Company: San Diego Gas & Electric Company (U 902 M)
Proceeding: 2020 Cost of Capital
Application: A.19-04-XXX
Exhibit: SDG&E-03

SAN DIEGO GAS & ELECTRIC COMPANY
PREPARED DIRECT TESTIMONY OF DON WIDJAJA
COMPANY RISK

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

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PREPARED DIRECT TESTIMONY
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I. INTRODUCTION

The purpose of my testimony is to provide an overview of the company risk that should be considered in determining the authorized overall rate of return ("ROR") for San Diego Gas & Electric Company ("SDG&E" or "Company"), including the proper risk-adjusted return on common equity ("ROE"). SDG&E's proposed ROE is discussed in the testimony of SDG&E witnesses Bruce Folkmann (Exhibit SDG&E-01), Dr. Roger Morin (Exhibit SDG&E-04), and John Reed, Jim Coyne, and Todd Shipman (collectively, "Concentric") (Exhibit SDG&E-05). I explain SDG&E's risk profile in the following three areas: (1) Business Risks; (2) Financial Risks; and (3) Regulatory Risks. These risks inform Dr. Morin's and Concentric's analyses of SDG&E's ROE, and the analysis of capital structure set forth in the testimony of Maritza Mekitarian (Exhibit SDG&E-02).

Because capital markets determine the price of investor capital (*i.e.*, the required return on stocks and bonds) based on the riskiness to the borrower in relation to other borrowers, risk is an important component in assessing SDG&E's ROE. Investors have many investment choices in a competitive investment market, including stocks, bonds, money funds, treasury securities, and real estate. For SDG&E to attract the necessary private funds to invest in public infrastructure improvements to provide safe, reliable, clean, and cost-effective energy, it must offer potential investors the prospect of earning a return on their investment that is equal to the potential returns offered by other investments of comparable risk.

As the California Public Utilities Commission ("Commission" or "CPUC") has held, the risks between utilities and non-utilities are also generally not comparable.[1]

> Earnings for non-utility companies are dependent on the extent of competition and ability to price products or services at rates a buyer is willing to pay for a product or service while maintaining a competitive edge. Earnings for utility companies are dependent on a fair return on investments with reasonable pricing of utility services, irrespective of what a buyer is willing to pay for a product or service for which they may have no alternative.[2]

Nor are California utilities fully comparable to non-California peers.[3] California utilities carry a significant risk premium. The risk of catastrophic wildfires – combined with the doctrine of inverse condemnation and regulatory uncertainty surrounding the recovery of wildfire costs – have resulted in SDG&E and other California utilities facing significantly higher business, financial, and regulatory risks than non-California utilities.

Consequently, credit ratings agencies have repeatedly downgraded SDG&E's credit rating – despite SDG&E's widely-acclaimed wildfire mitigation and prevention programs – because these agencies and other investors now view California utilities as riskier investments than non-California utilities. This results in higher costs of borrowing and the threat of being unable to raise necessary capital. Even if legislative or regulatory reforms relative to catastrophic wildfires are enacted, operating as a public utility in California will continue to be riskier compared to non-California utilities. Such reforms could exacerbate existing rate pressures. Other concerns will remain.

Below I discuss the business, financial, and regulatory risks that are unique to SDG&E.

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[1] D.07-12-049 at 14-15. *See* D.17-07-005 at 12, Q.1-3 (asking how the utility's level of business, financial and regulatory risks compare to non-utility benchmarks).

[2] D.07-12-049 at 14-15.

[3] D.17-07-005 at 12, Q.1-3 (asking how the utility's level of business, financial, and regulatory risks compare to utilities in California and nationally).

II. BUSINESS RISKS

Business risk is the exposure of investors' anticipated returns to the uncertainties of a company's day-to-day business activities. A company's business risk profile is essentially a qualitative assessment of the economic and business environment in which the company operates. When assessing a utility's relative risk, the Commission has previously utilized a holistic, six factor analysis: (1) proposed equity ratios; (2) bond ratings; (3) long-term interest coverage; (4) Value Line beta; (5) Value Line safety ratings; and (6) Value Line financial strength ratings.[4] Results from the six-factor analysis are provided in Appendix A.

SDG&E faces significant business risks, both in the present and the future. These risks include:

- Catastrophic wildfires; and
- Changes in the California energy industry.

I discuss each of these risks below.

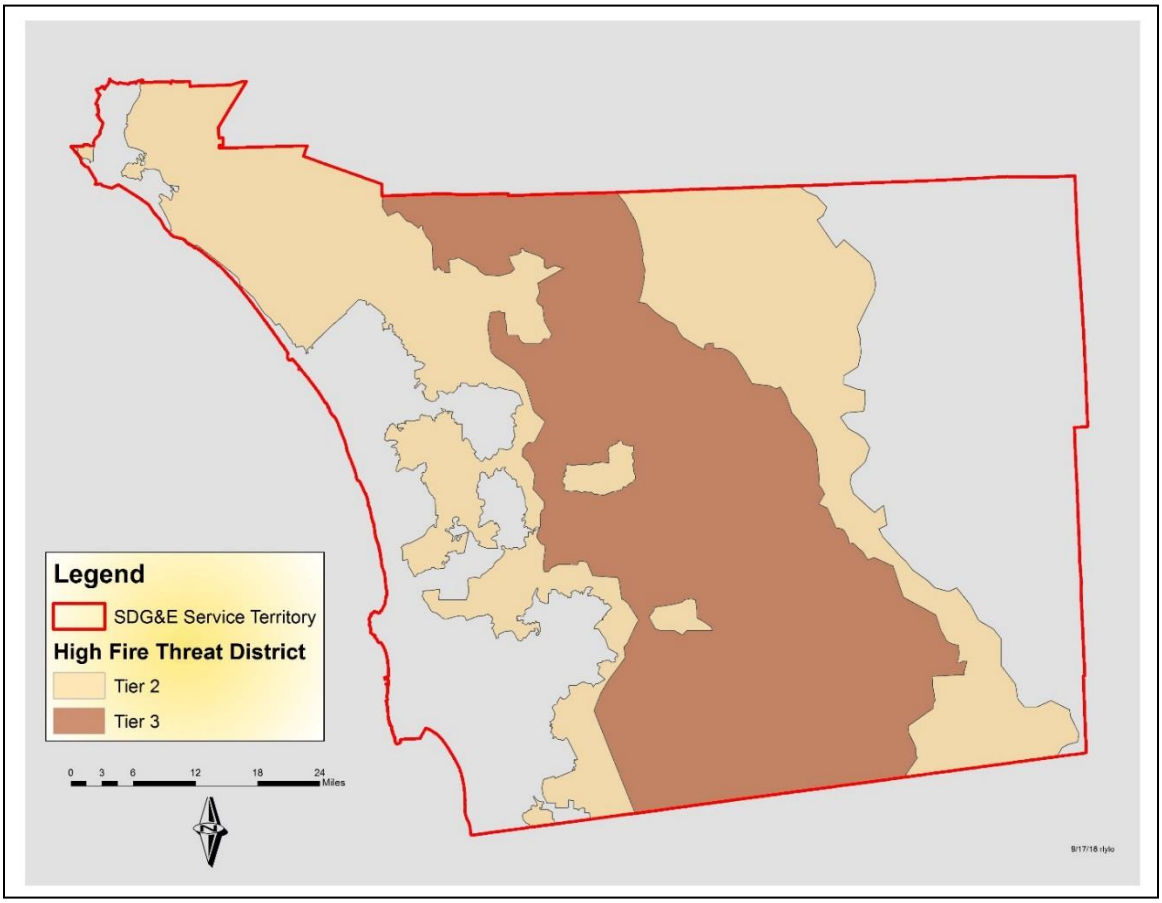
A. Catastrophic Wildfires

At a high level, the business risk associated with catastrophic wildfires comprises two related elements: (1) the frequency and magnitude of catastrophic wildfires in California; and (2) the potential that SDG&E may face massive uninsured and unrecoverable liabilities if its equipment is involved in a wildfire ignition.

SDG&E's service territory includes San Diego County and parts of Orange County. This region is extremely prone to wildfire outbreaks. As depicted in Figure 1 below, 57% of SDG&E's service territory is classified as High Fire Threat District by the Commission.

[4] D.92-11-047 at 90.

Figure 1: SDG&E Service Territory and High Fire Threat District Boundaries



Such wildfires can spread quickly and cause extreme damage due to the presence of dry, gusty Santa Ana winds and dry vegetation in a region that sees very little annual rainfall.

Under California state law, utilities are strictly liable for property damage caused by utility facilities under the doctrine of inverse condemnation, even in the absence of fault and where the utility facilities were one of several concurrent causes.[5] California courts apply inverse condemnation on the rationale that the public entity or utility can spread costs through rates. Yet the Commission has applied its "prudent manager" standard to a utility's role in

[5] *See Barham v. S. Cal. Edison Co.*, 74 Cal. App. 4th 744, 752 (1999), citing *Belair v. Riverside Cty. Flood Control Dist*., 47 Cal. 3d 550, 558 (1988) ("The fundamental policy underlying the concept of inverse condemnation is to spread among the benefiting community any burden disproportionately borne by a member of that community, to establish a public undertaking for the benefit of all.").

catastrophic wildfires without regard to the strict liability imposed by inverse condemnation or the cost-spreading rationale underlying that doctrine. This means that a utility can be liable for a wildfire under inverse condemnation through no fault of its own without any means of recovery or cost sharing. Although Senate Bill ("SB") 901[6] sought to clarify the Commission's cost-recovery-related standards and allow for the apportionment of costs, the timing and likelihood of recovery remains uncertain and has not been tested.

