidiaries operate, our business segments, rates for our products and services, financings, capital structures, cost structures, construction, environmental obligations, development and operation of our facilities, acquisition, disposal, depreciation and amortization of facilities and other assets, service reliability, hedging, derivatives transactions and commodities trading.

The federal, state and local political and economic environment has had, and may in the future have, an adverse effect on regulatory decisions with negative consequences for AVANGRID. These decisions may require AVANGRID to cancel, reduce, or delay planned development activities or other planned capital expenditures or investments or otherwise incur costs that we may not be able to recover through rates. We are unable to predict future legislative or regulatory changes, initiatives or interpretations, and there can be no assurance that we will be able to respond adequately or sufficiently quickly to such actions.



AVANGRID is subject to the jurisdiction of various regulatory agencies including, but not limited to, the FERC, the NERC, the CFTC, the DOE and the EPA. Further, Networks' regulated utilities are subject to the jurisdiction of the NYPSC, the MPUC, the New York State Department of Environmental Conservation, the Maine Department of Environmental Protection, the PURA, the CSC, the DEEP and the DPU. These regulatory agencies cover a wide range of business activities, including, among other items the retail and wholesale rates for electric energy, the transmission and distribution of energy, the setting of tariffs and rates including cost recovery clauses, procurement of electricity for Networks' customers, and certain aspects of the siting, construction and transmission and distribution systems. These regulatory agencies have the authority to initiate associated investigations or enforcement actions or impose penalties or disallowances, which could be substantial. Certain regulatory agencies have the authority to review and disallow recovery of costs that they consider excessive or imprudently incurred and to determine the level of return that AVANGRID is permitted to earn on invested capital.

The regulatory process, which may be adversely affected by the political, regulatory, and economic environment in the states we operate in may limit our earnings and does not provide any assurance with respect to the achievement of authorized or other earnings levels. The disallowance of the recovery of costs incurred by us or a decrease in the rate of return that we are permitted to earn on our invested capital could have a material adverse effect on our financial condition. In addition, certain of these regulatory agencies also have the authority to audit the management and operations of AVANGRID and its subsidiaries, which could result in operational changes or adversely impact our financial condition. Such audits and post-audit work require the attention of our management and employees and may divert their attention from other regulatory, operational or financial matters.

AVANGRID's regulated utility operations may not be able to recover costs in a timely manner or at all or obtain a return on certain assets or invested capital through base rates, cost recovery clauses, other regulatory mechanisms or otherwise.

Our regulated utilities are subject to periodic review of their rates and the retail rates charged to their customers through base rates and cost recovery clauses which are subject to the jurisdiction of the NYPSC, MPUC, PURA and DPU, as applicable. New rate proceedings can be initiated by the utilities or the regulators and are subject to review, modification and final authorization and implementation by the regulators. Networks' regulated utilities' business rate plans approved by state utility regulators limit the rates Networks' regulated utilities can charge their customers. The rates are generally designed for, but do not guarantee, the recovery of Networks' regulated utilities' respective cost of service and the opportunity to earn a reasonable rate of Return on Equity, or ROE. Actual costs may increase due to inflation or other factors and exceed levels provided for such costs in the rate plans for Networks' regulated utilities. Utility regulators can initiate proceedings to prohibit Networks' regulated utilities from recovering from their customers the cost of service that the regulators determine to have been imprudently incurred. Networks' regulated utilities defer for future recovery certain costs including major storm costs and environmental costs. Networks' regulated subsidiaries could be denied recovery of certain costs, or deferred recovery pending the next general rate case, including denials or deferrals related to major storm costs and construction expenditures. In some instances, denial of recovery may cause the regulated subsidiaries to record an impairment of assets. If Networks' regulated utilities' costs are not fully and timely recovered through the rates ultimately approved by regulators, our financial condition could be adversely affected.

Current electric and gas rate plans of Networks' regulated utilities include revenue decoupling mechanisms, or RDMs, and the provisions for the recovery of energy costs, including reconciliation of the actual amount paid by such regulated utilities. There is no guarantee that such decoupling mechanisms or recovery and reconciliation mechanism will apply in future rate proceedings.

There are pending challenges at the FERC against New England transmission owners (including UI and CMP) seeking to lower the ROE that these transmission owners are allowed to receive for wholesale transmission service pursuant to the ISO-NE Open Access Transmission Tariff. Reductions to the ROE adversely impact the revenues that Networks' regulated utilities receive from wholesale transmission customers and could have a material effect on our financial condition.

Changes in regulatory and/or legislative policy could negatively impact Networks' transmission planning and cost allocation.

The existing FERC-approved ISO-NE transmission tariff allocates the costs of transmission facilities that provide regional benefits to all customers of participating transmission-owning utilities in New England. The FERC has issued rules requiring all RTOs and transmission owning utilities to make compliance changes to their tariffs and contracts in order to further encourage the construction of transmission for generation, including renewable generation. Changes in RTO tariffs, transmission owners' agreements or legislative policy, or implementation of these new FERC planning rules, could adversely affect our transmission planning and financial condition.

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AVANGRID's operating subsidiaries' purchases and sales of energy commodities and related transportation and services expose us to potential regulatory risks that could have a material adverse effect on our business, and financial condition.

Under the EPAct 2005 and the Dodd-Frank Act, AVANGRID is subject to enhanced FERC and CFTC statutory authority to monitor certain segments of the physical and financial energy commodities markets. Under these laws, the FERC and CFTC have promulgated regulations that have increased compliance costs and imposed reporting requirements on AVANGRID. These regulations require our operating subsidiaries to comply with certain margin requirements for our over-the-counter derivative contracts with certain CFTC- or SEC-registered entities that require us to post cash collateral with respect to swap transactions, that could potentially have an adverse effect on our liquidity or our ability to hedge commodity or interest rate risks.

With regard to the physical purchases and sales of energy commodities, the physical trading of energy commodities and any related transportation and/or hedging activities that some of our operating subsidiaries undertake, our operating subsidiaries are required to follow market-related regulations and certain reporting and other requirements enforced by the FERC, the CFTC and the SEC. Additionally, to the extent that operating subsidiaries enter into transportation contracts with natural gas pipelines or transmission contracts with electricity transmission providers that are subject to FERC regulation, the operating subsidiaries to comply with the regulations and policies of the FERC, the CFTC or the SEC relating to the physical or financial trading and sales of natural gas or other energy commodities, transportation or transmission of these energy commodities or trading or hedging of these commodities could result in the imposition of significant civil and criminal penalties, which could have a material adverse effect on our business.

The increased cost of purchasing natural gas during periods in which natural gas prices have increased significantly could adversely impact our earnings and cash flow

Our regulated utilities are permitted to recover the costs of natural gas purchased for customers. Under the regulatory body-approved gas cost recovery pricing mechanisms, the gas commodity charge portion of gas rates charged to customers may be adjusted upward on a periodic basis. If the cost of purchasing natural gas increases and Networks' regulated natural gas utilities are unable to recover these costs from its customers immediately, or at all, Networks may incur increased costs associated with higher working capital requirements and/or realize increased costs. In addition, any increases in the cost of purchasing natural gas may result in higher customer bad debt expense for uncollectible accounts and reduced sales volume and related margins due to lower customer consumption.

Climate related proceedings and legislation may result in the alteration of the public utility model in the state we operate in and could materially and adversely impact our business and operations.

Clean energy and emission reduction legislation, proceedings, or executive orders have been issued within New York, Maine, Connecticut and Massachusetts that, among other things, set renewable energy and carbon emission goals and create incentive programs for energy efficiency and renewable energy programs. Additionally, new legislation can require significant change to the natural gas portion of AVANGRID including reduction in usage and restriction of the expansion of natural gas within our territories. We are unable to predict the impact these law and actions may have on the operations of our subsidiaries in New York, Maine, Connecticut and Massachusetts which could have an adverse effect on our business and financial condition.

Renewables relies in part on governmental policies that support utility-scale renewable energy. Any reductions to, or the elimination of, these governmental mandates and incentives or the imposition of additional taxes or other assessments on renewable energy, could adversely impact our growth prospects, our business and financial condition.

Renewables relies, in part, upon government policies that support the development and operation of utility-scale renewable energy projects and enhance the economic feasibility of these projects. The federal government and many state and local jurisdictions have policies or other mechanisms in place, such as tax incentives or Renewable Portfolio Standards, or RPS, that support the sale of energy from utility-scale renewable energy facilities. Federal, state and local governments may review their policies and mechanisms that support renewable energy and take actions that would make them less conducive to the development or operation of renewable energy facilities. Any reductions to, or the elimination of, governmental policies or other mechanisms that support renewable energy or the imposition of additional taxes or other assessments on renewable energy, could result in, among other items, the lack of a satisfactory market for new development, Renewables abandoning the development of new projects, a loss of Renewables' investments in the projects and reduced project returns.

New tariffs imposed on imported goods may increase capital expense in projects and negatively impact expected returns.

Changes in tariffs may affect the final cost of a significant portion of capital expenses in projects, with renewable projects being more exposed. Tariffs have been imposed in the recent years to imports of solar panels, aluminum and steel,



among other goods or raw materials. Depending on the timing and contractual terms, tariff changes may have adverse impacts to the buyer of these goods which could affect expected returns on approved projects.

Operational, Environmental, Social and Legal Risk Factors

AVANGRID is subject to numerous environmental laws, regulations and other standards, including rules and regulations with respect to climate change, which could result in increased capital expenditures, operating costs and various liabilities, and could require us to cancel or delay planned projects or limit or eliminate certain operations, all of which could have an adverse effect on our business and financial condition.

AVANGRID is subject to environmental laws and regulations, including, but not limited to, extensive federal, state and local environmental statutes, rules and regulations relating to air quality, water quality and usage, climate change, emissions of greenhouse gases, waste management, hazardous wastes, wildlife mortality and habitat protection, historical artifact preservation, natural resources and health and safety that could, among other things, prevent or delay the development of power generation, power or natural gas transmission, or other infrastructure projects, restrict the output of some existing facilities, limit the availability and use of some fuels required for the production of electricity, require additional pollution control equipment, and otherwise increase costs, increase capital expenditures and limit or eliminate certain operations. There are significant costs associated with compliance with these environmental statutes, rules and regulations, and those costs could be even more significant in the future as a result of new legislation. Violations of current or future laws, rules, regulations or other standards could expose our subsidiaries to regulatory and legal proceedings, disputes with, and legal challenges by, third parties, and potentially significant civil fines, criminal penalties and other sanctions.

Security breaches, acts of war or terrorism, grid disturbances or unauthorized access could negatively impact our business, financial condition and reputation.

Cyber breaches, acts of war or terrorism or grid disturbances resulting from internal or external sources could target our facilities or our information technology systems. In the ordinary course of business, we maintain sensitive customer, employee, financial and system operating information and are required by various laws to safeguard this information. Cyber or physical security intrusions could potentially lead to disabling damage to our facilities or to theft and the release of critical operating information or confidential customer or employee information, which could adversely affect our operations and/or reputation, and could result in significant costs, fines and litigation. Additionally, because our generation and transmission facilities are part of an interconnected regional grid, we face the risk of blackout due to a disruption on a neighboring interconnected system. As threats evolve and grow increasingly more sophisticated, we may incur significant costs to upgrade or enhance our security measures to protect against such risks and we may face difficulties in fully anticipating or implementing adequate preventive measures or mitigating potential harms.

A physical attack on our infrastructure could interfere with our normal business operations and affect our ability to control our transmission and distribution assets. A physical security intrusion could potentially lead to theft and the release of critical operating information and could result in significant costs, fines and litigation. Theft, vandalism or damages to our facilities and equipment can cause significant disruption to operations and can lead to operating losses.

The outbreak of COVID-19 and its impact on business and economic conditions could negatively affect our business, results of operations, financial condition, cash flows and the trading value of our securities.

The scale and scope of the COVID-19 pandemic and the impact on the economy and financial markets could adversely affect our business, financial performance and results of operations. We have not yet experienced a materially adverse impact to our business, results of operations or financial condition, however, given the uncertain scope and duration of the COVID-19 outbreak and its potential effects on our business, we currently cannot predict if there will be materially adverse impacts to our business, results of operations or financial condition in the future. While the situation surrounding COVID-19 remains fluid and its potential impact on AVANGRID is difficult to predict, the continued spread of the virus, availability of a vaccine and actions undertaken by national, regional, and local governments and health officials to contain COVID-19 or treat its effects could: impact customer demand for electricity particularly from businesses, commercial and industrial customers; cause us to experience an increase in costs as a result of our emergency measures, delayed payments from our customers and uncollectable accounts; cause delays and disruptions in the availability and timely delivery of materials and components used in our operations; cause delays and disruptions in the commercial operation dates of certain projects and impacting qualification criteria for certain tax credits and potential losses; cause impairment of goodwill or long-lived assets and impact our ability to develop, construct and operate facilities; result in our inability to meet the requirements of the covenants in our existing credit facilities, including covenants regarding the ratio of indebtedness to total capitalization; cause a deterioration in our financial metrics or the business environment that impacts our credit ratings; cause extended remote work, which could harm productivity, increase

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cybersecurity risk, strain our business continuity plans, give rise to claims by employees and otherwise negatively impact our business.

