

BEFORE THE
WASHINGTON UTILITIES & TRANSPORTATION COMMISSION

UG-__
GENERAL RATE APPLICATION
OF
NORTHWEST NATURAL GAS COMPANY

December 31, 2018

Direct Exhibit of Dr. Bente Villadsen

RATE OF RETURN ON EQUITY

REDACTED VERSION

Exh. BV-4C

Exhibit BV-4: Cost of Capital Estimate Tables and Workpapers

Table No. BV-1

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Table No. BV-2
Classification of Companies by Assets

Company	Regulated Assets
Atmos Energy	R
Chesapeake Utilities	R
Northwest Nat. Gas	R
ONE Gas Inc.	R
Southwest Gas	R
NiSource	R
Spire Inc.	R
South Jersey Industries	M
New Jersey Resources	M

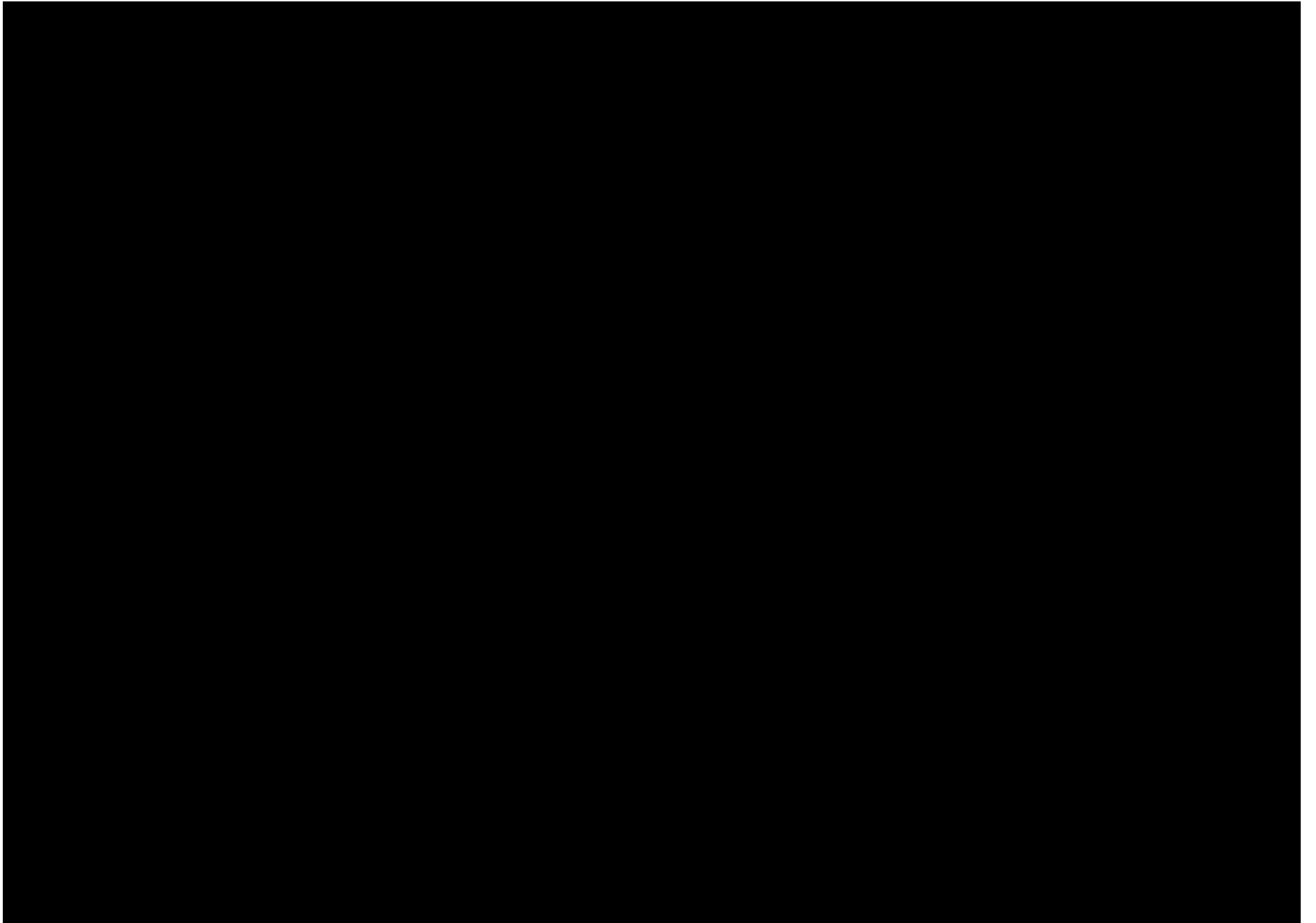
Sources and Notes:

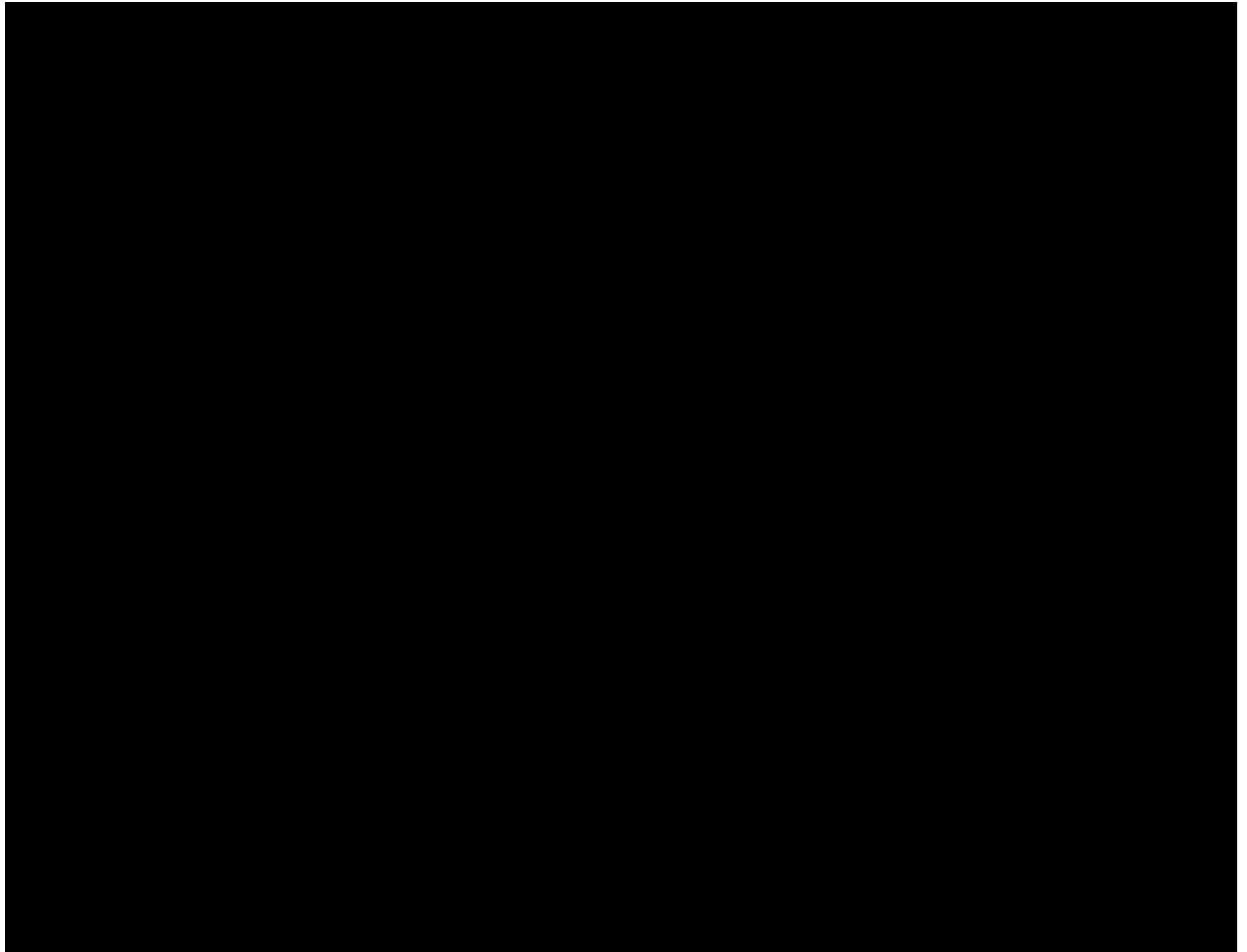
Calculations based on EEI definitions and Company 10K filings:

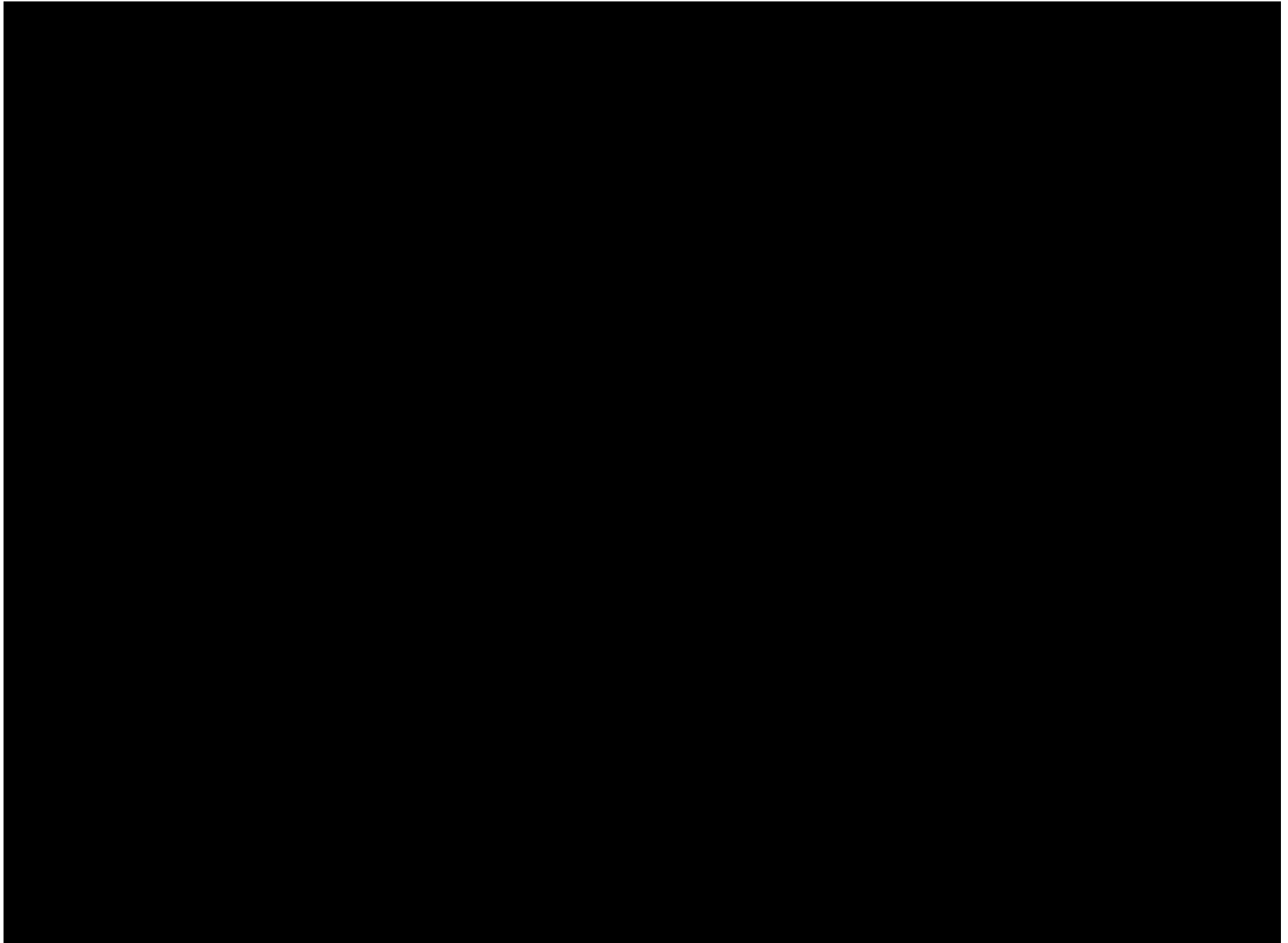
R = Regulated (greater than 80 percent of total assets are regulated).