SDG&E infrastructure has previously been a source of wildfire ignitions. The California Department of Forestry and Fire Protection ("Cal Fire") attributed three of the many wildfires that ignited the October 2007 firestorm to SDG&E infrastructure. In the aftermath of the October 2007 wildfires, SDG&E settled approximately 2,500 claims, paying about $2.4 billion. While SDG&E recovered a portion of those settlement costs through insurance ($1.1 billion), recoveries from third parties ($827 million), and FERC-authorized recoveries ($80 million),[7] in December 2017 the CPUC denied all recovery of the state portion of the 2007 wildfire costs, totaling $421 million.[8] Thus, any catastrophic wildfire has the potential to result in significant, years-long litigation that results in SDG&E facing a substantial risk of major legal and defense costs that it may be unable to recover in rates or insurance. Furthermore, the 2007 wildfires were not isolated occurrences. Although not linked to SDG&E infrastructure, the Company's service territory has experienced several other significant wildfire events since 2007, including the

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6 SB 901, Stats. 2017-2018, Ch. 626.

7 *See, e.g., San Diego Gas & Elec. Co.*, 146 FERC ¶ 63,017 (2014) (this initial decision became the final decision of the Commission by operation of law because no exceptions were taken to it.).

8 *See* D.17-11-033. The total state portion of the 2007 wildfire costs was $421 million. After applying a voluntary 10% shareholder contribution to this amount, SDG&E requested $379 million in CPUC cost recovery.

Bernardo, Cocos and Poinsettia fires in May 2014, the Lilac Fire in December 2017, and the West Fire in June 2018.

Recent events in other parts of California further illustrate the major risk for utilities posed by catastrophic wildfires in the state. This was underscored by Pacific Gas and Electric Company's ("PG&E") January 29, 2019 filing for Chapter 11 bankruptcy protection based, at least in part, on risk and potential liability from wildfires.[9] In October 2017, Northern California experienced more than 170 wildfires, burning at least 245,000 acres.[10] Although PG&E was eventually found not responsible for the October 2017 Tubbs Fire (at that point the most destructive fire in California history),[11] Cal Fire issued a News Release on June 8, 2018 in which its investigators announced that 12 wildfires across several Northern California counties were caused by PG&E's equipment.[12]

PG&E faced dozens of lawsuits and investors reacted immediately. Prior to the October 2017 wildfires, PG&E's stock was trading in the range of approximately $65-$70 per share. Immediately after the fires, the PG&E's stock price dropped to a range of $53-$57 per share. In December 2017, PG&E announced the suspension of its quarterly common stock and preferred stock dividends, citing uncertainty related to causes and potential liabilities associated with the

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[9] *See* PG&E Files for Reorganization Under Chapter 11 (January 29, 2019), *available at* http://www.pgecorp.com/news/press_releases/Release_Archive2019/190129press_release.shtml.

[10] *See* "CAL FIRE Investigators Determine Cause of Four Wildfires in Butte and Nevada Counties," News Release issued by Cal Fire (May 25, 2018), *available at* https://calfire.ca.gov/communications/downloads/newsreleases/2018/2017_WildfireSiege_Cause%20v2%20AB%20(002).pdf.

[11] *See* "CAL FIRE Investigators Determine the Cause of the Tubbs Fire," News Released Issued by Cal Fire (January 24, 2019), *available at* http://calfire.ca.gov/communications/downloads/newsreleases/2019/TubbsCause1v.pdf.

[12] *See* "CAL FIRE Investigators Determine Causes of 12 Wildfires in Mendocino, Humboldt, Butte, Sonoma, Lake, and Napa Counties," News Release issued by Cal Fire (June 8, 2018), *available at* https://calfire.ca.gov/communications/downloads/newsreleases/2018/2017_WildfireSiege_Cause.pdf.

October 2017 Northern California wildfires[13] and PG&E stock dropped to around a $44 price level.

On November 9, 2018, the Northern California "Camp Fire" ignited. Surpassing the Tubbs Fire as the most destructive in California history, the Camp Fire triggered billions of dollars in insurance claims, leading PG&E to announce that it may not have sufficient insurance to cover the liability costs if it was found liable for the fire.[14] PG&E's stock price was cut in half, trading around $17-$24 per share for the rest of 2018. On January 14, 2019, PG&E announced its intent to file for Chapter 11 bankruptcy, further driving down its stock price to $6 to $7 per share.

Southern California Edison Company ("Edison" or "SCE") faces similar wildfire threats in its service territory. In December 2017, catastrophic wildfires broke out in Southern California, burning more than 300,000 acres. Among these fires, the Thomas Fire became the largest in California history (until it was surpassed by the Mendocino Complex Fire in July 2018).[15] On October 30, 2018, Edison acknowledged that its equipment was associated with igniting parts of the Thomas Fire.[16] Edison has also been sued for mudslides in Montecito, California that occurred in January 2018, with complaints alleging that the mudslides resulted

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[13] *See* Shareholders, Dividend Payments, *available at* http://investor.pgecorp.com/shareholders/dividend-information/default.aspx.

[14] *See* Capital Public Radio, California's PG&E Rocked as Wildfire Liability Concerns Rise (November 14, 2018), *available at* http://www.capradio.org/articles/2018/11/14/californias-pge-rocked-as-wildfire-liability-concerns-rise/.

[15] *See* Cal Fire, Top 20 Largest California Wildfires, Cal Fire Fact Sheet (March 14, 2019), *available at* http://fire.ca.gov/communications/downloads/fact_sheets/Top20_Acres.pdf.

[16] Edison International, SCE Provides and Update on the Circumstances Pertaining to the 2017 Thomas Fire (October 30, 2018), *available at* https://newsroom.edison.com/releases/sce-provides-an-update-on-the-circumstances-pertaining-to-the-2017-thomas-fire.

from the fact that the Thomas Fire burned vegetation on the hillsides that might have prevented the mudslides from occurring.

On November 8, 2018, the Woolsey fire ignited. On December 6, 2018 Edison submitted a letter to the Commission stating that there was an outage at one of its substations about two minutes before the Woolsey Fire ignited in Ventura County.[17]

Like PG&E, SCE's stock price has dropped significantly because of these recent wildfires. Prior to the Thomas Fire, SCE's stock price traded slightly above $80 per share. Following that fire's ignition, the stock priced dropped below $65 per share by the end of December 2017. The Woolsey fire caused a further reduction in share value, with Edison's stock price trading down to between $53-$58 per share. Because the degree of liability associated with SCE's equipment is believed to be less severe, the equity impacts at SCE have been less acute than at PG&E.

The potential liability for the 2017 and 2018 wildfires is substantial. According to the California Department of Insurance, statewide wildfire insurance claims for the October and December 2017 wildfires total nearly $12 billion,[18] and over $9 billion for the 2018 wildfires.[19] A substantial portion of this liability may ultimately be borne by utility shareholders.

I do not expect that the frequency or destruction caused by catastrophic wildfires will lessen anytime soon. Five of the top 10 (and eight of the top 20) most destructive wildfires in

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[17] Southern California Edison, Letter to the Commission Re: Woolsey Fire (December 6, 2018), *available at* https://www.edison.com/content/dam/eix/documents/woolsey_letter_to_cpuc.pdf.

[18] *See* California Department of Insurance, California Statewide Insurance Claims Nearly $12 Billion (January 31, 2018), *available at* http://www.insurance.ca.gov/0400-news/0100-press-releases/2018/release013-18.cfm.

[19] *See* California Department of Insurance, Insurance Commissioner reports over $9 billion insured losses from deadly 2018 wildfires (December 12, 2018), *available at* http://www.insurance.ca.gov/0400-news/0100-press-releases/2018/release142-18.cfm.

California history, as measured by Cal Fire, occurred in 2017 and 2018.[20] With climate change and prolonged periods of drought, the risk of wildfires is, if anything, increasing. Former Governor Jerry Brown appropriately called the increased occurrence of catastrophic wildfires in California the "new normal."

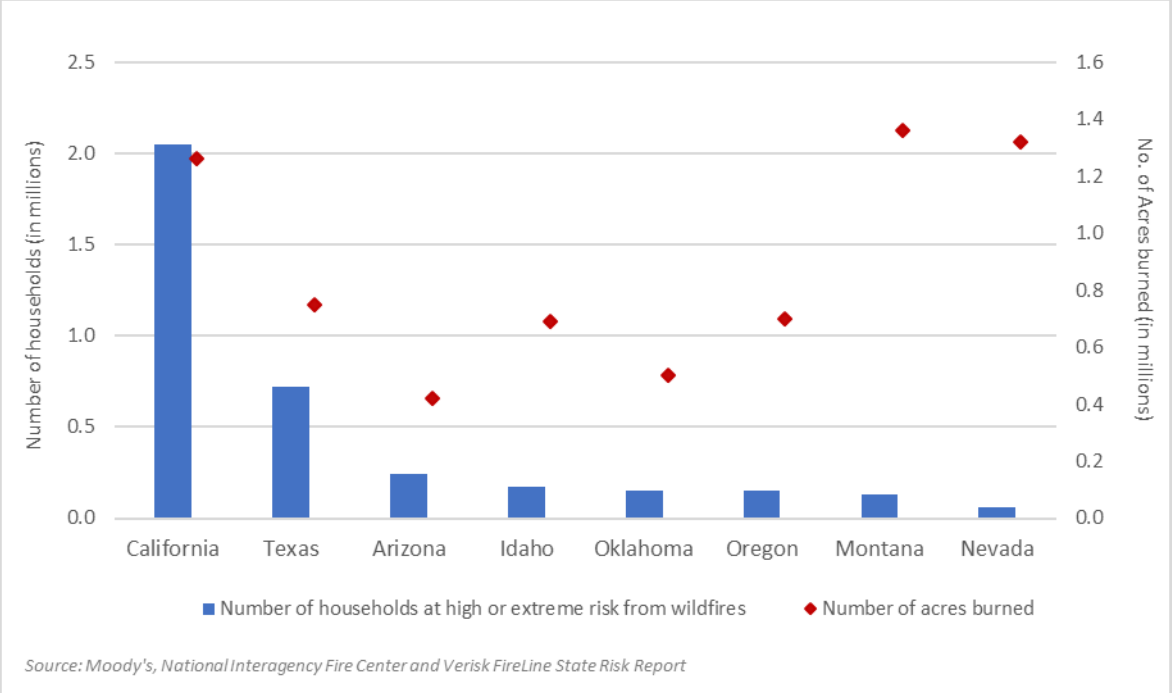
Wildfire risk mitigation is a top priority at SDG&E, with the Company recognized as an industry leader. Since the 2007 wildfires, SDG&E has been engaged in a series of wildfire risk mitigation efforts, including the development of the largest utility-owned weather network, fire mapping activities, development of a fire potential index and Santa Ana Wildfire Threat Index, infrastructure hardening, aggressive vegetation management, revised operational protocols, contracting for firefighting resources, and using one of the world's largest water dropping heli-tanker.