If Networks' electricity and natural gas transmission, transportation and distribution systems do not operate as expected, they could require unplanned expenditures, including the maintenance and refurbishment of Networks' facilities, which could adversely affect our business and financial condition.

Networks' ability to operate its electricity and natural gas transmission, transportation and distribution systems is critical to the financial performance of AVANGRID. The ongoing operation of Networks' facilities involves risks customary to the electric and natural gas industry that include the breakdown, failure, loss of use or destruction of Networks' facilities, equipment or processes or the facilities, equipment or processes of third parties due to natural disasters, war or acts of terrorism, operational and safety performance below expected levels, errors in the operation or maintenance of these facilities and the inability to transport electricity or natural gas to customers in an efficient manner. Any unexpected failure, including failure associated with breakdowns, forced outages or any unanticipated capital expenditures, accident, failure of major equipment, shortage of or inability to acquire critical replacement or spare parts could result in reduced profitability, impacted cash flows, harm to our reputation or result in regulatory penalties.

Storing, transporting and distributing natural gas involves inherent risks that could cause us to incur significant costs that could adversely affect our business, financial condition and reputation.

There are inherent hazards and operational risks in gas distribution activities, such as leaks, explosions and mechanical problems that could cause the loss of human life, significant damage to property, environmental pollution and impairment of operations. The location of pipelines and storage facilities near populated areas could increase the level of damages resulting from these risks. These incidents may subject us to litigation and administrative proceedings that could result in substantial monetary judgments, fines or penalties and damage to our reputation.

If Renewables' equipment is not available for operation, Renewables projects' electricity generation and the revenue generated from its projects may fall below expectations and adversely affect our financial condition.

The revenues generated by Renewables' facilities depend upon the ability to maintain the working order of its projects. A natural disaster, severe weather, accident, failure of major equipment, failure of equipment supplier or shortage of or acquire critical replacement of spare parts not held in inventory or maintenance services, including the failure of interconnection to available electricity transmission or distribution networks, could damage or require Renewables to shut down its turbines, panels or related equipment and facilities, leading to decreases in electricity generation levels and revenues.

Renewables' ability to generate revenue from renewable energy facilities depends on interconnecting utility and/or RTO rules, policies, procedures and FERC tariffs that do not present restrictions to renewable project operations which could adversely impact our operations and financial condition.

If a transmission network connected to one or more generating facilities experiences outages or curtailments caused by interconnecting utility and/or RTO, the affected projects may lose revenue. In addition, certain Renewables' generation facilities have agreements that may allow for economic curtailment by off-taker, which could negatively impact revenues. Furthermore, economic congestion on the transmission grid (for instance, a negative price difference between the location where power is put on the grid by a project and the location where power is taken off the grid by the project's customer) in certain of the bulk power markets in which Renewables operates may occur and its businesses may be responsible for those congestion costs. Similarly, negative congestion costs may require that the projects either not participate in the energy markets or bid and clear at negative prices which may require the projects to pay money to operate each hour in which prices are negative. If such businesses were liable for such congestion costs or if the projects are required to pay money to operate in any given hour when prices are negative, then our financial results could be adversely affected. Additionally, we are obligated to pay the FERC Tariff price, which can be adjusted from time to time, for Renewables' facilities interconnection agreements even if the project has been curtailed.

AVANGRID's subsidiaries do not own all the land on which their projects are located and our rights may be subordinate to the rights of lienholders and leaseholders, which could have an adverse effect on their business and financial condition.

Existing and future projects may be located on land occupied under long-term easements, leases and rights of way. The ownership interests in the land subject to these easements, leases and rights of way may be subject to mortgages securing loans or other liens and other easements, lease rights and rights of way of third parties that were created previously. As a result, some of these real property rights be subordinate to the rights of these third parties, and the rights of our operating subsidiaries to use the land on which their projects are, or will be, located and their projects' rights to such easements, leases and rights of way could be lost or curtailed.



AVANGRID and our subsidiaries face risks of strikes, work stoppages or an inability to negotiate future collective bargaining agreements on commercially reasonable terms which could have an adverse effect on our business and financial condition.

The majority of employees at Networks' facilities are subject to collective bargaining agreements with various unions. Unionization activities, including votes for union certification, could occur among non-union employees. If union employees strike, participate in a work stoppage or slowdown or engage in other forms of labor strike or disruption, our subsidiaries could experience reduced power generation or outages if replacement labor is not procured. The ability to procure such replacement labor or the ability to negotiate future collective bargaining agreements on commercially reasonable terms is uncertain.

Advances in technology and rate design initiatives could impair or eliminate AVANGRID's competitive advantage or could result in customer defection, which could have an adverse effect on our growth prospects, business and financial condition.

Legislative and regulatory initiatives designed to reduce greenhouse gas emissions or limit the effects of global warming and overall climate change has increased the development of new technologies for renewable energy, energy efficiency and investment to make those technologies more efficient and cost effective. There is a potential that new technology or rate design incentives could adversely affect the demand for services of our regulated subsidiaries thus impacting our revenues, such as distributed generation. Such emergence of alternative energy supply can result in customers relying on the power grid for limited use or completely abandoning the grid, which is known as customer defection. Similarly, future investments in Networks could be impacted if adequate rate making does not fully contemplate the characteristics of an integrated reliable grid from a unified perspective, regardless of customer disconnection. The interoperability, integration and standard connection of these distributed energy devices and systems could place a burden on the system of Networks' operating subsidiaries, without adequately compensating them. The technology and techniques used in the production of electricity from renewable sources are constantly evolving and becoming more complex. In order to maintain its competitiveness and expand its business, Renewables must adjust to changes in technology effectively and in a timely manner, which could impact our cash flow and/or reduce our profitability.

Business and Market Risk Factors

AVANGRID's operations and power production may fall below expectations due to the impact of natural events, which could adversely affect our financial condition and reputation.

Weather conditions influence the supply and demand for electricity, natural gas and other fuels and affect the price of energy and energy-related commodities. Severe weather can result in power outages, bodily injury and property damage or affect the availability of fuel and water. Many of our facilities could be at greater risk of damage should climate change produce unusual variations in temperature and weather patterns, resulting in more intense, frequent and extreme weather events and conditions.

Recoverability of additional costs associated with restoration and/or repair of regulated utilities facilities is defined within their respective rate decision. Regulatory agencies have the authority to review and disallow recovery of costs that they consider excessive or imprudently incurred. Reliability metrics may be negatively affected resulting in a potential negative rate adjustment or other imposed penalty. Our regulated utilities are subject to adverse publicity focused on the reliability of their distribution services and the speed with which they are able to respond to electric outages, natural gas leaks and similar interruptions caused by storm damage or other unanticipated events. Adverse publicity of this nature could harm our reputations and the reputations of our subsidiaries. Renewables can incur damage to wind or solar equipment, either through natural events such as lightning strikes that damage blades or in-ground electrical systems used to collect electricity from turbines or panels; or may experience production shut-downs or delayed restoration of production during extreme weather conditions resulting from, among other things, icing on the blades or restricted access to sites.

If weather conditions are unfavorable or below production forecasts, Renewables projects' electricity generation and the revenue generated from its projects may fall below expectations and have an adverse effect on financial condition.

Changing weather patterns or lower than expected wind or solar resource could cause reductions in electricity generation at Renewables' projects, which could negatively affect revenues. These events could vary production levels significantly from period to period, depending on the level of available resources. To the extent that resources are not available at planned levels, the financial results from these facilities may be less than expected. Changing weather patterns could also degrade equipment, components, and/or shorten interconnection and transmission facilities' useful lives or increase maintenance costs.

Lower prices for other fuel sources may reduce the demand for wind and solar energy development, which could adversely affect Renewables' growth prospects and financial condition.

Wind and solar energy demand is affected by the price and availability of other fuels, including nuclear, coal, natural gas and oil, as well as other sources of renewable energy. To the extent renewable energy, particularly wind and solar, becomes less



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cost-competitive due to reduced government targets, increases in the costs, new regulations, incentives that favor other forms of energy, cheaper alternatives or otherwise, demand for renewable energy could decrease.

There are a limited number of purchasers of utility-scale quantities of electricity, which exposes Renewables' utility-scale projects to additional risk that could have an adverse effect on its business.

Since the transmission and distribution of electricity is highly concentrated in most jurisdictions, there are a limited number of possible purchasers for utility-scale quantities of electricity in a given geographic location, including transmission grid operators, state and investor-owned power companies, public utility districts and cooperatives. As a result, there is a concentrated pool of potential buyers for electricity generated by Renewables' businesses, which may restrict our ability to negotiate favorable terms under new PPAs and could impact our ability to find new customers for the electricity generated by our generation facilities should this become necessary. Renewables' PPA portfolio is mostly contracted with low risk regulated utility companies. In the past few years, there has been increased participation from commercial and industrial customers. The higher long-term business risk profile of these companies results in increased credit risk. Furthermore, if the financial condition of these utilities and/or power purchasers deteriorated or the RPS programs, climate change programs or other regulations to which they are currently subject and that compel them to source renewable energy supplies change, demand for electricity produced by Renewables' businesses could be negatively impacted.

The benefits of any warranties provided by the suppliers of equipment for Networks and Renewables' projects may be limited by the ability of a supplier to satisfy its warranty obligations, or if the term of the warranty has expired or has liability limits which could have an adverse effect on our business and financial condition.

Networks and Renewables expect to benefit from various warranties, including product quality and performance warranties, provided by suppliers in connection with the purchase of equipment by our operating subsidiaries. The suppliers may fail to fulfill their warranty obligations, or the warranty may not be sufficient to compensate for all losses or cover a particular defect. In addition, these warranties generally expire within two to five years after the date of equipment delivery or commissioning and are subject to liability limits. If installation is delayed, the operating subsidiaries may lose all or a portion of the benefit of warranty.

Renewables' revenue may be reduced upon expiration or early termination of PPAs if the market price of electricity decreases and Renewables is otherwise unable to negotiate favorable pricing terms which could have a negative effect on our business and financial condition.

Renewables' PPA portfolio primarily has fixed or otherwise predetermined electricity prices for the life of each PPA. A decrease in the market price of electricity could result in a decrease in revenues upon expiry or extension of a PPA. The majority of Renewables' energy generation projects become merchant upon the expiration of a PPA and are subject to market risks unless Renewables can negotiate an extension or replacement contract. If Renewables is not able to secure a replacement contract with equivalent terms and conditions or otherwise obtain prices that permit operation of the related facility on a profitable basis, the affected project may temporarily or permanently cease operations and trigger an asset value impairment.

Our risk management policies cannot fully eliminate the risk associated with some of our operating subsidiaries' commodity trading and hedging activities, which may result in significant losses and adversely impact our financial condition.

Our subsidiaries' commodity trading and hedging activities are inherently uncertain and involve projections and estimates of factors that can be difficult to predict such as future prices and demand for power and other energy-related commodities. In addition, Renewables has exposure to commodity price movements through their "natural" long positions in electricity in addition to proprietary trading and hedging activities. We manage the exposure to risks of such activities through internal risk management policies, enforcement of established risk limits and risk management procedures but they may not be effective and, even if effective, cannot fully eliminate the risks associated with such activities.

Risk Factors Relating to Ownership of Our Common Stock

Iberdrola exercises significant influence over AVANGRID, and its interests may be different from yours. Additionally, future sales or issuances of our common stock by Iberdrola could have a negative impact on the price of our common stock.

Iberdrola owns approximately 81.5% of outstanding shares of our common stock and will be able to exercise significant influence over AVANGRID's policies and affairs, including the composition of our board of directors and any action requiring the approval of our shareholders, including the adoption of amendments to the certificate of incorporation and bylaws and the approval of a merger or sale of substantially all of our assets, subject to applicable law and the limitations set forth in the shareholder agreement to which we and Iberdrola are parties. The directors designated by Iberdrola may have significant authority to effect decisions affecting our capital structure, including the issuance of additional capital stock, incurrence of additional indebtedness, the implementation of stock repurchase programs and the decision of whether or not to declare dividends.

The interests of Iberdrola may conflict with the interests of our other shareholders. For example, Iberdrola may support certain long-term strategies or objectives for us that may not be accretive to shareholders in the short term. The concentration of ownership may also delay, defer or even prevent a change in control, even if such a change in control would benefit our other shareholders, and may make some transactions more difficult or impossible without the support of Iberdrola. This significant concentration of share ownership may adversely affect the trading price for shares of our common stock because investors may perceive disadvantages in owning stock in companies with shareholders who own significant percentages of a company's outstanding stock.