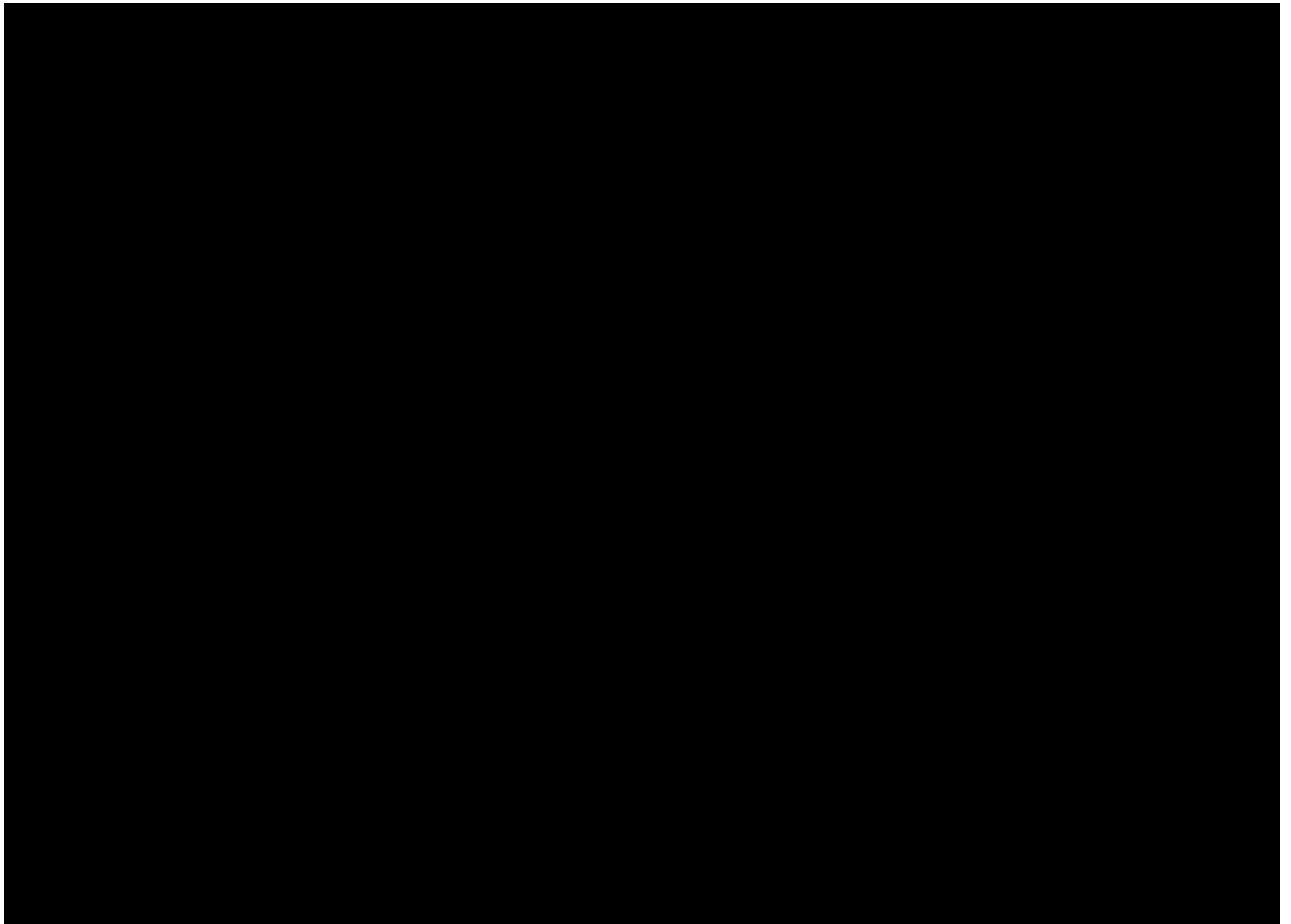
M = Mostly Regulated (50 to 80 percent of total assets are regulated).