While the goal behind these efforts is to avoid wildfire ignitions related to SDG&E facilities, SDG&E cannot entirely eliminate that risk. Although other states in the U.S. experience catastrophic wildfires, California is one of only two states (along with Alabama) that subject private companies to inverse condemnation liability. Unlike other utilities, this leaves California utilities potentially strictly liable for wildfire-related property damage and attorneys' fees – even where the utilities were not at fault. Given that the Commission has deemed the cost-spreading purpose of inverse condemnation not relevant to its review of a utility's request for liability cost recovery for a wildfire, utilities can incur billions in liabilities even for wildfire ignitions that are beyond their control.

[20] *See* Cal Fire, Top 20 Most Destructive California Wildfires, *available at* http://www.fire.ca.gov/communications/downloads/fact_sheets/Top20_Destruction.pdf.

Moreover, the significant wildfire risk that California utilities face is not solely attributable to inverse condemnation liability. Due to California's higher population density and many new housing developments being constructed near or in the High Fire Threat Districts, damages caused by wildfires in California are more costly than other states as shown in Figure 2 below. The 10 most destructive wildfires in the history of the U.S. based on insured losses have all occurred in California. This clearly demonstrates that California is the most exposed to property damages among wildfire-prone states. The risk that utilities face in California is thus a product of the State's specific legal and regulatory environment as well as high population density.

Figure 2: Comparison of Wildfire Size and Property Values Exposed to Wildfires



SDG&E uses insurance as a tool to help mitigate the financial risks associated with catastrophic wildfires. But SDG&E's ability to purchase insurance at a reasonable cost is influenced by worldwide insurance losses, particularly those relating to California. Several insurance companies that offer wildfire insurance have exited the California market due to the

2017 wildfires.[21] Those that have remained are significantly reducing their insurance capacity and increasing premiums.[22]

SDG&E expects insurance costs to continue increasing over time given recent claims related to the 2017 and 2018 wildfires. Indeed, on March 13, 2019 the Commission approved Edison's request to recover approximately $108 million that it incurred to obtain a 12-month, $300 million wildfire insurance policy for 2018.[23] That is extremely expensive insurance coverage. So while insurance can certainly be a tool to mitigate risk, the scale of property damage seen in the 2007 wildfires and more recently provides cause for concern that insurance may not be enough, or that it will become too expensive.

If SDG&E experiences costs or liabilities from catastrophic wildfires that exceed its insurance coverage (or that cannot be recovered in rates), its financial condition, cash flows and results of operations can be adversely affected. SDG&E also faces situations that may not be covered by insurance (including costs in excess of applicable policy limits) or that may be disputed by insurers.

The California Legislature has sought to address the risk utilities face with respect to catastrophic wildfires. The Legislature recently passed Senate Bill 901 to address a range of issues related to catastrophic wildfires, which Governor Brown signed into law on September 21, 2018. Although Governor Brown had proposed draft legislation in July that would have reformed inverse condemnation in certain respects, the Legislature did not pass that proposed inverse condemnation legislation in the 2018 legislative session.

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[21] *See* A.17-007/008, Rebuttal Testimony of Neil K. Cayabyab (Insurance) (June 18, 2018) (Ex. 240), at NKC-6 – NKC-7.

[22] *Id.*

[23] SCE Advice Letter ("AL") 3768-E, approved March 13, 2019 and effective February 22, 2019.

As discussed further in the testimony of Bruce MacNeil (Exhibit SDG&E-06), credit rating agencies have swiftly reacted to the legislation – and the largely unaltered legislative, legal, and regulatory framework – by repeatedly downgrading SDG&E's credit rating (as well as the credit ratings of PG&E and SCE).

Prior to the 2017 and 2018 wildfires, SDG&E credit ratings had not been downgraded in 15 years. However, since then, SDG&E has faced continuous negative ratings actions as credit ratings agencies reassessed the increasing regulatory and cost recovery risks – despite SDG&E's equipment not being responsible for any wildfires. Table 1 below summarizes SDG&E's recent credit rating downgrades.

Table 1: SDG&E Credit Rating Downgrades

Rating Agency	SDG&E			
	Date	**Rating**	**Outlook**	**Action Taken**
S&P	Jul 9, 2018	A	Negative	Outlook revised to Negative
	Sep 5, 2018	A-	Negative	Downgraded one notch to A- and Outlook remained Negative
	Jan 21, 2019	BBB+	Negative	Downgraded one notch to BBB+ and Outlook remained Negative
Moody's	Apr 11, 2018	A1	Negative	Outlook revised to Negative
	Sep 6, 2018	A2	Stable	Downgraded one notch to A2 and Outlook revised to Stable
	Jan 24, 2019	A2	Negative	Placed on review for downgrade
	Mar 5, 2019	Baa1	Negative	Downgraded two notches to Baa1 and Outlook remains Negative
Fitch	Sep 13, 2018	A-	Stable	Downgraded one notch to A- and Outlook revised to Stable
	Jan 22, 2019	A-	Negative	Outlook revised to Negative
	Mar 11, 2019	BBB+	Negative	Downgraded one notch to BBB+ and Outlook remains Negative

On September 5, 2018, Standard & Poor's ("S&P") lowered SDG&E's credit rating from "A" to "A-." S&P said its downgrade reflected the unaddressed longer-term risks associated with inverse condemnation.[24] S&P also maintained a negative credit outlook on SDG&E.[25]

On September 6, 2018, Moody's downgraded SDG&E's credit rating from A1 to A2, citing the continued existence of inverse condemnation as the principal rationale for the downgrade.[26] On September 13, 2018, Fitch Ratings downgraded SDG&E credit ratings from A to A-, explaining that "the continuation of inverse condemnation, execution risk associated with the implementation of the proposed legislation, pressure on customer bills if cost recovery is approved in event of a major wildfire, and diminishing access to insurance will permanently overshadow SDG&E's credit profile. Senate Bill 901 and SDG&E's fire prevention and mitigation programs only provide partial mitigation of the rising regulatory risks for electric utilities operating in California."[27]

On January 21, 2019, S&P again downgraded SDG&E's bond rating to BBB+ with a continued negative outlook. S&P stressed that SDG&E's operational management of wildfire mitigation is exceptional compared to its peers.[28] The ratings agency later added that:

> SDG&E has one of the most sophisticated advanced wildfire warning systems in the world. The company has invested in hundreds of weather stations and fire cameras that have the capability to identify when specific areas could be most susceptible to a wildfire. Furthermore, after a wildfire starts, the utility's fire

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[24] S&P Global Ratings, San Diego Gas & Electric Co. Downgraded to 'A-' on Unaddressed Longer-Term Wildfire Risks; Outlook Negative (September 5, 2018) at 2.

[25] *Id.*

[26] Moody's Investors Service, Moody's Downgrades San Diego Gas & Electric to A2 from A1; Outlook Stable (September 6, 2018) at 1.

[27] Fitch Ratings, Fitch Downgrades SDG&E's LT IDR to 'A1': Outlook Stable (September 13, 2018) at 1.

[28] S&P Global Ratings, San Diego Gas & Electric Co. Downgraded to 'BBB+', Outlook Remains Negative (January 21, 2019) at 2.

> camera system is equipped with the technology to identify the wildfire's GPS coordinates. This information is relayed to the California Department of Forestry and Fire Protection, which determines the most appropriate course of action to extinguish the fire at its earliest stage. The company's advance warning system has already prevented at least one wildfire that potentially could have been catastrophic.[29]

"[B]ecause of the company's advanced operations," S&P stated that it has consistently rated SDG&E "higher than its California electric utility peers."[30]

Yet S&P nonetheless downgraded SDG&E's credit rating because, "despite this advanced warning system, we don't think the utility is immune to the risk of a devastating wildfires. We believe that all California electric utilities are susceptible to potential liabilities from wildfires because of environmental changes and high winds that could spread the fire at a rate that outpaces the capabilities of the first responders."[31] S&P added that it "could [further] lower our ratings on SDG&E by one or two more notches if regulators and/or politicians do not take concrete steps to explicitly address these growing risks before the start of the 2019 wildfire season."[32] Figure 3 below illustrates S&P's downgrades of the California electric utilities following various events.