Further, sales of our common stock by Iberdrola or the perception that sales may be made by it could significantly reduce the market price of shares of our common stock. Even if Iberdrola does not sell a large number of shares of our common stock into the market, its right to transfer such shares may depress the price of our common stock. Furthermore, pursuant to the shareholder agreement, Iberdrola is entitled to customary registration rights of our common stock, including the right to choose the method by which the common stock is distributed, a choice as to the underwriter and fees and expenses to be borne by us. Iberdrola also retains preemptive rights to protect against dilution in connection with issuances of equity by us. If Iberdrola exercises its registration rights and/or its preemptive rights, the market price of shares of our common stock may be adversely affected. Additionally, being a controlled company, relevant risks materializing at the ultimate parent level could have a negative impact on our share price, financial condition, credit ratings or reputation.

We have elected to take advantage of the "controlled company" exemption to the corporate governance rules for NYSE-listed companies, which could make shares of our common stock less attractive to some investors or otherwise harm our stock price.

Under the rules of the NYSE, a company in which over 50% of the voting power is held by an individual, a group or another company is a "controlled company" and may elect to take advantage of certain exemptions to the corporate governance rules for NYSE-listed companies. AVANGRID has elected to take advantage of these exemptions and, as a controlled company, is not required to have a majority of its board of directors be independent directors, a compensation committee, or to have such committees be composed entirely of independent directors, and a nominating and corporate governance committee, or to have such committees of the corporate governance requirements of the NYSE without regard to the exemptions available for "controlled companies." Our status as a "controlled company" could make our shares of common stock less attractive to some investors or otherwise harm our stock price.

Our dividend policy is subject to the discretion of our board of directors and may be limited by our debt agreements and limitations under New York law.

Although we currently anticipate paying a regular quarterly dividend, any such determination to pay dividends is at the discretion of our board of directors and dependent on conditions such as our financial condition, earnings, legal requirements, including limitations under New York law and other factors the board of directors deem relevant. Our board of directors may, in its sole discretion, change the amount or frequency of dividends or discontinue the payment of dividends to receive a return on their investments.

AVANGRID may be unable to meet our financial obligations and to pay dividends on our common stock if our subsidiaries are unable to pay dividends or repay loans from us.

We are a holding company and, as such, have no revenue-generating operations of our own. We are dependent on dividends and the repayment of loans from our subsidiaries and on external financings to provide the cash necessary to make future investments, service debt we have incurred, pay administrative costs and pay dividends. Our subsidiaries are separate legal entities and have no independent obligation to pay dividends. Our regulated utilities are restricted by regulatory decision from paying us dividends unless a minimum equity-to-total capital ratio is maintained. The future enactment of laws or regulations may prohibit or further restrict the ability of our subsidiaries to pay upstream dividends or to repay funds. In addition, in the event of a subsidiary's liquidation or reorganization, our right to participate in a distribution of assets is subject to the prior claims of the subsidiary's creditors. As a result, our ability to pay dividends on our common stock and meet our financial obligations is reliant on the ability of our subsidiaries to generate sustained earnings and cash flows and pay dividends to and repay loans from us.

General Risk Factors

If we are unable to implement and maintain effective internal control over financial reporting in the future, investors may lose confidence in the accuracy and completeness of our financial reports and the trading price of our common stock may be negatively affected.

As a public company, we are subject to reporting, disclosure control and other obligations in accordance with applicable laws and rules adopted, and to be adopted, by the SEC and the NYSE such as the requirement that our management to report on



the effectiveness of our internal control over financial reporting and our independent registered public accounting firm to attest to the effectiveness of our internal controls. Our management and other personnel devote a substantial amount of time to these compliance activities, and if we are not able to comply with these requirements in a timely manner or if we are unable to conclude that our internal control over financial reporting is effective, our ability to accurately report our cash flows, results of operations or financial condition could be inhibited and additional financial and management resources could be required. Any failure to maintain internal control over financial reporting or if our independent registered public accounting firm determines the we have a material weakness or significant deficiency in our internal control over financial reports, a decline in the market price of our common stock, or subject us to sanctions or investigations by the NYSE, the SEC or other regulatory authorities. Failure to remedy any material weakness or significant deficiency in our internal control over financial reporting, could cover financial reporting, or to implement or maintain other effective control systems required of public companies, could also restrict our future access to the capital markets and reduce or eliminate the trading market for our common stock.

Changes in tax laws, as well as judgments and estimates used in the determination of tax-related asset and liability amounts, could adversely affect our financial condition.

Our provision for income taxes and reporting of tax-related assets and liabilities require significant judgments and the use of estimates. Amounts of taxrelated assets and liabilities involve judgments and estimates of the timing and probability of recognition of income, deductions and tax credits, including, but not limited to, estimates for potential adverse outcomes regarding tax positions that have been taken and the ability to utilize tax benefit carryforwards, such as net operating loss, or NOL, and tax credit carryforwards. Actual income taxes could vary significantly from estimated amounts due to the future impacts of, among other things, changes in tax laws, regulations and interpretations, our financial performance and results of operations.

Our investments and cash balances are subject to the risk of loss.

Our cash balances and the cash balances at our subsidiaries may be deposited in banks, may be invested in liquid securities such as commercial paper or money market funds or may be deposited in a liquidity agreement in which we are a participant along with other affiliates of the Iberdrola Group. Bank deposits in excess of federal deposit insurance limits would be subject to risks in the counterparty bank. Liquid securities and money market funds are subject to loss of principal, more likely in an adverse market situation, and to the risk of illiquidity.

The cost and availability of capital to finance our business is inherently uncertain and may adversely affect our financial condition.

AVANGRID and its subsidiaries are exposed to an increase in the general level of interest rates and to events, such as the 2008 financial crisis, affecting the capital markets that may increase the cost of capital or restrict its availability. In addition, AVANGRID's performance directly affects its financial strength and credit ratings and therefore its cost of, and ability to attract, capital. Significant increases in the cost of capital, whether caused by economic or capital market conditions or adverse company performance, would adversely impact our financial performance and may make certain potential business opportunities uneconomic. Prolonged inability to access capital would impair our ability to execute our business plan and could impair AVANGRID's ability to meet its financial obligations.

AVANGRID and our subsidiaries are subject to litigation or administrative proceedings, the outcome or settlement of which could adversely affect our business, financial condition and reputation.

AVANGRID and our operating subsidiaries have been and continue to be involved in legal proceedings, administrative proceedings, claims and other litigation that arise in the ordinary course of business. AVANGRID could experience unfavorable outcomes, developments or settlement of claims relating to these proceedings or future proceedings such as judgments for monetary damages, injunctions, unfavorable settlement terms, or denial or revocation of permits or approvals that could adversely impact our business, financial condition and reputation.

AVANGRID is not able to insure against all potential risks which could adversely affect our financial condition.

AVANGRID is exposed to certain risks inherent in our business such as equipment failure, manufacturing defects, natural disasters, terrorist attacks, cyberattacks and sabotage, as well as affected by international, national, state or local events. Our insurance coverage may not continue to be offered or offered on an economically feasible basis and may not cover all events that could give rise to a loss or claim involving the assets or operations of our subsidiaries.

Pension and post-retirement benefit plans could require significant future contributions to such plan that could adversely impact our business and financial condition.

We provide defined benefit pension plans and other post-retirement benefits administered by our subsidiaries for a significant number of employees, former employees and retirees. Financial market disruptions and significant declines in the

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market values of the investments held to meet those obligations, discount rate assumptions, participant demographics and increasing longevity, and changes in laws and regulations may require us to make significant contributions to the plans.

AVANGRID and our subsidiaries may suffer the loss of key personnel or the inability to hire and retain qualified employees, which could have an adverse effect on our operations and financial condition.

The operations of AVANGRID depend on the continued efforts of our employees. Retaining key employees and attracting new employees are important to our financial performance and our operations. We cannot guarantee that any member of our management will continue to serve in any capacity for any length of time. In addition, a significant portion of our skilled workforce will be eligible to retire in the next five to ten years. Such highly skilled individuals cannot be quickly replaced due to the technically complex work they perform. This could lead to a loss in productivity and increased recruiting and training costs.

Item 1B. Unresolved Staff Comments.

None.

Item 2. Properties.

We have included descriptions of the location and general character of our principal physical operating properties by segment in "Item 1. *Business*", which is incorporated herein by reference. The principal offices of AVANGRID and Networks are located in Orange, Connecticut; Portland, Maine; and Rochester, New York, while Renewables' headquarters is located in Portland, Oregon. In addition, AVANGRID and its subsidiaries have various administrative offices located throughout the United States. AVANGRID leases part of its administrative and local offices.

The following table sets forth the principal properties of AVANGRID, by location, type, lease or ownership and size as of December 31, 2020:

Location	Type of Facility	Leased/Owned	Size (square feet)
Orange, Connecticut	Office	Owned	127,310
Augusta, Maine	Office	Leased	220,400
Portland, Maine	Office	Leased	15,194
Rochester, New York	Office	Owned	122,494
Portland, Oregon	Office	Leased	63,543

We believe that our office facilities are adequate for our current needs and that additional office space can be obtained if necessary.

Item 3. Legal Proceedings.

For information with respect to this item see Notes 14 and 15 of our consolidated financial statements included in Part II, Item 8, "Financial Statements and Supplementary Data" of this Annual Report on Form 10-K, which information is incorporated herein by reference.

Item 4. Mine Safety Disclosures.

Not applicable.



UNITED STATES SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, D.C. 20549

FORM 10-K

I Annual Report Pursuant To Section 13 or 15(d) of the Securities Exchange Act of 1934

FOR THE FISCAL YEAR ENDED DECEMBER 31, 2020

OR

□ Transition Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

For the transition period from ______ to _____

Commission File Number 1-14514

Consolidated Edison, Inc.

Exact name of registrant as specified in its charter and principal office address and telephone number

New York State of Incorporation 13-3965100 I.R.S. Employer ID. Number

4 Irving Place, New York, New York 10003

(212) 460-4600

Commission File Number 1-1217

Consolidated Edison Company of New York, Inc.

Exact name of registrant as specified in its charter and principal office address and telephone number

New York State of Incorporation 13-5009340

I.R.S. Employer ID. Number

4 Irving Place, New York, New York 10003

(212) 460-4600

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Transmission. Of the total CECONY and O&R employees, 7,174 and 574 employees, respective **Page 18 of 36** represented by a collective bargaining unit. The collective bargaining agreement covering most of the CECONY employees expires in June 2024. Agreements covering other CECONY employees and O&R employees expire in June 2021 and May 2023, respectively.

Con Edison measures the voluntary attrition rate of its employees in assessing the company's overall human capital. The company has a low annual turnover rate of approximately 6.5 percent, half of which is attributed to retirements. The average length of service is 14 years. Con Edison strives to have a diverse and inclusive workforce. A comprehensive diversity and inclusion strategy underlies the corporate culture; informing how its employees engage with one another, and setting the foundation for a respectful and inclusive environment. On December 31, 2020, women represented 21.9 percent of the total workforce and people of color represented 49 percent of the workforce, with ethnicity breaking down as follows: 51.0 percent White, 20.8 percent Black, 18.1 percent Hispanic, 8.8 percent Asian and 1.3 percent other.

In managing the business, the company focuses heavily on creating a strong safety culture. Continuous focus on safety while performing work is paramount, and leaders and managers are committed to implementing programs and practices that promote the right knowledge, skills, and attitudes to successfully undertake the responsibilities of safety, including required training for both field and office employees. To that end, the company has a dedicated facility, the Learning Center, that offers classes to employees covering technical courses, skills enhancement, safety, and leadership development. During 2020, employees spent almost 500,000 hours in instructor-led training. Further, the company maintains a career development and succession planning program that is committed to helping employees grow their careers, talents, skills and abilities. In addition to their daily job functions, employees of the Utilities are assigned to and trained on a position for emergency response that is mobilized in the event of a weather event or emergency.

As a result of the COVID-19 pandemic, 60 percent of the total workforce was working remotely as of December 31, 2020. The viability of a mobile workforce was made possible by digital software and smart device capabilities that helped employees to collaborate with each other and remain productive while complying with health requirements. Even as the company continues to respond to the pandemic, the entire CECONY and O&R workforce is available in the event of an emergency that requires on-site presence. During 2020, Con Edison and its subsidiaries managed their operations and resources while avoiding lay-offs and furloughs and continued to recruit, interview, and hire internal and external applicants to fill critical positions. Con Edison, and its subsidiaries support employee health through mandatory pre-entry symptom surveys for employees arriving at all company locations, regular cleaning and disinfecting of all work and common areas, promoting social distancing, requiring face coverings, and directing employees to work remotely whenever possible.

Available Information

For the sources of information about the Companies, see "Available Information" in the "Introduction" appearing before this Item 1.

Item 1A: Risk Factors

Information in any item of this report as to which reference is made in this Item 1A is incorporated by reference herein. The use of such terms as "see" or "refer to" shall be deemed to incorporate at the place such term is used the information to which such reference is made.