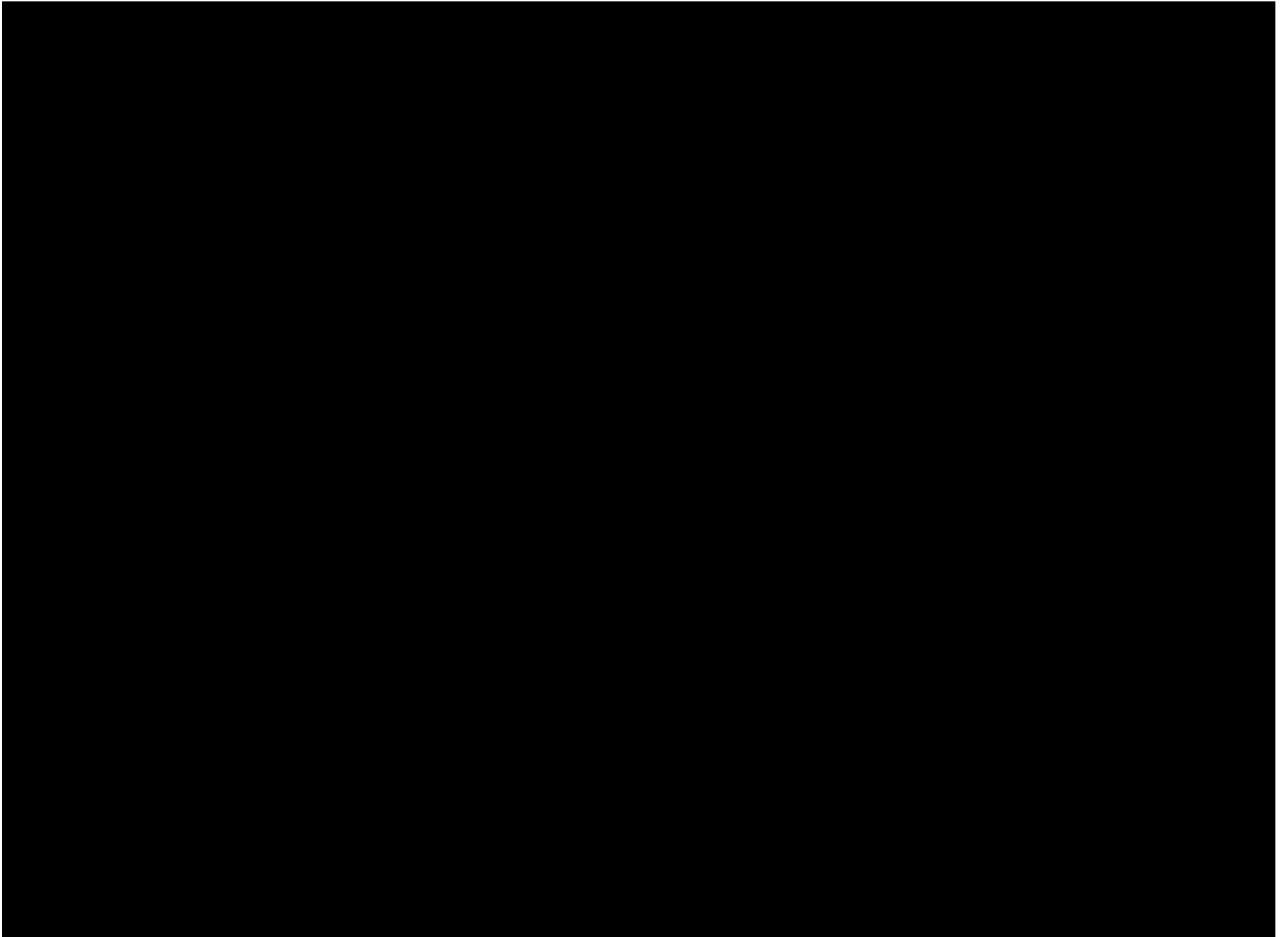
D = Diversified (less than 50 percent of total assets are regulated).