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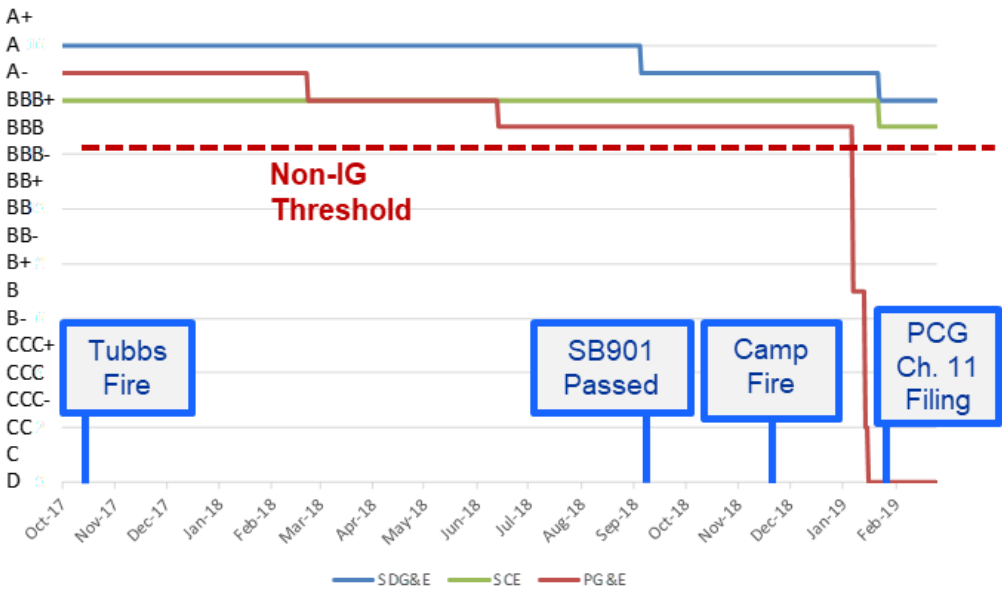
[29] S&P Credit FAQ: Will California Still Have an Investment-Grade Investor-Owned Electric Utility? (February 19, 2019), *available at* https://www.capitaliq.com/CIQDotNet/CreditResearch/RenderArticle.aspx?articleId=2168627&SctArtId=467165&from=CM&nsl_code=LIME&sourceObjectId=10866063&sourceRevId=14&fee_ind=N&exp_date=20290218-21:25:39.

[30] *Id.*

[31] *Id.*

[32] *Id.*

Figure 3: Timeline of S&P Credit Rating Downgrades



On March 5, 2019, Moody's again downgraded SDG&E's credit rating to Baa1 while maintaining a negative outlook.[33] While Moody's echoed S&P on SDG&E's history of effective wildfire mitigation and prevention, the ratings agency said the downgrade reflected SDG&E's exposure to sizeable potential liabilities in connection with California wildfires, resulting in higher business and financial risks compared to non-California utilities.[34] The ratings agency noted that the resulting damage from wildfires have an outsized effect on California utilities because of inverse condemnation.[35] Although Moody's stated that SB 901 should improve the prospect for recovery of wildfire costs, the rating agency believed that the legislation's effectiveness has not been tested yet and a significant amount of uncertainty because of the Commission's 2017 decision that disallowed the entire $379 million wildfire cost request (pre-

[33] Moody's Investor Service, Ratings Action: Moody's downgrades San Diego Gas & Electric to Baa1 from A2; outlook negative (March 5, 2019).

[34] *Id.* at 1.

[35] *Id.*

tax) related to SDG&E's 2007 wildfires remained.[36] Moody's further cautioned that the failure to pass legislation or enact regulatory charges before the end of this year's California legislative session could lead the rating agency to further downgrade SDG&E's ratings.[37]

PG&E and Edison have likewise experienced several subsequent credit rating downgrades. In January, S&P moved PG&E to D (junk bond status), and Edison to BBB (the second lowest investment grade rating) with a negative rating watch. S&P made this sweeping decision because, "[w]e believe that California electric utilities face ongoing and unresolved risks related to future wildfires because the "potential liability risks are significant in California" and "the regulatory mechanisms to resolve these risks are unclear at best."[38] The ratings agency continued that inverse condemnation "effectively makes California's utilities the insurer of last resort every time there is a devastating wildfire in their service territory,"[39] and S&P does not "believe that an electric utility is large enough, sufficiently diversified, or adequately capitalized

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[36] *Id.*

[37] *Id.*

[38] S&P Global Ratings, Credit FAQ: Will California Still Have an Investment-Grade Investor-Owned Electric Utility? (February 19, 2019), *available at* https://www.capitaliq.com/CIQDotNet/CreditResearch/RenderArticle.aspx?articleId=2168627&SctArtId=467165&from=CM&nsl_code=LIME&sourceObjectId=10866063&sourceRevId=14&fee_ind=N&exp_date=20290218-21:25:39.

[39] S&P Global Ratings, San Diego Gas & Electric Co. Downgraded to 'BBB+', Outlook Remains Negative (January 21, 2019) at 3.

to be a reinsurer."[40] On March 5, 2019, Moody's again downgraded Edison's credit rating to Baa2 (the second lowest investment grade rating) with a negative outlook.[41]

In short, S&P stated that the credit ratings for SDG&E and/or Edison "could be below investment grade" by the summer.[42] S&P specified that "[i]nvestment-grade utility ratings require a regulatory framework that is transparent, consistent, predictable, and allows for timely cost recovery."[43] But S&P believes that the California recovery process is "untested and uncertain," not allowing an electric utility to securitize wildfire costs on an expedited or emergency basis.[44] "Overall," the ratings agency stated, "the combination of climate change, frequent and severe wildfires, and California's interpretation of inverse condemnation, if unaddressed, significantly raises the risk for California's electric utilities to a level inconsistent with any other North American utility."[45] As a result, S&P believes that "without regulatory reform" it is possible that a second California electric utility may have to file for bankruptcy in 2019.[46]

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[40] S&P Global Ratings, Credit FAQ: Will California Still Have an Investment-Grade Investor-Owned Electric Utility? (February 19, 2019), *available at* https://www.capitaliq.com/CIQDotNet/CreditResearch/RenderArticle.aspx?articleId=2168627&SctArtId=467165&from=CM&nsl_code=LIME&sourceObjectId=10866063&sourceRevId=14&fee_ind=N&exp_date=20290218-21:25:39.

[41] Moody's Investor Service Ratings Action: Moody's downgrades Edison International to Baa3 and Southern California Edison to Baa2; outlooks negative.

[42] S&P Global Ratings, Credit FAQ: Will California Still Have an Investment-Grade Investor-Owned Electric Utility? (February 19, 2019), *available at* https://www.capitaliq.com/CIQDotNet/CreditResearch/RenderArticle.aspx?articleId=2168627&SctArtId=467165&from=CM&nsl_code=LIME&sourceObjectId=10866063&sourceRevId=14&fee_ind=N&exp_date=20290218-21:25:39.

[43] *Id.*

[44] *Id.*

[45] *Id.*

[46] *Id.*

If SDG&E were to experience a significant wildfire, there are two possible immediate consequences: (1) further credit rating downgrade, and (2) suspension of dividends. As indicated by credit rating agencies, a further credit rating downgrade is highly likely in the event SDG&E is the cause of wildfires that leads to material losses in excess of insurance coverage. As further discussed in the testimony of Dr. Morin, lower credit ratings lead to increased borrowing costs.[47] A credit rating downgrade from A to Baa (under Moody's rating system) could result in higher borrowing rates in the range of 46 to 52 basis points, as shown in Table 2 below. While credit ratings directly impact borrowing rates, equity investors are attuned to the change in business risk profile that accompanies credit rating downgrades and would require a commensurate incremental ROE to compensate for the higher risk.

Table 2: Bond Yield Spread between A and BAA rated Public Utility Bonds

Spread Between A & BAA Rated Public Utility Bonds As of April 8, 2019			
	Moody's A Rated Public Utilities Bond Yield Avg	**Moody's Baa Rated Public Utilities Bond Yield Avg**	**Spread**
Spot	4.09%	4.56%	0.47%
2019 YTD Average	4.24%	4.75%	0.52%
3 Year Average	4.07%	4.53%	0.46%

The suspension of dividends is punitive to equity investors, as observed in PG&E's case. When PG&E suspended dividends, PG&E's stock price plummeted 13%[48] the following day. Increased volatility in stock price is a clear indication of higher risk. And in the absence of

[47] *See* Prepared Direct Testimony of Roger A. Morin, Ph.D., Return on Equity (April 2019) ("Ex. SDG&E-04 (Morin)") at 62-63.

[48] PG&E announced suspension of dividends on December 20, 2017 after market close. The closing stock price for PG&E Corporation (PCG) on December 20, 2017 was $51.12. The closing price on December 21, 2017 was $44.50.

dividend payments, equity investors seek a higher ROE as a means to restore total shareholder returns to levels prior to suspension of dividends.

B. Changes in the California Energy Industry

The energy industry in California is in a period of unprecedented change as government policies, customer needs and technology innovation are transforming towards a more decentralized, less utility centric-environment; all while simultaneously advancing increasingly aggressive clean energy goals. Indeed, the Commission's Final Customer Choice Action Plan and Gap Analysis[49] ("Choice Action Plan") acknowledges the rapid changes occurring in California's electric sector. The Choice Action Plan identifies major gaps in policy, regulation, and legislation that need to be addressed, underscoring the risk and uncertainty laden in today's California energy environment. Moreover, the Choice Action Plan acknowledges the lack of a comprehensive regulatory framework to address customer choice options and the disaggregation of load, which is "creating unintended adverse consequences."[50] Areas particularly vulnerable include: the proliferation of consumer adopted advanced technologies, such as rooftop solar and behind the meter energy storage; growing customer demand for choice in their energy service provider; and aggressive decarbonization goals. An additional critical area exposed to risk includes technology and cybersecurity. I discuss each of these in the following subsections.

When analyzed in isolation, it becomes clear that each factor poses a different type of risk to SDG&E. Because SDG&E must manage these major changes simultaneously, the risks are

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[49] California Public Utilities Commission, California Customer Choice Project, Choice Action Plan and Gap Analysis (December 2018) ("Commission Choice Action Plan"), *available at* http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Utilities_and_Industries/Energy_-_Electricity_and_Natural_Gas/Final%20Gap%20Analysis_Choice%20Action%20Plan%2012-31-18%20Final.pdf.