The Companies' businesses are influenced by many factors that are difficult to predict, and that involve uncertainties that may materially affect actual operating results, cash flows and financial condition.

The Companies have established an enterprise risk management program to identify, assess, manage and monitor its major business risks based on established criteria for the severity of an event, the likelihood of its occurrence, and the programs in place to control the event or reduce the impact. The Companies' major risks include:

Regulatory/Compliance Risks:

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The Companies Are Extensively Regulated And Are Subject To Substantial Penalties. The Companies' operations require numerous permits, approvals and certificates from various federal, state and local governmental agencies. State utility regulators may seek to impose substantial penalties on the Utilities for violations of state utility laws, regulations or orders. In addition, the Utilities' rate plans usually include negative revenue adjustments for failing to meet certain operating and customer satisfaction standards. In January 2021, Governor Cuomo proposed legislation that, if enacted, would establish an automatic moratorium on disconnections of residential and small business customers by the Utilities during certain states of emergency. In November 2020, the NYSPSC issued orders to show cause why substantial penalties should not be imposed on the Utilities regarding their preparation for and response to Tropical Storm Isaias and on CECONY regarding its actions and/or omissions prior to, during, and after the July 2019 power outages on the west side of Manhattan and in the Flatbush area of Brooklyn. The orders further indicated that should the NYSPSC confirm that certain alleged violations demonstrate a failure by the Utilities to continue to provide safe and adequate service, the NYSPSC would be authorized to commence a proceeding to revoke or modify the Utilities' operating certificates. See Note B to the financial statements in Item 8. FERC has the authority to impose penalties on the Utilities, the Clean Energy Businesses and the projects that Con Edison Transmission invests in, which could be substantial, for violations of the Federal Power Act, the Natural Gas Act or related rules, including reliability and cyber security rules. Environmental agencies may seek penalties for failure to comply with laws, regulations or permits. The Companies may also be subject to penalties from other regulatory agencies. The Companies may be subject to new laws, regulations or other requirements or the revision or reinterpretation of such requirements, which could adversely affect them. See "Utility Regulation", "Competition" and "Environmental Matters - Climate Change" and "Environmental Matters - Other Federal, State and Local Environmental Provisions" in Item 1, "Application of Critical Accounting Policies" in Item 7 and "COVID-19 Regulatory Matters" and "Other Regulatory Matters" in Note B to the financial statements in Item 8.

The Utilities' Rate Plans May Not Provide A Reasonable Return. The Utilities have rate plans approved by state utility regulators that limit the rates they can charge their customers. The rates are generally designed for, but do not guarantee, the recovery of the Utilities' cost of service (including a return on equity). See "Utility Regulation – State Utility Regulation – Rate Plans" in Item 1 and "Rate Plans" in Note B to the financial statements in Item 8. Rates usually may not be changed during the specified terms of the rate plans other than to recover energy costs and limited other exceptions. The Utilities' actual costs may exceed levels provided for such costs in the rate plans (see "COVID-19 Regulatory Matters" in Note B to the financial statements in Item 8). State utility regulators can initiate proceedings to prohibit the Utilities from recovering from their customers the cost of service (including energy costs and storm restoration costs) that the regulators determine to have been imprudently incurred (see "Other Regulatory Matters" in Note B to the financial statements to resolve various prudence proceedings.

The Companies May Be Adversely Affected By Changes To The Utilities' Rate Plans. The Utilities' rate plans typically require action by regulators at their expiration dates, which may include approval of new plans with different provisions. The need to recover from customers increasing costs, taxes or state-mandated assessments or surcharges could adversely affect the Utilities' opportunity to obtain new rate plans that provide a reasonable rate of return and continue important provisions of current rate plans. The Utilities' current New York electric and gas rate plans include revenue decoupling mechanisms and their New York electric, gas and steam rate plans include provisions for the recovery of energy costs and reconciliation of the actual amount of pension and other postretirement, environmental and certain other costs to amounts reflected in rates. See "Rate Plans" in Note B to the financial statements in Item 8.
Operations Risks:

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The Failure Of, Or Damage To, The Companies' Facilities Could Adversely Affect The Companies. The Utilities provide electricity, gas and steam service using energy facilities, many of which are located either in, or close to, densely populated public places. See the description of the Utilities' facilities in Item 1. A failure of, or damage to, these facilities, or an error in the operation or maintenance of these facilities, could result in bodily injury or death, property damage, the release of hazardous substances or extended service interruptions. Impacts of climate change, such as sea level rise, coastal storm surge, inland flooding from intense rainfall, hurricane-strength winds and extreme heat could damage facilities and the Utilities' response to such events may be perceived to be below customer expectations. The Utilities could be required to pay substantial amounts that may not be covered by the Utilities' insurance policies to repair or replace their facilities, compensate others for injury or death or other damage and settle any proceedings initiated by state utility regulators or other regulatory agencies. The occurrence of such events could also adversely affect the cost and availability of insurance. See "Other Regulatory Matters" in Note B and "Manhattan Explosion and Fire" in Note H to the financial statements in Item 8. Changes to laws, regulations or judicial doctrines could further expand the Utilities' liability for service interruptions. See "Utility Regulation" and "Environmental Matters – Climate Change" in Item 1.

A Cyber Attack Could Adversely Affect The Companies. The Companies and other operators of critical energy infrastructure and energy market participants face a heightened risk of cyber attack and the Companies' businesses require the continued operation of information systems and network infrastructure. See Item 1 for a description of the businesses of the Utilities, the Clean Energy Businesses and Con Edison Transmission. Cyber attacks may include hacking, viruses, malware, denial of service attacks, ransomware or other security breaches, including loss of data. Cyber threats to the electric and gas systems are increasing in sophistication, magnitude and frequency. There has been a growing use of COVID-19 related themes by malicious cyber actors and the significant increase in employees working remotely has increased the attack surface area for the Companies as well as their contractors and vendors. Interconnectivity with customers through advanced metering infrastructure, independent system operators, energy traders and other energy market participants, suppliers, contractors and others also exposes the Companies' information systems and network infrastructure to an increased risk of cyber incidents, including attacks, and increases the risk that a cyber incident or attack on the Companies could affect others. In the event of a cyber incident or attack that the Companies were unable to defend against or mitigate, the Companies could have their operations and the operations of their customers and others disrupted. The Companies could also have their financial and other information systems and network infrastructure impaired, property damaged, and customer and employee information stolen; experience substantial loss of revenues, response costs and other financial loss; and be subject to increased regulation, litigation, penalties and damage to their reputation. In December 2020, it was announced that updates from SolarWinds, a network monitoring tool used by CECONY, O&R and the Clean Energy Businesses, was compromised and facilitated a cyberattack against multiple private and public sector entities. The Companies have experienced cyber incidents and attacks, including the recent SolarWinds attack, although none of the incidents or attacks had a material impact.

The Failure Of Processes and Systems And The Performance Of Employees And Contractors Could Adversely Affect The Companies. The Companies have developed business processes and use information and communication systems for operations, customer service, legal compliance, personnel, accounting, planning and other matters. The Companies have completed a multi-year, phased transition of information technology services, including application maintenance and support and infrastructure and operations services, to a contractor. The failure of the Companies' or its contractors' business processes or information and communication systems or the failure by the Companies' employees or contractors to follow procedures, their unsafe actions, errors or intentional misconduct, cyber incidents or attacks, or work stoppages could adversely affect the Companies' operations and liquidity and result in substantial liability, higher costs and increased regulatory requirements. The violation of laws or regulations by employees or contractors for personal gain may result from contract and procurement fraud, extortion, bribe acceptance, fraudulent related-party transactions and serious breaches of corporate policy or standards of business conduct. See "Human Capital" in Item 1.

Environmental Risks:

The Companies Are Exposed To Risks From The Environmental Consequences Of Their Operations. The Companies are exposed to risks relating to climate change and related matters. In 2019, CECONY completed a climate change vulnerability study and during 2020, CECONY further evaluated its future climate change adaptation strategies and developed a climate change implementation plan. New York State enacted the Climate Leadership and Community Protection Act and New York City enacted the Climate Mobilization Act. See "Environmental Matters – Clean Energy Future" in Item 1. CECONY may also be impacted by regulations requiring reductions in air emissions. See "Environmental Matters – Other Federal, State and Local Environmental Provisions – Air Quality" in Item 1. In addition, the Utilities are responsible for hazardous substances, such as asbestos, PCBs and coal tar, that

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have been used or produced in the course of the Utilities' operations and are present on propertipage in fact is and equipment currently or previously owned by them. See "Environmental Matters" in Item 1 and Note G to the financial statements in Item 8. The Companies could be adversely affected if a causal relationship between electric and magnetic fields and adverse health effects were to be established.

Financial and Market Risks:

A Disruption In The Wholesale Energy Markets Or Failure By An Energy Supplier or Customer Could Adversely Affect The Companies. Almost all the electricity and gas the Utilities sell to their full-service customers is purchased through the wholesale energy markets or pursuant to contracts with energy suppliers. See the description of the Utilities' energy supply in Item 1. A disruption in the wholesale energy markets or a failure on the part of the Utilities' energy suppliers or operators of energy delivery systems that connect to the Utilities' energy facilities could adversely affect their ability to meet their customers' energy needs and adversely affect the Companies. The Utilities' ability to gain access to additional energy supplies, if needed, depends on effective markets and siting approvals for developer projects, which the Utilities do not control. See "CECONY - Gas Peak Demand" in Item 1. The Clean Energy Businesses sell the output of their renewable electric production projects under long-term power purchase agreements with utilities and municipalities, and a failure of the production projects could adversely affect Con Edison.

The Companies Have Substantial Unfunded Pension And Other Postretirement Benefit Liabilities. The Utilities have substantial unfunded pension and other postretirement benefit liabilities. The Utilities expect to make substantial contributions to their pension and other postretirement benefit plans. Significant declines in the market values of the investments held to fund pension and other postretirement benefits could trigger substantial funding requirements under governmental regulations. See "Application of Critical Accounting Policies – Accounting for Pensions and Other Postretirement Benefits" and "Financial and Commodity Market Risks" in Item 7 and Notes E and F to the financial statements in Item 8.

Con Edison's Ability To Pay Dividends Or Interest Depends On Dividends From Its Subsidiaries. Con Edison's ability to pay dividends on its common stock or interest on its external borrowings depends primarily on the dividends and other distributions it receives from its subsidiaries. The dividends that the Utilities may pay to Con Edison are limited by the NYSPSC to not more than 100 percent of their respective income available for dividends calculated on a two-year rolling average basis, with certain exceptions. See "Dividends" in Note C and Note T to the financial statements in Item 8.

The Companies Require Access To Capital Markets To Satisfy Funding Requirements. The Utilities estimate that their construction expenditures will exceed \$10,800 million over the next three years. The Utilities use internally-generated funds, equity contributions from Con Edison, if any, and external borrowings to fund the construction expenditures. The Clean Energy Businesses are investing in renewable generation and sustainable energy infrastructure projects that require funds in excess of those produced in the businesses. Con Edison expects to finance its capital requirements primarily through internally generated funds, the sale of its common shares or external borrowings. Changes in financial market conditions or in the Companies' credit ratings could adversely affect their ability to raise new capital and the cost thereof. See "Capital Requirements and Resources" in Item 1.

Changes To Tax Laws Could Adversely Affect the Companies. Changes to tax laws, regulations or interpretations thereof could have a material adverse impact on the Companies. Depending on the extent of these changes, the changes could also adversely impact the Companies' credit ratings and liquidity. The reduction in the federal corporate income tax rate to 21 percent under the TCJA resulted in decreased cash flows from operating activities, and requires increased cash flows from financing activities, for the Utilities. See "Capital Requirements and Resources – Capital Resources" in Item 1, "Liquidity and Capital Resources – Cash Flows from Operating Activities" in Item 7, "Rate Plans" and "Other Regulatory Matters" in Note B and Note L to the financial statements in Item 8.

Other Risks:

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The Companies Face Risks Related To Health Epidemics And Other Outbreaks, Including The COVID-19 **Pandemic.** The COVID-19 pandemic has impacted, and continues to impact, countries, communities, supply chains and markets. During 2020, the Companies' service territories included some of the most severely impacted counties in the United States. As a result of the COVID-19 pandemic, there has been an economic slowdown in the Companies' service territories, decreased demand for the services that they provide and changes in governmental and regulatory policy. The decline in business activity in the Companies' service territories has resulted in lower billed sales revenues and increased difficulty of customers to pay bills. Although the Utilities' New York electric and gas businesses have largely effective revenue decoupling mechanisms in place, lower billed sales revenues and higher uncollectible accounts have impacted and could continue to impact the Companies' liquidity. The Utilities have also suspended service disconnections, new late payment charges and certain other fees for customers, which may result in a further increase to bad debt expense. The Companies will continue to monitor developments relating to the COVID-19 pandemic; however, the Companies cannot predict the extent to which, COVID-19 may have a material impact on liquidity, financial condition, and results of operations. The situation is changing rapidly and future impacts may materialize that are not yet known. Accordingly, the extent to which COVID-19 may impact these matters will depend on future developments that are highly uncertain and cannot be predicted, including the success of vaccination efforts, actions that federal, state and local governmental or regulatory agencies may continue to take in response to the COVID-19 pandemic, and other actions taken to contain it or treat its impact, among others. See "Coronavirus Disease 2019 (COVID-19) Impacts" in Item 7 and "COVID-19 Regulatory Matters" in Note B.