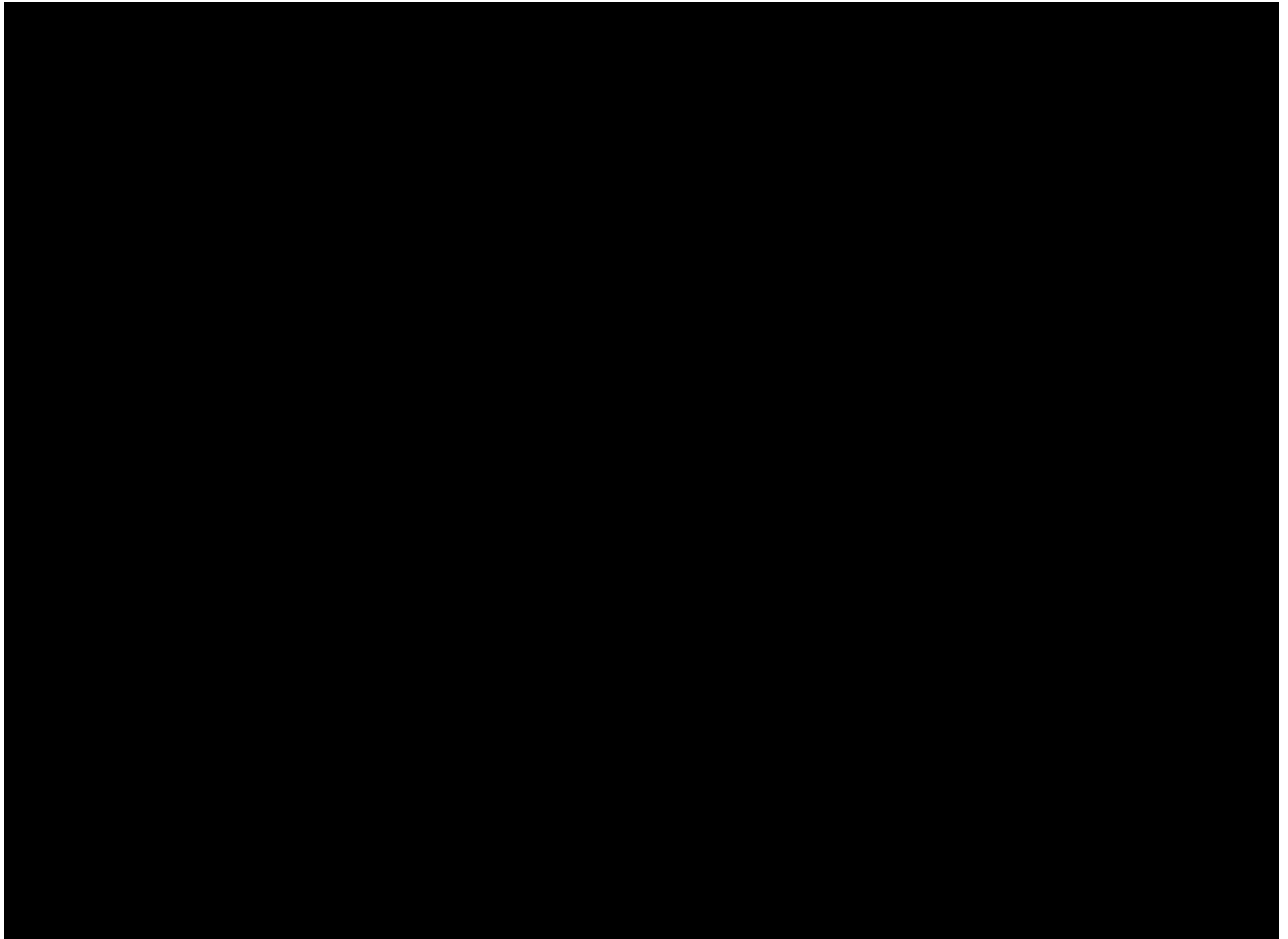


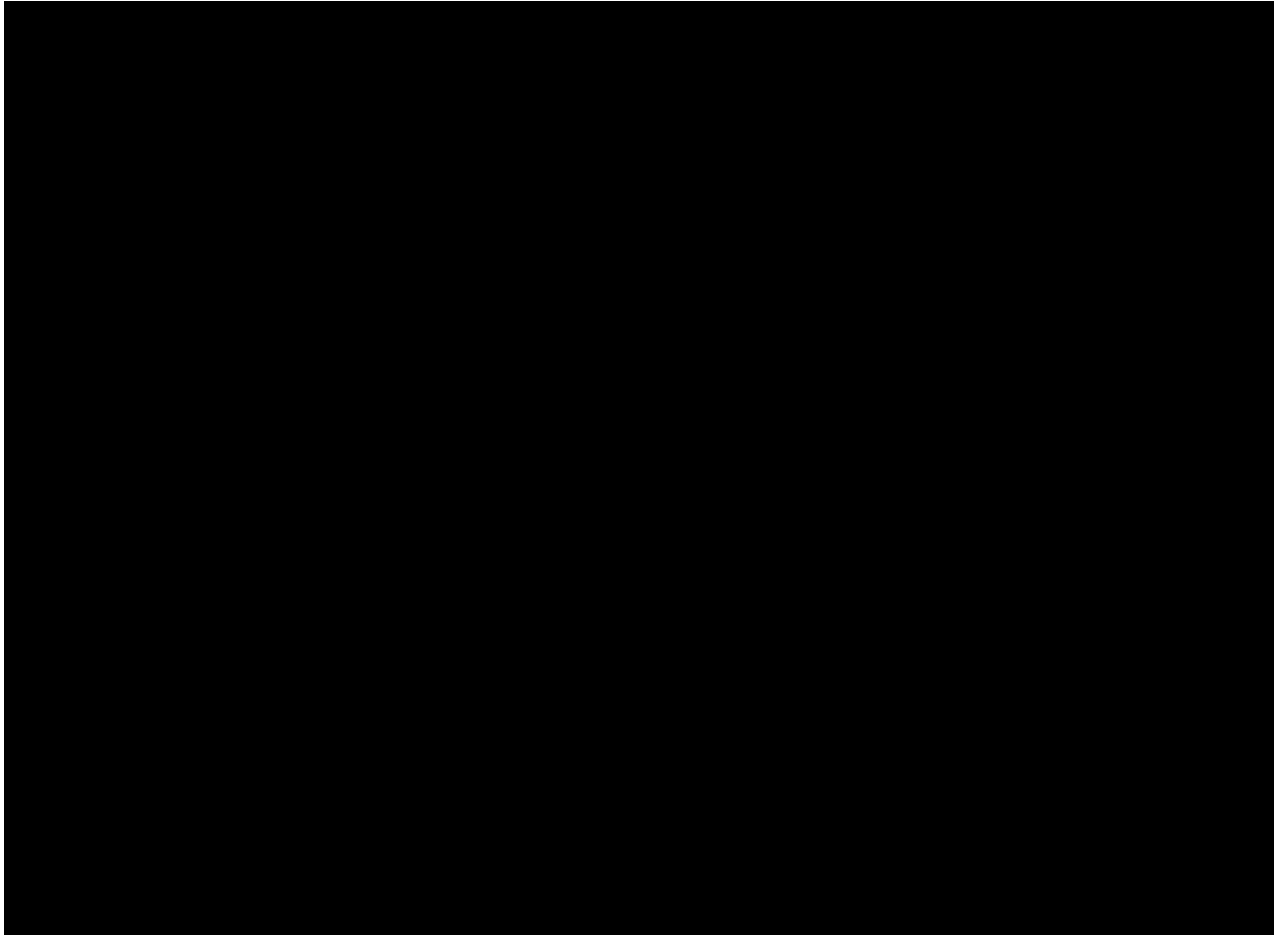


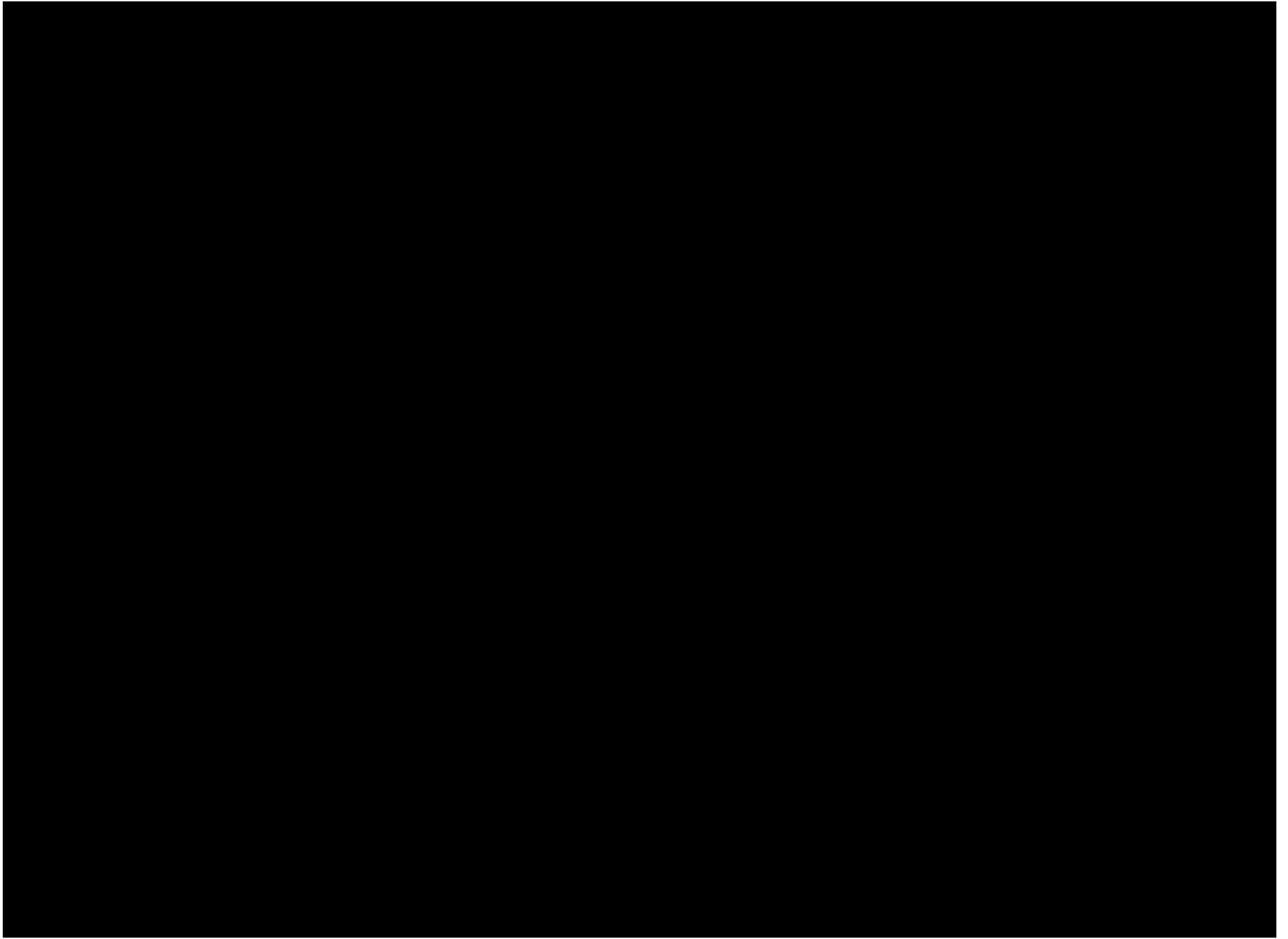