[50] *Id*. at 6.

greatly amplified due to the interconnection and interdependency of the various factors, creating a systemic risk that is new, complex, and difficult to track. Complex, systemic risk is more likely to produce unforeseen or unpredictable outcomes. Investors will require a just and reasonable ROE to compensate for the higher risk profile caused by embedded systemic risk in SDG&E's business. Not only are these risks increasing for SDG&E, they are increasing at a rate above national utility averages. As discussed below, SDG&E is on the cutting edge of many new technologies with more exposure to risk than other utilities (for example, the highest penetration of rooftop solar), and is also subject to California's mandated clean energy goals.

1. Increased Customer Adoption of Advanced Technologies and Resulting Rate Pressures

California is experiencing increasing deployment of distributed energy resources ("DER") such as rooftop solar and energy storage. This decentralized and less utility-centric model presents risks, given the Company's current volumetric based rate structure. The high adoption rate of rooftop solar[51] and behind the meter energy storage in SDG&E's service territory puts SDG&E in a particularly unique position on two fronts. First, high levels of customer DER adoption under today's current volumetric rate structure impedes SDG&E's ability to collect the cost of utility infrastructure investments equitably from all customers.

This results in greater rate pressure due to shrinking customer load volume, potentially threatening SDG&E's ability to collect on its investments. The current rate structure was developed for the vertically-integrated electricity model that SDG&E has operated in for most of its' history. Under the current net energy metering rate structure, rooftop solar customers are

[51] Environment America Research & Policy Center, Shining Cities 2018, How Smart Local Policies are Expanding Solar Power in America (April 2018) at 12, *available at* https://environmentamerica.org/sites/environment/files/reports/EA_shiningcities2018_scrn%20%282%29.pdf.

often not paying for their full share of grid services. This shifting of costs from one customer class to another impacts affordability. Moreover, from 2010 to 2018, the average net monthly use per residential customer has declined about 20%, primarily due to the installation of rooftop solar and the success of energy efficiency programs. This decline in usage and sales is a contributing factor to the raising rates SDG&E has experienced. Frequently discussed wildfire liability legislative or regulatory solutions could compound rate pressures to help fund those solutions for all Californians. Indeed, the CPUC's Choice Action Plan recognizes this tension, highlighting the need for additional analysis to assess "[s]eparating appropriate customer costs associated with distribution grid services from bundled customers' volumetric rates. "[52]

Additionally, higher levels of DERs on the system can potentially increase the risk related to operating the utility's system. As a result of the highly unpredictable and geographically diverse two-way energy flow from distributed generation, the planning and operation of the system becomes progressively more complex and riskier. This growth will eventually require modernization of the electric distribution grid to accommodate two-way flows of electricity. Areas with high concentration of distributed generation pose a potentially greater risk to local distribution system reliability, as transformers can become overloaded. In addition to the impact on reliability, the unexpected and potentially higher capital and operations and maintenance costs due to the potential for reduced life expectancy on existing infrastructure and the unpredictable future introduces variability to SDG&E's earnings.

Because SDG&E's customers tend to be early adopters, SDG&E does not have the luxury to wait and learn from other utilities on how to deal with the sea changes resulting from

[52] Commission Choice Action Plan at 15.

wide-scale implementation of these technologies. These circumstances contribute to an investor's perception of a higher risk profile for SDG&E.

2. Customer Choice

The growing flexibility for customers to choose their energy service provider, such as through Community Choice Aggregation ("CCA"), presents business risks for SDG&E. Community Choice Aggregation is a program that permits cities, counties, and other authorized entities – called Community Choice Aggregators – to purchase or generate electricity for residents and businesses located within the boundaries of their jurisdiction. Currently, SDG&E performs these procurement functions for the majority its customers.

Various cities within SDG&E's territory are exploring the adoption of a CCA program. In 2018, the City of Solana Beach became the first CCA program in SDG&E's service territory. The City of San Diego is also pursuing a CCA Program. On February 25, 2019, the San Diego City Council gave the Mayor authority to negotiate agreements with other local cities and government agencies to collaborate on CCA joint powers authorities. The County of San Diego is taking similar steps. With the City of San Diego and other likely near-term CCA formations, SDG&E could be serving less than 25% of load in 2021.

The market is transitioning at a faster pace than regulation and market frameworks are being created. With the growth of Load Serving Entities ("LSEs"), and as customer load becomes increasingly disaggregated, SDG&E, as the provider of last resort ("POLR"), must stand ready to provide electricity if the market does not meet customer demand due to a sudden exit or failure of an LSE. As the CPUC's Choice Action Plan notes, "[t]hese entities must have the administrative capacity and financial standing to absorb an uncertain number of customers and uncertain electric load as well as resources available to ensure reliability of supply to meet

that load."[53] The Choice Action Plan goes on to note that the current environment does not have policies to appropriately value the services of the POLR.[54] SDG&E, as a POLR, remains exposed if the customers served by CCA and/or Direct Access ("DA") providers return to bundled utility service, adding complexity to the market and creating unplanned procurement obligations that could put a strain on SDG&E's balance sheet and cashflows.

3. Clean Energy Goals

California policy continues to evolve with a greater emphasis on clean and sustainable energy solutions. To execute on these aggressive decarbonization goals, regulators will continue to rely on the utility as the primary vehicle for implementation. Part of the State's decarbonization efforts includes a heavy reliance on renewable energy. Renewable energy procurement, however, presents business risk. In 2002, California established its Renewables Portfolio Standard ("RPS"), pursuant to which utilities must increase their procurement of electricity from renewable sources. The RPS procurement percentages have sharply increased over time. Senate Bill 100[55] sets the current RPS standard at 60% by 2030, with the remaining 40% of energy supplied by zero-carbon resources by 2045.[56] This is one of the most ambitious targets in the country.[57] With that comes a higher perceived risk of California IOUs by investors.

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[53] Commission Choice Action Plan at 33.

[54] *Id*. at 33.

[55] SB 100, Stats. 2018, Ch. 312.

[56] Cal. Pub. Utils. Code § 311(a).

[57] Lawrence Berkley National Laboratory, U.S. Renewables Portfolio Standards, 2017 Annual Status Report (July 2017), *available at* http://eta-publications.lbl.gov/sites/default/files/2017-annual-rps-summary-report.pdf.

4. Technology and Cyber Security

In addition to general information and cyber risks that all corporations face (*e.g.*, malware, malicious intent by insiders and inadvertent disclosure of sensitive information), the utility industry faces evolving cyber security risks associated with protecting sensitive and confidential information and its infrastructure. In July 2018, for example, there were widespread media reports of state-sponsored Russian attempts to hack the U.S. electric grid.[58] SDG&E must safeguard its systems from such threats so that external actors cannot successfully take control of its assets with the intent of causing harm to the public, *e.g.,* an act of terrorism. These acts may result in gas leaks, fire, explosions, and/or outages. Such technology, security, and cyber threats from potentially unknown and rapidly changing sources means that SDG&E must continue to invest in cyber security mitigation measures to simply keep the risk from growing. Given the substantial amount of data SDG&E collects as well as the critical infrastructure it operates, SDG&E is exposed to heightened business risks related to technology and cyber security.

III. FINANCIAL RISKS

As described by Dr. Morin (Ex. SDG&E-04), financial risk stems from the method used by the company to finance its investments and is reflected in the utility's capital structure. The Commission has applied the same six-factor test to assess this issue. As a utility's debt ratio increases, a higher return on equity may be needed to compensate for that increased risk.[59] Thus, companies that issue more debt instruments have higher financial risk than companies that are financed mostly or entirely by equity.

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[58] The New York Times, Russian Hackers Appear to Shift Focus to U.S. Power Grid (July 27, 2018), *available at* https://www.nytimes.com/2018/07/27/us/politics/russian-hackers-electric-grid-elections-.html.

[59] *See* Ex. SDG&E-04 (Morin) at 62-64.

When assessing the financial risk of a company, credit rating agencies and investors evaluate certain financial ratios, such as a company's capital structure, leverage, and cash flow adequacy. Three significant examples of financial risk, each of which I discuss below, result from SDG&E's financial exposure due to catastrophic wildfire risks, long-term power purchase agreements ("PPA"), and elevated levels of capital investment.

A. The Financial Impact of Catastrophic Wildfires

As discussed extensively above, SDG&E is at a greater financial risk from the threat of catastrophic wildfires and the surrounding legal and regulatory construct. If SDG&E experiences costs or liabilities from catastrophic wildfires that exceed its insurance coverage (or that cannot be recovered in rates), its financial condition, cash flows and results of operations can be adversely affected.

SDG&E's lowered credit ratings also increases its financial risks. As S&P has noted, because utilities generally operate with "negative discretionary cash flow, reflecting the high capital spending necessary to maintain and improve their electrical systems," a utility's credit rating is critical.[60] The "lack of consistent access to the capital markets or lack of steady affordable capital can add considerable strain to a utility's business model."[61] To offset this risk, "a utility's credit quality depends on its operating under a credit-supportive regulatory construct that is consistent and predictable."[62] These lower credit ratings result in higher borrowing costs.

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[60] S&P Global Ratings, Credit FAQ: Will California Still Have an Investment-Grade Investor-Owned Electric Utility? (February 19, 2019), *available at* https://www.capitaliq.com/CIQDotNet/CreditResearch/RenderArticle.aspx?articleId=2168627&SctArtId=467165&from=CM&nsl_code=LIME&sourceObjectId=10866063&sourceRevId=14&fee_ind=N&exp_date=20290218-21:25:39.

[61] *Id.*

[62] *Id.*

Inverse condemnation impacts a utility's liquidity in two ways. First, when wildfire liabilities are extremely large, utilities are expected to incur the costs of restoration and pay out claims quickly. This may result in a utility carrying billions in exposure on its balance sheet for years before any cost recovery was determined. SDG&E experienced this situation first-hand with the 2007 wildfire exposures where the Wildfire Expense Memorandum Account ("WEMA") undercollected balance grew to around $420 million – before the cost recovery proceeding began.