The Companies' Strategies May Not Be Effective To Address Changes In The External Business **Environment.** The failure to identify, plan and execute strategies to address changes in the external business environment could have a material adverse impact on the Companies. Con Edison seeks to provide shareholder value through continued dividend growth, supported by earnings growth in regulated utilities and contracted electric and gas assets. Changes to public policy, laws or regulations (or interpretations thereof), customer behavior or technology could significantly impact the value of the Utilities' energy delivery facilities, the Clean Energy Businesses' renewable and sustainable energy infrastructure projects and Con Edison Transmission's investment in electric and gas transmission projects. Such changes could also affect the Companies' opportunities to make additional investments in such assets and the potential return on the investments. The Utilities' gas delivery customers and CECONY's steam delivery customers have alternatives, such as electricity and oil. Distributed energy resources, and demand reduction and energy efficiency investments, provide ways for the energy consumers within the Utilities' service areas to manage their energy usage. The Companies expect distributed energy resources and electric alternatives to gas and steam to increase, and for gas and steam usage to decrease, as the CLCPA and the Climate Mobilization Act continue to be implemented. CECONY established a gas moratorium in March 2019 on new gas service in most of Westchester County. CECONY filed a gas planning analysis with the NYSPSC in July 2020 stating the moratorium could be lifted when increased pipeline capacity is achieved or peak demand is reduced to a level that would enable the company to lift the moratorium and that it is monitoring gas supply constraint in the New York City portion of its service territory. See "Clean Energy" Businesses," "Con Edison Transmission," "Environmental Matters - Clean Energy Future" and "Environmental Matters - Climate Change," "Competition" and "CECONY - Gas Peak Demand" in Item 1.

The Companies Also Face Other Risks That Are Beyond Their Control. The Companies' results of operations can be affected by circumstances or events that are beyond their control. Weather and energy efficiency efforts directly influence the demand for electricity, gas and steam service, and can affect the price of energy commodities. Terrorist or other physical attacks or acts of war could damage the Companies' facilities. Economic conditions can affect customers' demand and ability to pay for service, which could adversely affect the Companies.

Item 1B: Unresolved Staff Comments

Con Edison

Con Edison has no unresolved comments from the SEC staff.

CECONY CECONY has no unresolved comments from the SEC staff.

Item 2: Properties

Con Edison

Con Edison has no significant properties other than those of the Utilities and the Clean Energy Businesses.

Management Discussion and Analysis

For the year ended December 31, 2020 Dated February 11, 2021

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This MD&A has been prepared in accordance with National Instrument 51-102 - *Continuous Disclosure Obligations*. It should be read in conjunction with the 2020 Annual Financial Statements and is subject to the cautionary statement and disclaimer provided under "Forward-Looking Information" on page 46. Further information about Fortis, including its Annual Information Form filed on SEDAR, can be accessed at www.fortisinc.com, www.sedar.com, or www.sec.gov.

Financial information herein has been prepared in accordance with US GAAP (except for indicated Non-US GAAP Financial Measures) and, unless otherwise specified, is presented in Canadian dollars based, as applicable, on the following US dollar-to-Canadian dollar exchange rates: (i) average of 1.34 and 1.33 for the years ended December 31, 2020 and 2019, respectively; (ii) 1.27 and 1.30 as at December 31, 2020 and 2019, respectively; (iii) average of 1.30 and 1.32 for the quarters ended December 31, 2020 and 2019, respectively; and (iv) 1.32 for all forecast periods. Certain terms used in this MD&A are defined in the "Glossary" on page 48.

ABOUT FORTIS

Fortis (TSX/NYSE: FTS) is a well-diversified leader in the North American regulated electric and gas utility industry, with revenue of \$8.9 billion and total assets of \$55 billion as at December 31, 2020.

Regulated utilities account for 99% of the Corporation's assets with the remainder primarily attributable to non-regulated energy infrastructure. The Corporation's 9,000 employees serve 3.3 million utility customers in five Canadian provinces, nine US states and three Caribbean countries. As at December 31, 2020, 66% of the Corporation's assets were located outside Canada and 59% of 2020 revenue was derived from foreign operations.

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BUSINESS RISKS

Fortis has established an ERM process to help identify and evaluate risks by both severity of impact and probability of occurrence. Materiality thresholds are reviewed and, if necessary, updated annually. Non-financial risks that may impact the safety of employees, customers or the general public, as well as reputational risks, are also evaluated. Systems of internal controls are established to monitor and manage identified risks. The ERM process at the subsidiary level is overseen by each subsidiary's board of directors and any material risks identified are communicated to Fortis management and form part of Fortis' ERM program. The Fortis board of directors, through the audit committee, oversees Fortis' ERM program, ensuring strategic objectives are achieved.

A summary of the Corporation's current significant business risks follows.

Regulation

Regulated utility assets represented approximately 99% of the Corporation's total assets as at December 31, 2020. Regulatory jurisdictions include five Canadian provinces, nine US states and three Caribbean countries, as well FERC regulation for transmission assets in the US.

Regulators administer legislation covering material aspects of the utilities' business, including: customer rates and the underlying allowed ROEs and deemed capital structures; capital expenditures; the terms and conditions for the provision of energy and capacity, ancillary services and affiliate services; securities issuances; and certain accounting matters. Regulatory or legislative changes and decisions, and delays in the recovery of costs in rates due to regulatory lag, could have a Material Adverse Effect. The risk of regulatory lag is particularly significant for UNS Energy given the use of historical test years in setting rates.

The ability to recover the actual cost of service and earn the approved ROE or ROA typically depends on achieving the forecasts established in the rate-setting process. Failure to do so could have a Material Adverse Effect. For those utilities subject to PBR mechanisms, rates reflect assumed inflation rates and productivity improvement factors, and variances therefrom could have a Material Adverse Effect. Under FortisAlberta's PBR mechanism there is an added risk that incremental incurred capital expenditures may not be approved for recovery in rates.

For transmission operations, the underlying elements of FERC-established formula rates can be, and have been, challenged by third parties which could result in, and has resulted in, lowered rates and customer refunds. These underlying elements include the assumed ROE, ROE adders for independent transmission ownership and deemed capital structure as well as operating and capital expenditures. These challenges could have a Material Adverse Effect.

Additionally, the US Congress periodically considers enacting energy legislation that could assign new responsibilities to FERC, modify provisions of the *U.S. Federal Power Act* or the *Natural Gas Act*, or provide FERC or another entity with increased authority to regulate US federal energy matters. Such changes could have a Material Adverse Effect.

The political and economic environments as well as their effect on energy laws and governmental energy policies have had, and may continue to have, negative impacts on regulatory decisions. While Fortis is well positioned to maintain constructive regulatory relationships through local management teams and boards comprised mostly of independent local members, it cannot predict future legislative or regulatory changes, whether caused by economic, political or other factors, or its ability to respond thereto in an effective and timely manner, or the resulting compliance costs. These dynamics could have a Material Adverse Effect.

Climate Change and Physical Risks

The provision of electric and gas service is subject to customary industry risks, including severe weather and natural disasters, wars, terrorism, critical equipment failure and other catastrophic events within and outside the Corporation's service territories. Resultant service disruption and repair and replacement costs could have a Material Adverse Effect if not resolved in a timely and effective manner and/or mitigated through insurance policies or regulatory cost recovery.



Climate change is predicted to lead to more frequent and intense weather events, changing air temperatures, changing seasonal variations, and regulatory responses (see "Environmental Matters" on page 30), each of which could have a Material Adverse Effect. Severe weather impacts the Corporation's service territories, primarily when thunderstorms, flooding, wildfires, hurricanes and snow or ice storms occur. Increased frequency of extreme weather events could increase the cost of providing service. Changes in precipitation that result in droughts could increase the risk of wildfire caused by the Corporation's electricity assets or may cause water shortages that could adversely affect operations. Extreme weather conditions in general require system backup and can contribute to increased system stress, including service interruptions. Changing air temperatures could also result in system stress and decreased efficiencies to operating facilities over time. Longer-term climate change impacts, such as sustained higher temperatures, higher sea levels and larger storm surges, could result in service disruption, repair and replacement costs, and costs associated with strengthened design standards and systems, each of which could have a Material Adverse Effect if not resolved in a timely and effective manner and/or mitigated through insurance policies or regulatory cost recovery.

Generating equipment and facilities are subject to risks, including equipment breakdown and flood and fire damage, that may result in the uncontrolled release of water, interruption of fuel supply, lower-than-expected operational efficiency or performance, and service disruption. There is no assurance that generating equipment and facilities will continue to operate in accordance with expectations.

The operation of transmission and distribution assets is subject to risks, including the potential to cause fires, mainly as a result of equipment failure, falling trees and lightning strikes to lines or equipment. Certain utilities operate in remote and mountainous terrain that can be difficult to access for timely repairs and maintenance, or otherwise face risk of loss or damage from forest fires, floods, washouts, landslides, earthquakes, avalanches and other acts of nature with a potential Material Adverse Effect.

The gas utilities are exposed to operational risks associated with natural gas, including fires, explosions, pipeline corrosion and leaks, accidental damage to mains and service lines, equipment failure, damage and destruction from earthquakes, fires, floods and other natural disasters, and other accidents and issues that can lead to service disruption, spills and commensurate environmental liability, or other liability with a Material Adverse Effect.

Risks associated with fire damage vary depending on weather, forestation, the proximity of habitation and third-party facilities to utility facilities, and other factors. The utilities may become liable for firesuppression costs, regeneration and timber value costs, and third-party claims if their facilities are held responsible for a fire, and such claims, if successful, could have a Material Adverse Effect.

Electricity and gas systems require ongoing maintenance, improvement and replacement. Service disruption, other effects and liability caused by the failure to properly implement or complete approved maintenance and capital expenditures, the occurrence of significant unforeseen equipment failures, or the inability to recover requisite costs in customer rates, could have a Material Adverse Effect.

The electricity and gas systems are designed to service customers under various contingencies in accordance with good utility practice. The utilities are responsible for operating and maintaining their assets in a safe manner, including the development and application of appropriate standards, system processes and/or procedures to ensure the safety of employees, contractors and the general public. The impacts of climate change may necessitate the acceleration of these standards, processes and procedures. Failure to do so may disrupt the ability of the utilities to safely provide service, which could cause reputational harm and other impacts with a Material Adverse Effect.

Pandemics and Public Health Crises, including the COVID-19 Pandemic

The Corporation could be negatively impacted by a widespread outbreak of communicable diseases or other public health crises that cause economic and/or other disruptions. The COVID-19 Pandemic continues to be an evolving situation that has adversely impacted economic activity and conditions around the world, including the Corporation's service territories (see "General Economic Conditions" and "Access to Capital" on page 34). The virus and efforts to reduce the health impacts and control its spread have led many jurisdictions around the world, including Canada, the US and the Caribbean, to institute restrictions on travel, gatherings and business operations. The Corporation and its utilities have been subjected to government and regulatory action in response to the COVID-19 Pandemic, including restrictions on business operations, customer deferrals and suspension of disconnections. Other potential impacts on the Corporation's operations may include reduced labour availability and

productivity, disruptions to capital markets leading to share price volatility and liquidity issues, supply chain disruptions, project construction delays and a prolonged reduction in economic activity. An extended economic slowdown could reduce energy sales and adversely impact the ability of customers, contractors and suppliers to fulfill their obligations and could disrupt operations and capital expenditure programs or cause impairment of goodwill.

The overall impact will depend on the duration and severity of the pandemic, potential government actions to mitigate public health effects or aid economic recovery, and other factors beyond the Corporation's control. An extended period of economic disruption could have a Material Adverse Effect.

Environmental Matters

The Corporation's businesses are subject to environmental risks and environmental laws and regulations, including those which: (i) impose limitations or restrictions on the discharge of pollutants into the air, soil and water; (ii) establish standards for the management, treatment, storage, transportation and disposal of hazardous wastes; and/or (iii) impose obligations to investigate and remediate contamination.

The risk of contamination of air, soil and water at the electric businesses primarily relates to: (i) the transportation, handling, storage and combustion of fuel; (ii) the use of petroleum-based products, mainly transformer and lubricating oil; (iii) the management and disposal of coal combustion residuals and other wastes; and (iv) accidents resulting in hazardous release at or from coal mines that supply generating facilities. Contamination risks at the gas businesses primarily relate to leaks and other accidents involving gas systems. The key environmental risks for hydroelectric generation operations include dam failures and the creation of artificial water flows that may disrupt natural habitats.