Second, even if utilities are successful in receiving cost recovery related to wildfires, the rates and bill impacts to ratepayers will be very significant. Credit rating agencies view high bills as credit negative. Higher rates may crowd out headroom for other costs and capital investments. Credit ratings and rates pressures will likely to continue to exist in such fashion even if there is legislative or regulatory reform addressing wildfire liability.

As noted, equity investors are equally attuned to the change in business risk profile that accompanies credit rating downgrades and would require a commensurately higher ROE to compensate for the higher risk and finance new investments aimed at improving safety and reliability. As Dr. Morin discusses, if equity investors face greater uncertainty about future dividends and company earnings, a company's equity becomes a riskier investment, and forces a company to rely more on debt financing.[63] As a company relies more on debt financing, its capital structure becomes more leveraged. This increase the cost to the utility for both debt and equity financing, increasing the possibility a company will not have access to the capital markets.

[63] *See* Ex. SDG&E-04 (Morin) at 7.

B. Long-Term PPAs

SDG&E has entered into a substantial number of long-term PPAs. This may negatively impact credit ratings due to the credit rating agencies' treatment of PPAs as debt equivalence. SDG&E's power purchase commitment payments through 2022 are expected to total $3.65 billion. As renewable PPAs represent a growing component of the Company's overall energy portfolio, SDG&E expects the corresponding debt equivalent figure to continue to grow for the foreseeable future. Senate Bill 100 will exacerbate this growth, as California continues to be at the forefront of renewable energy adoption and increasing RPS requirements. As a result, SDG&E's financial ratios, as calculated by the rating agencies, may deteriorate and increase SDG&E's financial risk profile. Accounting Standard Codification 810 ("ASC 810") consolidation of certain PPAs into SDG&E's balance sheet could further deteriorate SDG&E's financial credit ratios.

C. Elevated Levels of Capital Investment

Over the next five years, SDG&E plans to invest approximately $6.4 to $7.1 billion in capital projects. Capital investments include modernizing transmission and distribution infrastructure, and fire hardening measures to protect against extreme weather events and support public safety. SDG&E will be accessing the capital markets to finance these large capital investments. Given the expected rise in interest rates, SDG&E is exposed to interest rate risks. Higher interest rates translate to higher financing costs, which would put pressures on cashflows and earnings.

An elevated level of investment increases the risk of under-recovery or delayed recovery of invested capital. Credit rating agencies and investors consistently analyze and focus on the effect that elevated capital investments may have on cash flows and corresponding pressure on credit metrics. Equity investors are equally aware of the pressure on cash flows associated with

a utility's elevated capital investments and resultant effect on the cost of capital. To ensure that SDG&E has ready access to capital funding at a reasonable cost, SDG&E requires a just and reasonable ROE. SDG&E's proposed ROE will provide the cash flow necessary to sustain strong credit metrics appealing to both investors and rating agencies.

IV. REGULATORY RISKS

Regulatory risk refers to new risks that investors may face from future regulatory actions. The two main types of regulatory risks are: (1) regulatory lag risk; and (2) cost recovery risk. Regulatory lag risk is related to the utility's ability to timely recover costs, which introduces uncertainty. Cost recovery risk is related to the utility's ability to consistently recover costs, and it reflects the risk of future regulatory actions, such as a disallowance of operating expenses and rate base additions. Rating agencies assess cost recovery risk and regulatory lag risk in setting utility bond ratings.

The most significant regulatory risk overlaps with one of the business risks I discussed above, namely the cost recovery risk that SDG&E may face for catastrophic wildfire liabilities. As discussed, under the current status quo, utilities are strictly liable under inverse condemnation regardless of fault, while the Commission applies a reasonableness review for cost recovery in an un-expedited proceeding where the cost-spreading purposes of inverse condemnation is not considered relevant. That is a very real risk that SDG&E encountered first-hand in 2017 with the Commission's denial of SDG&E's cost recovery for the 2007 wildfires. It has also directly impacted the other investor-owned utilities in California. Credit rating agencies and investors alike have recognized California as having credit negative regulatory and legislative developments.

Even if cost recovery is eventually allowed, the recovery process is time consuming and uncertain while the utility is responsible for costs up-front. According to S&P, one of the risks

that led to PG&E's bankruptcy was the utility's belief that the Commission was unlikely to consider PG&E's request for wildfire cost recovery on an expedited basis, and that "it would likely to take years to obtain authorization to securitize" wildfire costs.[64] As noted, S&P states that "investment-grade utility ratings require a regulatory framework that is transparent, consistent, predictable, and allows for timely cost recovery."[65] The ratings agency finds California's current regulatory environment lacking in that regard, contrasting the regulatory framework for catastrophic wildfire with Florida's handling of hurricanes, where the state has allowed for the securitization of those costs and utilities can petition for the recovery of storm costs for natural disasters without being subject to an earnings test. Moody's has likewise noted that, although Senate Bill 901 improves the prospect for recovery of wildfire costs, Senate Bill 901's new framework is untested and a significant amount of uncertainty associated with cost recovery remains because of the Commission's disallowance of recovery related to SDG&E's 2007 wildfires.[66] Based on Regulatory Research Associates ("RRA") assessment, California's regulatory climate for energy utilities was downgraded to "Average 1" from "Above Average 3" in January 2019 in light of the bankruptcy filing by PG&E, citing that "the lack of regulatory or legislative protections against subsequent wildfire liabilities caused by the application of inverse condemnation to investor-owned utilities."[67]

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[64] S&P Global Ratings, Credit FAQ: Will California Still Have an Investment-Grade Investor-Owned Electric Utility? (February 19, 2019), *available at* https://www.capitaliq.com/CIQDotNet/CreditResearch/RenderArticle.aspx?articleId=2168627&SctArtId=467165&from=CM&nsl_code=LIME&sourceObjectId=10866063&sourceRevId=14&fee_ind=N&exp_date=20290218-21:25:39.

[65] *Id.*

[66] Moody's Investors Service, Moody's downgrades San Diego Gas & Electric to Baa1 from A2; outlook negative (March 5, 2019) at 1.

[67] RRA Regulatory Focus, State Regulatory Evaluations – February 8, 2019.

V. CONCLUSION

As a California utility, SDG&E faces significant business, financial and regulatory risks that are not present for utilities nationwide. This primarily comes from the Company being potentially unable to recover catastrophic wildfire liabilities and instead having to act as the insurer of last resort for its service territory. But even if a legislative or regulatory solution is implemented to address wildfire liability, numerous risks remain. SDG&E will still have to operate in a more decentralized, less utility-centric model that is mismatched with the Company's current volumetric based rate structure, while attempting to meet aggressive environmental and energy goals.

This concludes my prepared direct testimony.

VI. WITNESS QUALIFICATIONS

My name is Don Widjaja. I am the Director of Financial Planning and Regulatory Accounts for SDG&E. My business address is 8330 Century Park Court, San Diego, California 92123. My current responsibilities include the development, implementation, and analysis of SDG&E's financial planning and budget process, as well as overseeing the development, analysis, and implementation of financing strategies, revenue requirements, regulatory accounts, and cost recovery mechanisms. I hold a Master of Business Administration degree from Washington University in St. Louis with an emphasis in finance. I received a Bachelor of Science degree in Chemical Engineering from Purdue University.

In 2008, I joined SDG&E as the Quantitative Risk and Controls Manager in the Risk Management Department, where I was responsible for providing risk assessment on energy procurement activities, major projects, and new business initiatives. Prior to joining SDG&E, I worked at Credit Suisse and Ameren Corporation.

I have previously submitted testimony to this Commission, including testimony supporting SDG&E's Test Year 2013 Cost of Capital Application (A.12-04-016).

APPENDIX A

RESPONSES TO QUESTIONS 1 THROUGH 3, AND QUESTION 7 AS DIRECTED BY D.17-07-005

In D.17-07-005, the Commission, in granting the California utilities' petition to extend the prior cost of capital period, the Commission directed the utilities to address eight specific questions in testimony. I will address the first three questions and question 7, given that they pertain to risks.

Question 1: How does the utility's level of **business risk** compare to other utilities nationally and to other California utilities, and to non-utility benchmarks? Include separate comparisons for vertically integrated and non-vertically integrated utilities. How has this level changed since the test year 2013 Cost of Capital application?

Question 2: How does the utility's level of **financial risk** compare to other utilities nationally and to other California utilities, and to non-utility benchmarks? Include separate comparisons for vertically integrated and non-vertically integrated utilities. How has this level changed since the test year 2013 Cost of Capital application?

Combined Response to Questions 1 & 2: When assessing investor-owned utilities' relative risk, the Commission has previously utilized an approach that analyzes six factors: (a) proposed equity ratios, (b) bond ratings, (c) long-term interest coverage, (d) Value Line beta, (e) Value Line safety ratings and (f) Value Line financial strength ratings.

When adopting this relative risk assessment approach, the Commission stated "[w]e believe there is merit in the overall approach… in ranking the relative risk of the utilities. Despite the problems associated with any on risk indicator, it is noteworthy that six separate indicators were used."[1] Results of these six factors are provided in the tables below:

[1] D.92-11-047 at 90; D.89-11-068 at 58-59.

Table A1: Key Commission Risk Indicators for California Utilities (Current)

	SoCalGas	SDG&E	SCE	PG&E
Equity Ratio	56%*	56%*	48%^	52%^
Bond Rating (Moody's) [1]	A1	Baa1	Baa2	WR
Bond Rating (S&P) [1]	A	BBB+	BBB	D
2018 Long-Term Interest Coverage [1]	10.12	7.95	2.55	-6.64
Value Line Beta [2]	0.75	0.75	0.55	0.65
Value Line Safety Rating [2]	2	2	3	5
Value Line Financial Strength Rating [2]	A	A	B+	C

* Proposed Equity Ratio

^ Current Authorized Equity Ratio

[1] Source: S&P Global Market Intelligence (SNL)

[2] Source: Value Line January 25, 2019; Parent information represented

Table A2: Historical Moody's Bond Rating for California Utilities

	Bond Rating (Moody's) [1]			
Year	SoCalGas	SDG&E	SCE	PG&E
2018	A1	A2	A3	Baa2
2017	A1	A1	A2	A2
2016	A1	A1	A2	A3
2015	A1	A1	A2	A3
2014	A1	A1	A2	A3
2013	A2	A2	A3	A3

[1] Source: 10Ks, Moody's Investors Service, S&P Global Market Intelligence (SNL)

Table A3: Historical S&P Bond Rating for California Utilities

	Bond Rating (S&P) [1]			
Year	SoCalGas	SDG&E	SCE	PG&E
2018	A	A-	BBB+	BBB-
2017	A	A	BBB+	A-
2016	A	A	BBB+	BBB+
2015	A	A	BBB+	BBB
2014	A	A	BBB+	BBB
2013	A	A	BBB+	BBB

[1] Source: S&P Global Ratings, S&P Global Market Intelligence (SNL)

Table A4: Historical Long-Term Interest Coverage for California Utilities

	Long-Term Interest Coverage [1]			
Year	SoCalGas	SDG&E	SCE	PG&E
2018	10.12	7.95	2.55	-6.64
2017	11.51	7.14	6.44	6.66
2016	10.99	8.65	8.10	6.09
2015	13.13	8.32	7.87	5.49
2014	14.09	7.57	8.22	6.76
2013	13.52	6.69	6.72	5.44

[1] Source: S&P Global Market Intelligence (SNL)

Table A5: Historical Value Line Beta, Safety Rating & Financial Strength Rating for California Utilities

	Value Line Beta [1]				Value Line Safety Rating [1]				Value Line Financial Strength Rating [1]			
Quarter	SoCalGas	SDG&E	SCE	PG&E	SoCalGas	SDG&E	SCE	PG&E	SoCalGas	SDG&E	SCE	PG&E
2018 Q4	0.75	0.75	0.60	0.65	2	2	2	3	A	A	B++	B
2018 Q3	0.75	0.75	0.60	0.65	2	2	2	3	A	A	A	B
2018 Q2	0.80	0.80	0.60	0.65	2	2	2	3	A	A	A	B
2018 Q1	0.80	0.80	0.65	0.65	2	2	2	3	A	A	A	B
2017 Q4	0.80	0.80	0.65	0.65	2	2	2	2	A	A	A	B++
2017 Q3	0.80	0.80	0.60	0.65	2	2	2	2	A	A	A	B++
2017 Q2	0.80	0.80	0.60	0.65	2	2	2	3	A	A	A	B+
2017 Q1	0.80	0.80	0.65	0.65	2	2	2	3	A	A	A	B+
2016 Q4	0.80	0.80	0.65	0.65	2	2	2	3	A	A	A	B+
2016 Q3	0.80	0.80	0.70	0.65	2	2	2	3	A	A	A	B+
2016 Q2	0.85	0.85	0.70	0.70	3	3	2	3	B++	B++	A	B+
2016 Q1	0.80	0.80	0.70	0.70	3	3	2	3	B++	B++	A	B+

[1] Source: Value Line; Parent company information represented

Historical Data is only available through 2016

Table A6: Historical Moody's Bond Rating for Proxy Companies

Bond Rating (Moody's) [1]						
Company [2]	2018	2017	2016	2015	2014	2013
LNT	Baa1	Baa1	Baa1	A3	A3	Baa1
AEE	Baa1	Baa1	Baa1	Baa1	Baa2	Baa3
BKH	Baa2	Baa2	Baa2	Baa1	Baa1	Baa2
CMS	Baa1	Baa1	NR	NR	NR	NR
ED	Baa1	A3	A3	A3	A3	Baa1
D	Baa2	NR	NR	NR	NR	NR
DTE	Baa1	Baa1	Baa1	NR	NR	NR
DUK	Baa1	Baa1	Baa1	A3	A3	Baa1
ES	Baa1	Baa1	Baa1	Baa1	Baa1	Baa2
EXC	Baa2	Baa2	Baa2	Baa2	Baa2	Baa2
FTS	Baa3	Baa3	Baa3	NR	NR	NR
MGEE	NR	NR	NR	NR	NR	NR
NWE	A3	WR	WR	WR	WR	WR
PEG	Baa1	Baa1	NR	NR	NR	NR
WEC	Baa1	A3	A3	A3	A2	A3
XEL	A3	A3	A3	A3	A3	Baa1
Proxy Average	Baa1	Baa1	Baa1	Baa1	Baa1	Baa1
SDG&E	A2	A1	A1	A1	A1	A2
SDG&E vs Proxy	Higher	Higher	Higher	Higher	Higher	Higher

[1] Source: Moody's Investors Service

[2] All of the proxy companies are determined as Vertically Integrated at the parent level

Table A7: Historical S&P Bond Rating for Proxy Companies

Bond Rating (S&P) [1]						
Company [2]	2018	2017	2016	2015	2014	2013
LNT	A-	A-	A-	A-	A-	A-
AEE	BBB+	BBB+	BBB+	BBB+	BBB+	BBB+
BKH	BBB+	BBB	BBB	BBB	BBB	BBB
CMS	BBB+	BBB+	BBB+	BBB+	BBB+	BBB
ED	A-	A-	A-	A-	A-	A-
D	BBB+	BBB+	BBB+	A-	A-	A-
DTE	BBB+	BBB+	BBB+	BBB+	BBB+	BBB+
DUK	A-	A-	A-	A-	BBB+	BBB+
ES	A+	A+	A	A	A-	A-
EXC	BBB	BBB	BBB	BBB	BBB	BBB
FTS	A-	A-	A-	A-	A-	A-
MGEE	AA-	AA-	AA-	AA-	AA-	AA-
NWE	BBB	BBB	BBB	BBB	BBB	BBB
PEG	BBB+	BBB+	BBB+	BBB+	BBB+	BBB+
WEC	A-	A-	A-	A-	A-	A-
XEL	A-	A-	A-	A-	A-	A-
Proxy Average	A-	A-	A-	A-	BBB+	BBB+
SDG&E	A-	A	A	A	A	A
SDG&E vs Proxy	Same	Higher	Higher	Higher	Higher	Higher

[1] Source: S&P Global Ratings

[2] All of the proxy companies are determined as Vertically Integrated at the parent level

Table A8: Historical Long-Term Interest Coverage for Proxy Companies

Long-Term Interest Coverage [1]						
Company [2]	2018	2017	2016	2015	2014	2013
LNT	5.88	6.09	5.83	6.01	6.22	6.22
AEE	6.21	6.26	6.14	6.13	6.16	4.93
BKH	4.19	4.40	3.80	2.21	5.82	3.85
CMS	4.73	5.03	4.76	4.90	4.47	4.48
ED	4.93	5.58	5.54	5.48	5.62	4.56
D	4.62	5.39	5.74	5.97	3.80	5.67
DTE	5.27	5.42	5.53	5.11	6.75	5.71
DUK	4.71	5.19	4.97	5.93	5.71	5.55
ES	5.31	6.57	6.54	6.62	6.27	6.41
EXC	5.58	6.25	5.33	7.51	6.34	5.16
FTS	3.77	4.16	3.72	4.50	3.08	3.50
MGEE	9.57	9.94	9.19	8.78	9.60	9.38
NWE	4.83	4.71	4.33	4.54	4.01	4.14
PEG	7.72	9.83	8.73	11.45	10.98	9.52
WEC	5.66	6.74	6.64	6.00	6.69	6.22
XEL	5.94	6.25	6.07	5.88	6.10	5.72
Proxy Average	5.56	6.11	5.80	6.06	6.10	5.69
SDG&E	7.95	7.14	8.65	8.32	7.57	6.69
SDG&E vs Proxy	2.40	1.02	2.84	2.26	1.47	1.00
	Higher	Higher	Higher	Higher	Higher	Higher

[1] Source: S&P Global Market Intelligence (SNL)

[2] All of the proxy companies are determined as Vertically Integrated at the parent level

Table A9: Historical Value Line Beta for Proxy Companies

Value Line Beta [1]												
Company [2]	2018 Q4	2018 Q3	2018 Q2	2018 Q1	2017 Q4	2017 Q3	2017 Q2	2017 Q1	2016 Q4	2016 Q3	2016 Q2	2016 Q1
LNT	0.60	0.65	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.75	0.75	0.80
AEE	0.55	0.60	0.65	0.65	0.70	0.65	0.65	0.70	0.65	0.70	0.75	0.75
BKH	0.80	0.85	0.90	0.90	0.90	0.85	0.85	0.90	0.90	0.90	0.90	0.90
CMS	0.55	0.55	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.70	0.75
ED	0.40	0.45	0.50	0.50	0.50	0.50	0.50	0.55	0.55	0.55	0.55	0.55
D	0.60	0.60	0.65	0.65	0.65	0.65	0.65	0.70	0.65	0.70	0.70	0.70
DTE	0.55	0.60	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.70	0.70	0.75
DUK	0.50	0.55	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.65
ES	0.60	0.60	0.65	0.65	0.65	0.65	0.65	0.70	0.70	0.70	0.75	0.75
EXC	0.65	0.65	0.70	0.70	0.70	0.70	0.65	0.70	0.65	0.70	0.65	0.70
FTS	0.60	0.65	0.70	0.70	0.70	0.70	0.65	0.65	0.65	0.65	0.65	0.65
MGEE	0.60	0.65	0.70	0.70	0.75	0.75	0.75	0.70	0.70	0.70	0.70	0.70
NWE	0.60	0.65	0.65	0.70	0.70	0.65	0.65	0.70	0.70	0.70	0.70	0.70
PEG	0.60	0.65	0.70	0.70	0.70	0.70	0.70	0.65	0.70	0.70	0.75	0.75
WEC	0.50	0.55	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.65	0.65	0.70
XEL	0.55	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.65	0.65	0.65
Proxy Average	**0.58**	**0.62**	**0.66**	**0.67**	**0.67**	**0.66**	**0.66**	**0.67**	**0.67**	**0.69**	**0.70**	**0.72**
SDG&E	0.75	0.75	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.85	0.80
SDG&E v Proxy	0.17	0.13	0.14	0.13	0.13	0.14	0.14	0.13	0.13	0.11	0.15	0.08
	Higher	Higher	Higher	Higher	Higher	Higher	Higher	Higher	Higher	Higher	Higher	Higher