Liabilities relating to contamination investigation and remediation, and claims for personal injury or property damage, may arise at many locations, including formerly and currently owned/operated properties and waste treatment or disposal sites, regardless of whether such contamination was caused by the business at the time it owned the property or whether it resulted from non-compliance with applicable environmental laws. Under some environmental laws, such liabilities may be joint and several, meaning that a party can be held responsible for more than its share of the liability involved or even the entire liability. These liabilities could lead to litigation and administrative proceedings that could result in substantial monetary judgments for clean-up costs, damages, fines and/or penalties. To the extent not fully covered by insurance, these costs could have a Material Adverse Effect.

The Corporation's businesses have incurred substantial expenses for environmental compliance, and they anticipate continuing to do so in the future. In particular, the management of GHG emissions is a major concern due to new and emerging federal, state and provincial GHG laws, regulations and guidelines.

The Corporation's businesses continue to develop compliance strategies and assess the impact of emerging legislative changes, but significant uncertainties remain. Increased compliance costs or additional operating restrictions from revised or additional regulation could have a Material Adverse Effect.

Growth

Fortis has a history of growth through acquisitions and organic growth from capital investment in existing service territories. Acquisitions include inherent risks that some or all of the expected benefits may fail to materialize, or may not occur within the time periods anticipated, and material unexpected costs may arise.

The Corporation's dividend growth guidance is significantly dependent upon achieving the Rate Base growth expected from the execution of the five-year capital plan described under "Capital Plan" on page 24. Projects, particularly Major Capital Projects, are subject to risks of delay and cost overruns during construction caused by inflation, supply and labour costs, supplier non-performance, weather, geologic conditions or other factors beyond the Corporation's control. There is no assurance that regulators will approve: (i) all of the planned projects or their amounts or timing; (ii) permits in a timely manner, or with reasonable terms and conditions; or (iii) the recovery of cost overruns in customer rates. These risks could impact the successful execution of a project by preventing the project from proceeding, delaying its completion, increasing its projected costs or negatively impacting its financing.

Weather Variability and Seasonality

Electricity consumption varies significantly in response to climate change and seasonal weather changes (see "Climate Change and Physical Risks" on page 28). In central and western Canada, Arizona and New York State, cool summers may reduce the use of air conditioning and other cooling equipment, while less severe winters may reduce heating load. Alternatively, severe weather could unexpectedly increase heating and cooling loads, negatively impacting system reliability.

Weather and seasonality have a significant impact on gas distribution volumes as a major portion of the gas is used for space heating by residential customers. The earnings of the Corporation's gas utilities and Aitken Creek are typically highest in the first and fourth quarters.

Hydroelectric generation is sensitive to rainfall levels.

Regulatory deferral and revenue decoupling mechanisms are in place at certain of the Corporation's utilities to minimize the volatility in earnings that would otherwise be caused by variations in weather conditions. Both the discontinuance of key regulatory mechanisms and their absence at other Fortis entities could result in significant and prolonged weather variations from seasonal norms having a Material Adverse Effect.

Natural Gas Competitiveness

Approximately 19% of the Corporation's revenue is derived from the delivery of natural gas. A decrease in the competitiveness of natural gas due to pricing or other factors could have a Material Adverse Effect.

In British Columbia, which accounts for 80% of the Corporation's natural gas revenue, natural gas primarily competes with electricity for space and hot water heating. Upfront capital costs for gas service continue to present competitive challenges for natural gas compared to electricity service. If gas becomes less competitive, the ability to add new customers could be impaired. Existing customers could also reduce their consumption or switch to electricity, placing further pressure on rates, whereby system costs must be recovered from a smaller customer and sales base, leading to further reductions in competitiveness.

Government policy could also impact the competitiveness of natural gas in British Columbia. The provincial government has introduced changes to energy policy, including GHG emission reduction targets and a tax on carbon-based fuels which is expected to increase in the future. However, the Government of British Columbia has yet to introduce a carbon tax on imported electricity generated through the combustion of carbon-based fuels. As all levels of government become more active in the development of policies to address climate change, any resultant changes to energy policy may have a material impact on the competitiveness of natural gas relative to non-carbon based energy sources or other energy sources.

There are other competitive challenges that are impacting the penetration of natural gas into new housing stock such as green attributes of the energy source, and type of housing stock being built. In addition, as part of their own climate change policy plans, local governments may use various tools at their disposal such as franchise agreements, permits, building codes and zoning bylaws to impose limitations on energy sources permitted in new and existing developments. The municipalities can also provide incentives, such as higher density allowance, to builders to adopt carbon free options for their developments. These actions and policies may hinder the Corporation's ability to attract new customers or retain existing customers.

Commodity Price Volatility

Purchased power and generation fuel costs are subject to commodity price volatility, which is managed through regulator-approved: (i) mechanisms that permit the flow through in customer rates of commodity price changes and/or that provide for rate-stabilization and other deferral accounts (see "Business Unit Performance" on page 10); and (ii) price-risk management strategies such as the use of derivative contracts that effectively fix costs (see "Financial Instruments - Derivatives" on page 39).

There is no assurance that current regulator-approved mechanisms will continue to exist in the future. Additionally, despite these mechanisms, severe and prolonged commodity price increases could result in rates that customers are unable to pay and/or could affect consumption and sales growth. These could have a Material Adverse Effect.

Purchased Power Supply

A significant portion of electricity and gas sold by the Corporation's utilities is purchased through the wholesale energy markets or pursuant to contracts with energy suppliers rather than being generated. A disruption in the wholesale energy markets, or a failure on the part of energy or fuel suppliers or operators of energy delivery systems that connect to the Corporation's utilities, could have a Material Adverse Effect.

Required Approvals

The acquisition, ownership and operation of electric and gas businesses require numerous licences, permits, agreements, orders, certificates and other approvals from various levels of government, regulators, government agencies, Indigenous Peoples and/or third parties. The external environment has become more complex with heightened expectations from permitting agencies, local municipalities and Indigenous Peoples to be able to review and provide feedback on projects, largely driven by policy responses to climate change. There is no assurance that: (i) all of these approvals will be obtained, continuously maintained or renewed without delay; and (ii) the terms and conditions thereof will be fully complied with at all times and will not change in a material adverse manner. Significant failures in these regards could prevent the operation of the businesses and have a Material Adverse Effect.

Reliability Standards

The *Energy Policy Act* requires owners, operators and users of the bulk electric system in the US to meet mandatory reliability standards developed by the North American Electric Reliability Corporation and its regional entities, which are approved and enforced by FERC. Many of these, or similar, standards have been adopted in certain Canadian provinces including British Columbia, Alberta and Ontario. The failure to develop, implement and maintain appropriate operating practices/systems and capital plans to address reliability obligations could lead to compliance violations and a Material Adverse Effect, such as the exclusion from customer rates of related costs including potentially significant penalties.

Indigenous Peoples' Land Claims

In British Columbia, the Corporation's utilities provide service to customers on Indigenous Peoples' lands and maintain facilities on lands that are subject to Indigenous Peoples' land claims. Various treaty negotiation processes involving Indigenous Peoples and the Governments of British Columbia and Canada are underway, but the basis for potential settlements is unclear and not all Indigenous Peoples are participating in the processes. To date, the policy of the Government of British Columbia has been to structure settlements without prejudicing existing third-party rights. However, there is no assurance that the settlement processes will not have a Material Adverse Effect.

FortisAlberta has distribution assets on Indigenous Peoples' lands in Alberta with access permits held by TransAlta Utilities Corporation. To acquire these permits, FortisAlberta requires approval from First Nations and Crown-Indigenous Relations and Northern Affairs Canada. FortisAlberta may be unable to obtain such approvals or negotiate land-use agreements with reasonable terms. Significant failures in these regards could have a Material Adverse Effect.

Joint-Ownership Interests and Third-Party Operators

Certain generating facilities from which TEP receives power are jointly owned with, or are operated by, third parties. TEP may not have sole discretion or any ability to affect the management or operations of such facilities, including how to best address changing economic conditions or environmental requirements. A divergence in the interests of TEP and those of the joint owners or operators could have a Material Adverse Effect.

Wataynikaneyap Partnership, which is owned 51% by 24 First Nations communities and 49% by a partnership between Fortis (80%) and Algonquin Power & Utilities Corp. (20%), is responsible for the Wataynikaneyap Transmission Power Project. Fortis does not have sole discretion on decisions for the project and divergence in the interest of Fortis and the other partners could delay the project's completion, increase its anticipated cost, or adversely affect the reputation of Fortis.

Counterparty Credit Risk

ITC has a concentration of credit risk as approximately 70% of its revenue is derived from three customers. These customers have investment-grade credit ratings and credit risk is further managed by MISO by requiring a letter of credit or cash deposit equal to the credit exposure, which is determined by a credit-scoring model and other factors.

FortisAlberta has a concentration of credit risk as its distribution service billings are to a relatively small group of retailers. Credit risk is managed by obtaining from the retailers either a cash deposit, letter of credit, an investment-grade credit rating, or a financial guarantee from an entity with an investment-grade credit rating.

UNS Energy, Central Hudson, FortisBC Energy, Aitken Creek and Fortis may be exposed to credit risk from non-performance by counterparties to derivatives. Credit risk is managed by net settling payments, when possible, and dealing only with counterparties that have investment-grade credit ratings. At UNS Energy and Central Hudson, certain contractual arrangements require counterparties to post collateral.

There is no assurance that management strategies will continue to be effective. Significant counterparty defaults could have a Material Adverse Effect.

Cybersecurity

As operators of critical energy infrastructure, the Corporation's utilities face the risk of cybercrime, which has increased in frequency, scope and potential impact in recent years. Their ability to operate effectively is dependent upon developing and maintaining complex information systems and infrastructure that: (i) support the operation of electric generation, transmission and distribution facilities, including gas facilities; (ii) provide customers with billing, consumption and load settlement information, where applicable; and (iii) support financial and general operations.

Information and operations technology systems may be vulnerable to unauthorized access due to hacking, viruses, acts of war or terrorism, acts of vandalism and other causes. This can result in the disruption of energy service and other business operations, system failures and grid disturbances, property damage, corruption or unavailability of critical data, and the misappropriation and/or disclosure of sensitive, confidential and proprietary business, customer and employee information.

A material breach could adversely affect the financial performance of the Corporation, its reputation and standing with customers, regulators and financial markets, and expose it to claims for third-party damage. The resultant financial impacts may not be fully covered by insurance policies or, in the case of utilities, through regulatory cost recovery, and could have a Material Adverse Effect.

Technology Advances

The emergence of initiatives designed to reduce GHG emissions and control or limit the effects of climate change has increased the incentive for the development of new technologies that produce power, enable more efficient storage of energy or reduce power consumption.

New technology developments in distributed generation, particularly solar, and energy efficiency products and services, as well as the implementation of renewable energy and energy efficiency standards, will continue to impact retail sales. Heightened awareness of energy costs and environmental concerns have increased demand for products that reduce energy consumption. The Corporation's utilities are also promoting demand-side management programs.

New technologies include energy derived from renewable sources, customer-owned generation, energy-efficient appliances, battery storage and control systems. Advances in these or other technologies could have a significant impact on retail sales with a potential Material Adverse Effect.

Interest Rates

Generally, the market price of the Corporation's common shares is inversely sensitive to interest rate changes. Additionally, allowed ROEs are exposed to changes in long-term interest rates. A low interest rate environment could reduce allowed ROEs. Alternatively, if interest rates rise, regulatory lag may cause delays in any compensatory ROE increases. Borrowings under variable-rate credit facilities and long-term debt, as well as new debt issuances, are also exposed to interest rate changes.

Tax Laws

Fortis and its subsidiaries are subject to changes in income tax rates and other tax legislation in Canada, the US and other international jurisdictions. The nature, timing or impact of changes in future tax laws cannot be predicted and could have a Material Adverse Effect. Although income taxes at the regulated utilities are generally recovered in customer rates, regulatory lag can result in recovery delays or non-recovery for certain periods. A variety of other impacts are also possible. At the non-regulated level, changes in income tax rates and other tax legislation could materially affect the after-tax cost of existing and future debt which is not recoverable in customer rates.

Foreign Exchange Exposure

The reporting currency of ITC, UNS Energy, Central Hudson, Caribbean Utilities, FortisTCI, BECOL and Belize Electricity is, or is pegged to, the US dollar. The earnings and cash flow from, and net investments in, these entities are exposed to fluctuations in the US dollar-to-Canadian dollar exchange rate.

Fortis has limited this exposure through hedging. As at December 31, 2020, US\$2.3 billion (2019 - US\$2.2 billion) of corporately issued US dollar-denominated long-term debt had been designated as an effective hedge of foreign net investments, leaving US\$10.2 billion (2019 - US\$9.7 billion) in foreign net investments unhedged. Fortis has also entered into foreign exchange contracts to manage a portion of its exposure to foreign currency risk.