[1] Source: Value Line; Parent company information represented

[2] All of the proxy companies are determined as Vertically Integrated at the parent level

Table A10: Historical Value Line Safety Rating for Proxy Companies

Company [2]	Value Line Safety Rating [1]											
	2018 Q4	2018 Q3	2018 Q2	2018 Q1	2017 Q4	2017 Q3	2017 Q2	2017 Q1	2016 Q4	2016 Q3	2016 Q2	2016 Q1
LNT	2	2	2	2	2	2	2	2	2	2	2	2
AEE	2	2	2	2	2	2	2	2	2	2	2	2
BKH	2	2	2	2	2	2	2	2	2	2	2	2
CMS	2	2	2	2	2	2	2	2	2	2	2	2
ED	1	1	1	1	1	1	1	1	1	1	1	1
D	2	2	2	2	2	2	2	2	2	2	2	2
DTE	2	2	2	2	2	2	2	2	2	2	2	2
DUK	2	2	2	2	2	2	2	2	2	2	2	2
ES	1	1	1	1	1	1	1	1	1	1	1	1
EXC	3	3	3	3	3	3	3	3	3	3	3	3
FTS	2	2	2	2	2	2	2	2	2	2	2	2
MGEE	1	1	1	1	1	1	1	1	1	1	1	1
NWE	2	2	3	3	3	3	3	3	3	3	3	3
PEG	1	1	1	1	1	1	1	1	1	1	1	1
WEC	1	1	1	1	1	1	1	1	1	1	1	1
XEL	1	1	1	1	1	1	1	1	1	1	1	1
Proxy Average	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**
SDG&E	2	2	2	2	2	2	2	2	2	2	3	3
SDG&E v Proxy	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	1.3	1.3
	Higher	Higher	Higher	Higher	Higher	Higher	Higher	Higher	Higher	Higher	Higher	Higher

[1] Source: Value Line; Parent company information represented

[2] All of the proxy companies are determined as Vertically Integrated at the parent level

Table A11: Historical Value Line Financial Strength Rating for Proxy Companies

Company [2]	Value Line Financial Strength Rating [1]												
	2018 Q4	2018 Q3	2018 Q2	2018 Q1	2017 Q4	2017 Q3	2017 Q2	2017 Q1	2016 Q4	2016 Q3	2016 Q2	2016 Q1
LNT	A	A	A	A	A	A	A	A	A	A	A	A
AEE	A	A	A	A	A	A	A	A	A	A	A	A
BKH	A	A	A	A	A	A	A	A	A	A	A	A
CMS	B++	B++	B++	B++	B++	B++	B++	B++	B++	B++	B++	B++
ED	A+	A+	A+	A+	A+	A+	A+	A+	A+	A+	A+	A+
D	B++	B++	B++	B++	B++	B++	B++	B++	B++	B++	B++	B++
DTE	B++	B++	B++	B++	B++	B++	B++	B++	B++	B++	B++	B++
DUK	A	A	A	A	A	A	A	A	A	A	A	A
ES	A	A	A	A	A	A	A	A	A	A	A	A
EXC	B++	B++	B++	B++	B++	B++	B++	B++	B++	B++	B++	B++
FTS	B++	B++	B++	B++	B+	B+	B+	B+	B+	B+	B+	B+
MGEE	A	A	A	A	A	A	A	A	A	A	A	A
NWE	B++	B++	B+	B+	B+	B+	B+	B+	B+	B+	B+	B+
PEG	A++	A++	A++	A++	A++	A++	A++	A++	A++	A++	A++	A++
WEC	A+	A+	A+	A+	A+	A+	A+	A+	A+	A+	A+	A+
XEL	A+	A+	A+	A+	A+	A+	A+	A+	A+	A+	A+	A
Proxy Average	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**
SDG&E	A	A	A	A	A	A	A	A	A	A	B++	B++
SDG&E vs Proxy	Same	Same	Same	Same	Same	Same	Same	Same	Same	Same	Lower	Lower

[1] Source: Value Line; Parent company information represented

[2] All of the proxy companies are determined as Vertically Integrated at the parent level

Table A12: Value Line Non-Utility Companies (Portfolio I)

Company	Beta	Safety	Financial Strength	Yield%
Allison Transmission	1.05	3	B+	1.3
Alphabet Inc.	1.05	1	A++	Nil
Altria Group	0.70	2	B++	5.6
Amer. Express	1.10	1	A++	1.5
Amgen	1.15	1	A++	3.1
Gallagher (Arthur J.)	0.90	1	A	2.2
Gartner Inc.	0.95	3	B++	Nil
Genpact Limited	0.75	2	B++	1.0
Genuine Parts	0.95	1	A+	2.8
Home Depot	1.05	1	A++	2.9
IHS Markit	1.05	3	B++	Nil
IQVIA Holdings	0.95	3	B+	Nil
Intercontinental Exch.	0.85	2	A	1.5
Medtronic plc	0.90	1	A++	2.3
Motorola Solutions	0.95	2	B++	1.6
PepsiCo, Inc.	0.75	1	A++	3.0
Service Corp. Int'l	1.05	3	B+	1.8
Sherwin-Williams	1.05	2	A+	1.1
Union Pacific	1.15	1	A++	2.2
U.S. Bancorp	1.00	1	A	3.2

[1] Source: Value Line Investment Survey - Selection & Opinion (4/5/2019)

Table A13: Value Line Non-Utility Companies (Portfolio IV)

Company	Beta	Safety	Financial Strength	Yield%
AT&T Inc.	0.80	1	A++	6.5
Alliant Energy	0.65	2	A	3.0
Blackstone Group	1.25	3	B++	6.7
Boeing	1.15	1	A++	2.2
Brit. Am. Tobacco	0.95	2	B++	6.3
Caterpillar Inc.	1.30	2	A+	2.6
Coca-Cola	0.70	1	A++	3.6
Consol. Edison	0.45	1	A+	3.5
Eaton Corp. plc	1.20	2	A+	3.6
Intel Corp.	1.05	1	A++	2.4
Kimberly-Clark	0.75	1	A+	3.3
LyondellBasell Inds.	1.35	3	A	4.7
McDonald's Corp.	0.80	1	A++	2.5
Merck & Co.	0.95	1	A++	2.7
Paychex, Inc.	0.95	1	A	3.1
Pfizer, Inc.	0.90	1	A++	3.4
Prudential Fin'l	1.30	3	B++	4.4
Southern Co.	0.50	2	A	4.7
United Parcel Serv.	0.95	1	A	3.6
Waste Management	0.75	1	A	2.0

[1] Source: Value Line Investment Survey - Selection & Opinion (4/5/2019)

Question 3: How does the utility's level of regulatory risk compare to other utilities nationally and to other California utilities, and to non-utility benchmarks? Include separate comparisons for vertically integrated and non-vertically integrated utilities. How has this level changed since the test year 2013 Cost of Capital application?

Response: On a national level, there is not much quantitative analysis readily available or compiled by any source. There are sources that generally rank jurisdictions based on supportive regulatory environment. Based on Regulatory Research Associates ("RRA") assessment, California's regulatory climate for energy utilities was downgraded to "Average 1" from "Above Average 3" in January 2019 in light of the bankruptcy filing by PG&E, citing that "the lack of regulatory or legislative protections against subsequent wildfire liabilities caused by the application of inverse condemnation to investor-owned utilities."[2]

[2] RRA Regulatory Focus, State Regulatory Evaluations – February 8, 2019.

RRA state regulatory evaluations
Energy

Above Average 1	Average 1	Below Average 1
Alabama	Arkansas	Alaska
	California	Connecticut
	Indiana	Kansas
	Iowa	Montana
	Kentucky	New Jersey
	Mississippi	
	Nebraska	
	New York	
	North Carolina	
	North Dakota	
	Utah	

Above Average 2	Average 2	Below Average 2
Georgia	Colorado	New Mexico
Florida	Hawaii	West Virginia
Pennsylvania	Idaho	
Virginia	Illinois	
Wisconsin	Louisiana—NOCC	
	Louisiana—PSC	
	Maine	
	Massachusetts	
	Minnesota	
	Nevada	
	Ohio	
	Oregon	
	Texas—RRC	
	Rhode Island	
	South Dakota	

Above Average 3	Average 3	Below Average 3
Michigan	Arizona	District of Columbia
Tennessee	Delaware	Maryland
	Missouri	
	New Hampshire	
	Oklahoma	
	South Carolina	
	Texas—PUC	
	Vermont	
	Washington	
	Wyoming	

Question 7: What, if any, regulatory, tax, policy, legal, technological, or accounting changes since the Test Year 2013 Cost of Capital applications have occurred that impact the level of risk facing the utility? Provide a qualitative discussion of the impacts of these changes, as support that discussion with quantitative analysis and data to the extent practicable. Please include changes in any relevant jurisdiction.

Response: Please see responses to Questions 1 through 3 above and Exhibit SDG&E-02 (Mekitarian), § III.B2.