Given only partial hedging, consolidated earnings and cash flow continue to be impacted by exchange rate fluctuations. On average, Fortis estimates that a five-cent increase or decrease in the US dollar relative to the Canadian dollar exchange rate of US\$1.00=CA\$1.34 as at December 31, 2020 would increase or decrease annual EPS by approximately six cents, which reflects the Corporation's hedging program.

The Corporation's \$19.6 billion five-year capital plan for 2021 through 2025 also includes exposure to foreign exchange. On average, Fortis estimates that a five-cent increase or decrease in the US dollar relative to the Canadian dollar would increase or decrease capital expenditures by \$400 million over the five-year planning period.

There is no assurance that existing hedging strategies will continue to be effective and the resultant financial impacts could have a Material Adverse Effect.

Access to Capital

Ongoing access to cost-effective capital is required to fund, among other things, capital expenditures and the repayment of maturing debt.

Operating Cash Flow may not be sufficient to fund the repayment of all outstanding liabilities when due or anticipated capital expenditures. The ability to meet long-term debt repayments is dependent upon obtaining sufficient and cost-effective financing to replace maturing indebtedness.

The ability to arrange such financing is subject to numerous factors, including the results of operations and financial condition of Fortis and its subsidiaries, the regulatory environments including regulatory decisions regarding capital structure and allowed ROEs, capital market conditions, general economic conditions and credit ratings. Changes in credit ratings could affect credit risk spreads on new longterm debt and credit facilities, as well as their availability.

There is no assurance that sufficient capital will continue to be available on acceptable terms. For further information see "Liquidity and Capital Resources" on page 19.

Insurance

Insurance is maintained with reputable industry insurers for property damage, potential liabilities and business interruption for coverage considered appropriate and in accordance with industry practice.

A significant portion of transmission and distribution assets is uninsured, as is customary in North America, as the cost is prohibitive. Insurance is subject to coverage limits and deductibles as well as time-sensitive claims discovery and reporting provisions. There is no assurance that: (i) the amounts and types of actual damage, liabilities or business interruption will be fully covered; (ii) regulatory relief would be obtained for coverage shortfalls; (iii) adequate insurance at reasonable rates will continue to be available; or (iv) insurers will fulfill their obligations. Significant actual shortfalls could have a Material Adverse Effect.

Talent Management

The delivery of safe, reliable and cost-effective service depends on the attraction, development and retention of skilled workforces. Like its peers, Fortis faces demographic challenges and competitive markets relating to trades, technical and professional staff, particularly considering its significant capital plan. ITC relies heavily on agreements with third parties to provide services for the construction, maintenance and operation of certain aspects of its business. Significant failures in attracting or retaining a skilled workforce could have a Material Adverse Effect.

Labour Relations

Most of the Corporation's utilities employ members of labour unions or associations under collective bargaining agreements. Fortis considers its labour relationships to be satisfactory but there is no assurance that this will continue or that existing collective bargaining agreements will be renewed on reasonable terms without work disruption or other job action. Significant failures in these regards could cause service interruptions and/or labour cost increases for which the regulator disallows full recovery in rates, and could have a Material Adverse Effect.

Post-Retirement Obligations

Fortis and most of its subsidiaries maintain a combination of defined benefit pension and/or OPEB plans for certain employees and retirees. The most significant cost drivers for these plans are investment performance and interest rates, which are affected by global financial markets. Market disruptions, significant declines in the market values of investments held to meet plan obligations, discount rate changes, participant demographics, and changes in laws and regulations may require additional plan funding. Significant increases in plan expenses and funding requirements could have a Material Adverse Effect.

General Economic Conditions

Fluctuations in general economic conditions, energy prices, employment levels, personal disposable incomes, housing starts, industrial activity and other factors may lower energy demand and reduce sales both directly and through reduced capital spending, particularly that related to new customer growth, which would affect Rate Base growth. A severe and prolonged economic downturn could have a Material Adverse Effect, including making it more difficult for customers to pay their bills.

Reputation, Relationships and Stakeholder Activism

The Corporation's operations and growth prospects require strong relationships with key stakeholders, including regulators, governments and agencies, Indigenous communities, landowners, and environmental organizations. Inadequately managing expectations and issues important to stakeholders, including those arising during construction, could affect the Corporation's reputation as well as have a significant impact on its operations and infrastructure development.

Additionally, external stakeholders are increasingly challenging utilities regarding climate change, sustainability, diversity, returns including ROEs, executive compensation and other matters. Public opposition to larger infrastructure projects is becoming increasingly common, which can challenge capital plans and resultant organic growth. While the Corporation actively monitors such activism and is committed to developing stronger relationships with its external stakeholders, failure to effectively maintain or respond to stakeholder activism could have a Material Adverse Effect.

Legal, Administrative and Other Proceedings

These proceedings arise in the ordinary course of business and may include environmental claims, employment-related claims, securities-based litigation, contractual disputes, personal injury or property damage claims, actions by regulatory or tax authorities, and other matters. Unfavourable outcomes such as judgments or settlements for monetary or other damages, injunctions, denial or revocation of permits, reputational harm, and other results could have a Material Adverse Effect.

ACCOUNTING MATTERS

New Accounting Policies

Financial Instruments

Effective January 1, 2020, the Corporation adopted ASU No. 2016-13, *Measurement of Credit Losses on Financial Instruments*, which requires the use of reasonable and supportable forecasts in the estimation of credit losses and the recognition of expected losses upon initial recognition of a financial instrument, in addition to using past events and current conditions. The new guidance also requires quantitative and qualitative disclosures regarding the activity in the allowance for credit losses for financial assets within the scope of the guidance. Adoption did not have a material impact on the 2020 Annual Financial Statements.

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Bring Energy to Life

nationalgrid

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Internal control and risk factors

Disclosure controls

Working with management, including the Chief Executive and Chief Financial Officer, we have evaluated the effectiveness of the design and operation of our disclosure controls and procedures as at 31 March 2020. Our disclosure controls and procedures are designed to provide reasonable assurance of achieving their objectives; however, their effectiveness has limitations, including the possibility of human error and the circumvention or overriding of the controls and procedures.

Even effective disclosure controls and procedures provide only reasonable assurance of achieving their objectives. Based on the evaluation, the Chief Executive and Chief Financial Officer concluded that the disclosure controls and procedures are effective to provide reasonable assurance that information required for disclosure in the reports that we file and submit under the Exchange Act is recorded, processed, summarised and reported as and when required and that such information is accumulated and communicated to our management, including the Chief Executive and Chief Financial Officer, as appropriate, to allow timely decisions regarding disclosure.

Internal control over financial reporting

Our management, including the Chief Executive and Chief Financial Officer, has carried out an evaluation of our internal control over financial reporting pursuant to the Disclosure Guidance and Transparency Rules sourcebook and Section 404 of the Sarbanes-Oxley Act 2002. As required by Section 404, management is responsible for establishing and maintaining an adequate system of internal control over financial reporting (as defined in Rules 13a-5(f) and 15d-15(f) under the Exchange Act).

Our internal control over financial reporting is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes, in accordance with generally accepted accounting principles.

Risk factors

Potentially harmful activities

Aspects of the work we do could potentially harm employees, contractors, members of the public or the environment.

Potentially hazardous activities that arise in connection with our business include: the generation, transmission and distribution of electricity; and the storage, transmission and distribution of gas. Electricity and gas utilities also typically use and generate hazardous and potentially hazardous products and by-products. In addition, there may be other aspects of our operations that are not currently regarded or proved to have adverse effects but could become so, such as the effects of electric and magnetic fields.

A significant safety or environmental incident, or the failure of our safety processes or of our occupational health plans, as well as the breach of our regulatory or contractual obligations or our climate change targets, could materially adversely affect our results of operations and our reputation.

Safety is a fundamental priority for us and we commit significant resources and expenditure to ensuring process safety; to monitoring personal safety, occupational health and environmental performance; and to meeting our obligations under negotiated settlements.

Pandemics

We face risks related to health epidemics and other outbreaks.

As seen in the context of COVID-19, pandemics and their associated countermeasures may affect countries, communities, supply chains and markets, including the UK and our service territory in the US. The spread of such pandemics could have adverse effects on our workforce, which could affect our ability to maintain our networks and provide service. In addition, disruption of supply chains could adversely affect our systems or networks.

Pandemics such as COVID-19 can also result in extraordinary economic circumstances in our markets which could negatively affect our customers' ability to pay our invoices in the US or the charges payable to the system operators for transmission services in the UK. The suspension of debt collection and customer termination activities across our service area in response to such pandemics is likely to result in near-term lower customer collections, and could result in increasing levels of bad debt and associated provisions.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Management's evaluation of the effectiveness of the Company's internal control over financial reporting was based on the revised Internal Control-Integrated Framework 2013 issued by the Committee of Sponsoring Organizations of the Treadway Commission. Using this evaluation, management concluded that our internal control over financial reporting was effective as at 31 March 2020.

Deloitte LLP, which has audited our consolidated financial statements for the year ended 31 March 2020, has also audited the effectiveness of our internal control over financial reporting.

During the year, there were no changes in our internal control over financial reporting that have materially affected it, or are reasonably likely to materially affect it.

Risk factors

Management of our risks is an important part of our internal control environment, as we describe on pages 22 – 25. In addition to the principal risks listed, we face a number of inherent risks that could have a material adverse effect on our business, financial condition, results of operations and reputation, as well as the value and liquidity of our securities.

Any investment decision regarding our securities and any forwardlooking statements made by us should be considered in the light of these risk factors and the cautionary statement set out on page 258. An overview of the key inherent risks we face is provided below.

We are subject to laws and regulations in the UK and US governing health and safety matters to protect the public and our employees and contractors, who could potentially be harmed by these activities, as well as laws and regulations relating to pollution, the protection of the environment, and the use and disposal of hazardous substances and waste materials.

These expose us to costs and liabilities relating to our operations and properties, including those inherited from predecessor bodies, whether currently or formerly owned by us, and sites used for the disposal of our waste.

The cost of future environmental remediation obligations is often inherently difficult to estimate and uncertainties can include the extent of contamination, the appropriate corrective actions and our share of the liability. We are increasingly subject to regulation in relation to climate change and are affected by requirements to reduce our own carbon emissions as well as to enable reduction in energy use by our customers. If more onerous requirements are imposed or our ability to recover these costs under regulatory frameworks changes, this could have a material adverse impact on our business, reputation, results of operations and financial position.

The extent to which pandemics such as COVID-19 may affect our liquidity, business, financial condition, results of operations and reputation will depend on future developments, which are highly uncertain and cannot be predicted, and will depend on the severity of the relevant pandemic, the scope, duration, cost to National Grid and overall economic impact of actions taken to contain it or treat its effects.

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Internal control and risk factors continued

Infrastructure and IT systems

We may suffer a major network failure or interruption, or may not be able to carry out critical operations due to the failure of infrastructure, data or technology or a lack of supply.

Operational performance could be materially adversely affected by: a failure to maintain the health of our assets or networks; inadequate forecasting of demand; inadequate record keeping or control of data or failure of information systems and supporting technology. This, in turn, could cause us to fail to meet agreed standards of service, incentive and reliability targets, or be in breach of a licence, approval, regulatory requirement or contractual obligation. Even incidents that do not amount to a breach could result in adverse regulatory and financial consequences, as well as harming our reputation.

Where demand for electricity or gas exceeds supply, including where we do not adequately forecast and respond to disruptions in energy supplies, and our balancing mechanisms are not able to mitigate this fully, a lack of supply to consumers may damage our reputation.

In addition to these risks, we may be affected by other potential events that are largely outside our control, such as the impact of the COVID-19 pandemic (including on our operations and as a result of large-scale working from home by our employees), weather (including as a result of climate change and major storms), unlawful or unintentional acts of third parties, insufficient or unreliable supply, or force majeure.

Law, regulation and political and economic uncertainty

Changes in law or regulation, or decisions by governmental bodies or regulators and increased political and economic uncertainty, could materially adversely affect us.

Most of our businesses are utilities or networks subject to regulation by governments and other authorities. Changes in law or regulation or regulatory policy and precedent (including any changes arising as a result of emergency legislation to address the COVID-19 pandemic and the UK's exit from the European Union), including decisions of governmental bodies or regulators, in the countries or states in which we operate could materially adversely affect us. We may fail to deliver any one of our customer, investor and wider stakeholder propositions due to increased political and economic uncertainty.

If we fail to engage in the energy policy debate, we may be unable to influence future energy policy and deliver our strategy.

Weather conditions can affect financial performance, and severe weather that causes outages or damages infrastructure, together with our actual or perceived response, could materially adversely affect operational and potentially business performance and our reputation.

Malicious attack, sabotage or other intentional acts, including breaches of our cyber security, may also damage our assets (which include critical national infrastructure) or otherwise significantly affect corporate activities and, as a consequence, have a material adverse impact on our reputation, business, results of operations and financial condition.

Unauthorised access to, or deliberate breaches of, our IT systems may also lead to manipulation of our proprietary business data or customer information. Unauthorised access to private customer information may make us liable for a violation of data privacy regulations. Even where we establish business continuity controls and security against threats to our systems, these may not be sufficient.

Decisions or rulings concerning the following (as examples) could have a material adverse impact on our results of operations, cash flows, the financial condition of our businesses and the ability to develop those businesses in the future:

- the RIIO-2 price controls; whether licences, approvals or agreements to
 operate or supply are granted, amended or renewed; whether consents for
 construction projects are granted in a timely manner; or whether there has
 been any breach of the terms of a licence, approval or regulatory requirement;
 and
- timely recovery of incurred expenditure or obligations; the ability to pass through commodity costs; a decoupling of energy usage and revenue, and other decisions relating to the impact of general economic conditions on us, our markets and customers; implications of climate change and of advancing energy technologies; whether aspects of our activities are contestable; and the level of permitted revenues and dividend distributions for our businesses and in relation to proposed business development activities.

For further information, see pages 219 – 226, which explain our regulatory environment in detail.

Business performance

Current and future business performance may not meet our expectations or those of our regulators and shareholders.

Earnings maintenance and growth from our regulated gas and electricity businesses will be affected by our ability to meet or exceed efficiency targets and service quality standards set by, or agreed with, our regulators. If we do not meet these targets and standards, or if we are not able to deliver the US rate plans strategy successfully, we may not achieve the expected benefits, our business may be materially adversely affected and our performance, results of operations and reputation may be materially harmed and we may be in breach of regulatory or contractual obligations.

Growth and business development activity

Failure to respond to external market developments and execute our growth strategy may negatively affect our performance. Conversely, new businesses or activities that we undertake alone or with partners may not deliver target outcomes and may expose us to additional operational and financial risk.

Failure to grow our core business sufficiently and have viable options for new future business over the longer term, or failure to respond to the threats and opportunities presented by emerging technology or innovation (including for the purposes of adapting our networks to meet the challenges of increasing distributed energy resources), could negatively affect the Group's credibility and reputation and jeopardise the achievement of intended financial returns.

Our business development activities and the delivery of our growth ambition include acquisitions, disposals, joint ventures, partnering and organic investment opportunities, such as development activities relating to changes to the energy mix and the integration of distributed energy resources and other advanced technologies. These are subject to a wide range of both external uncertainties (including the availability of potential investment targets and attractive financing and the impact of competition for onshore transmission in both the UK and US) and internal uncertainties (including actual performance of our existing operating companies and our businesse selfectively). As a result, we may suffer unanticipated costs and liabilities and other unanticipated effects.

Exchange rates, interest rates and commodity price indices

Changes in foreign currency rates, interest rates or commodity prices could materially impact earnings or our financial condition.

We have significant operations in the US and are therefore subject to the exchange rate risks normally associated with non-UK operations including the need to translate US assets, liabilities, income and expenses into sterling (our reporting currency).

We may also be liable for the past acts, omissions or liabilities of companies or businesses we have acquired, which may be unforeseen or greater than anticipated. In the case of joint ventures, we may have limited control over operations and our joint venture partners may have interests that diverge from our own.

The occurrence of any of these events could have a material adverse impact on our results of operations or financial condition, and could also impact our ability to enter into other transactions.

In addition, our results of operations and net debt position may be affected because a significant proportion of our borrowings, derivative financial instruments and commodity contracts are affected by changes in interest rates, commodity price indices and exchange rates, in particular the dollar-to-sterling exchange rate.

Furthermore, our cash flow may be materially affected as a result of settling hedging arrangements entered into to manage our exchange rate, interest rate and commodity price exposure, or by cash collateral movements relating to derivative market values, which also depend on the sterling exchange rate into the euro and other currencies.

Post-retirement benefits

We may be required to make significant contributions to fund pension and other post-retirement benefits.

We participate in a number of pension schemes that together cover substantially all our employees. In both the UK and US, the principal schemes are DB schemes where the scheme assets are held independently of our own financial resources.

In the US, we also have other post-retirement benefit schemes. Estimates of the amount and timing of future funding for the UK and US schemes are based on actuarial assumptions and other factors, including: the actual and projected market performance of the scheme assets; future long-term bond yields; average life expectancies; and relevant legal requirements. Actual performance of scheme assets may be affected by volatility in debt and equity markets (including as a result of the COVID-19 pandemic).

Changes in these assumptions or other factors may require us to make additional contributions to these pension schemes which, to the extent they are not recoverable under our price controls or state rate plans, could materially adversely affect the results of our operations and financial condition.

Financing and liquidity

An inability to access capital markets at commercially acceptable interest rates could affect how we maintain and grow our businesses.

Our businesses are financed through cash generated from our ongoing operations, bank lending facilities and the capital markets, particularly the long-term debt capital markets.

Some of the debt we issue is rated by credit rating agencies, and changes to these ratings may affect both our borrowing capacity and borrowing costs. In addition, restrictions imposed by regulators may also limit how we service the financial requirements of our current businesses or the financing of newly acquired or developing businesses.

Financial markets can be subject to periods of volatility and shortages of liquidity – for example, as a result of unexpected political or economic events or the COVID-19 pandemic. If we were unable to access the capital markets or other sources of finance at commercially acceptable rates for a prolonged period, our cost of financing may increase, the discretionary and uncommitted elements of our proposed capital investment programme may need to be reconsidered, and the manner in which we implement our strategy may need to be reassessed.

Such events could have a material adverse impact on our business, results of operations and prospects.

Some of our regulatory agreements impose lower limits for the long-term unsecured debt credit ratings that certain companies within the Group must hold or the amount of equity within their capital structures, including a limit requiring National Grid plc to hold an investment-grade long-term senior unsecured debt credit rating.

Customers and counterparties

Customers and counterparties may not perform their obligations.

Our operations are exposed to the risk that customers, suppliers, banks and other financial institutions, and others with whom we do business, will not satisfy their obligations, which could materially adversely affect our financial position.

This risk is significant where our subsidiaries have concentrations of receivables from gas and electricity utilities and their affiliates, as well as industrial customers and other purchasers, and may also arise where customers are unable to pay us as a result of increasing commodity prices or adverse economic conditions (including as a result of the COVID-19 pandemic).

Employees and others

We may fail to attract, develop and retain employees with the competencies (including leadership and business capabilities), values and behaviours required to deliver our strategy and vision and ensure they are engaged to act in our best interests.

Our ability to implement our strategy depends on the capabilities and performance of our employees and leadership at all levels of the business. Our ability to implement our strategy and vision may be negatively affected by the loss of key personnel (including personnel on sick leave or otherwise unable to work on an extended basis because of the COVID-19 pandemic) or an inability to attract, integrate, engage and retain appropriately qualified personnel, or if significant disputes arise with our employees.

In addition, some of our regulatory arrangements impose restrictions on the way we can operate. These include regulatory requirements for us to maintain adequate financial resources within certain parts of our operating businesses and may restrict the ability of National Grid plc and some of our subsidiaries to engage in certain transactions, including paying dividends, lending cash and levying charges.

The inability to meet such requirements, or the occurrence of any such restrictions, may have a material adverse impact on our business and financial condition.

Our debt agreements and banking facilities contain covenants, including those relating to the periodic and timely provision of financial information by the issuing entity, and financial covenants, such as restrictions on the level of subsidiary indebtedness.

Failure to comply with these covenants, or to obtain waivers of those requirements, could in some cases trigger a right, at the lender's discretion, to require repayment of some of our debt and may restrict our ability to draw upon our facilities or access the capital markets.

To the extent that counterparties are contracted with for physical commodities (gas and electricity) and they experience events that impact their own ability to deliver, we may suffer supply interruption as described in Infrastructure and IT systems on page 228.

There is also a risk to us where we invest excess cash or enter into derivatives and other financial contracts with banks or other financial institutions. Banks who provide us with credit facilities may also fail to perform under those contracts.

As a result, there may be a material adverse effect on our business, financial condition, results of operations and prospects.

There is a risk that an employee or someone acting on our behalf may breach our internal controls or internal governance framework, or may contravene applicable laws and regulations. This could have an impact on the results of our operations, our reputation and our relationship with our regulators and other stakeholders.

Exhibit NYT-0005

Performance Measure	Maximum Negative Revenue Adjustment
Customer Service Quality Performance Measures: • PSC Complaint Rate, • Customer Satisfaction Index • Calls Answered in 30 seconds	\$3.0 million
Electric Reliability (SAIFI and CAIDI)	30 basis points each on a pre-tax basis for failure to meet pre-established target levels

Central Hudson Gas & Electric Corporation

<u>Source</u>: Case 17-E-0459, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Central Hudson Gas & Electric Corporation for Electric Service, "Order Adopting Terms of Joint Proposal and Establishing Electric and Gas Rate Plan" (Issued and Effective June 14, 2018)

Performance Measure	Subcategory	Maximum Negative Revenue Adjustment in Rate Year 1
Electric Reliability	Threshold Standards (SAIFI/CAIDI)	\$20 million
	Major Outages	\$110 million
	Remote Monitoring System Reporting	\$50 million
	Program Standards	\$17.5 million
Customer Service (Electric and Gas, excluding gas-only mechanisms) Out	Commission Complaints	\$9 million
	Customer Satisfaction Surveys	\$18 million
	Outage Notification	\$8 million
	Call Answer Rate	\$5 million

Consolidated Edison Company of New York, Inc.

<u>Source</u>: Case 19-E-0065, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Consolidated Edison Company of New York, Inc. for Electric Service, "Order Adopting Terms of Joint Proposal and Establishing Electric and Gas Rate Plan" (Issued and Effective January 16, 2020), Appendix A (Joint Proposal), Appendices 14 and 18

Performance Measure	Maximum Negative Revenue Adjustment
Customer Service Quality Performance Measures – PSC Complaint Rate, Residential and Small/Medium Commercial and Industrial Customer Satisfaction Surveys, and % Calls Answered in 30 seconds	\$19.8 million
Electric Reliability Performance Metrics – SAIFI, CAIDI, Estimating, Standardized Interconnection Requirements, and Inspection and Maintenance	\$14.0 million
Electric Safety Standards – Stray Voltage Testing and Inspections	150 basis point revenue adjustment

Niagara Mohawk Power Corporation

<u>Source</u>: Service Quality Assurance Program Reports (e.g. "Service Quality Assurance Program Report for the third quarter of 2019, ended September 30, 2019" and filed October 31, 2019); Case 04-M-0159, Proceeding on Motion of the Commission to Examine the Safety of Electric Transmission and Distribution Systems, "Order Granting Petition in Part and Modifying Electric Safety Standards" (Issued March 22, 2013); and Case 17-E-0238, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Niagara Mohawk Power Corporation d/b/a National Grid for Electric Service, "Order Adopting Terms of Joint Proposal and Establishing Electric and Gas Rate Plans" (Issued and Effective March 15, 2018)

Performance Metric	Maximum Negative Revenue Adjustment
Customer Service Quality (Electric and Gas)	\$9.52 million
Electric Reliability (SAIFI and CAIDI)	\$14.00 million
Distribution Line Inspection for Level II Deficiencies	\$2.00 million

New York State Electric & Gas Corporation

<u>Source</u>: Case 19-E-0378, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of New York State Electric & Gas Corporation for Electric Service, "Order Approving Electric and Gas Rate Plans in Accord With Joint Proposal, With Modifications" (Issued and Effective November 19, 2020), Joint Proposal, Appendices K and P.

Orange and Rockland Utilities, Inc.

Performance Metric	Maximum Annual Negative Revenue Adjustment
Electric Reliability (SAIFI and CAIDI)	20 basis points each for failure to meet pre-established target levels
Customer Service Performance (electric only) – Annual PSC Complaint Rate, Customer Contact Satisfaction Survey, and % of Calls Answered in 30 Seconds	\$1.50 million

<u>Source</u>: Case 18-E-0067, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Orange and Rockland Utilities, Inc. for Electric Service, "Order Adopting Terms of Joint Proposal and Establishing Electric and Gas Rate Plans" (Issued and Effective March 14, 2019), Joint Proposal, Appendices 13 and 15.

Performance Metric	Maximum Annual Negative Revenue Adjustment
Customer Service Quality (Electric and Gas)	\$5.90 million
Electric Reliability (SAIFI and CAIDI)	\$10.00 million
Distribution Line Inspection for Level II Deficiencies	\$1.25 million

Rochester Gas and Electric Corporation

<u>Source</u>: Case 19-E-0380, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Rochester Gas and Electric Corporation for Electric Service, "Order Approving Electric and Gas Rate Plans in Accord With Joint Proposal, With Modifications" (Issued and Effective November 19, 2020), Joint Proposal, Appendices K and P.