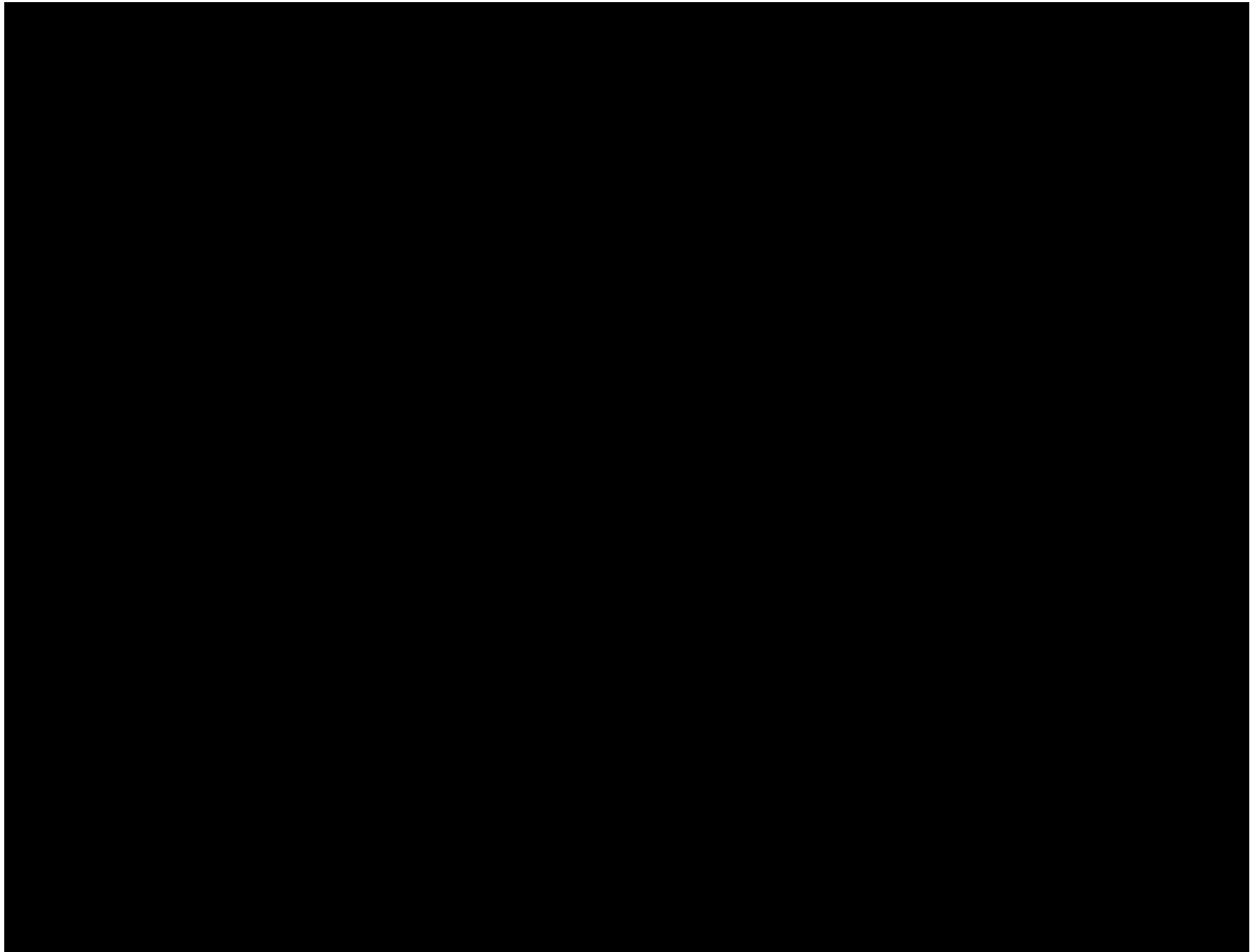


Table No. BV-4
Capital Structure Summary

Company	DCF Capital Structure			5-Year Average Capital Structure		
	Common Equity - Value Ratio	Preferred Equity - Value Ratio	Debt - Value Ratio	Common Equity - Value Ratio	Preferred Equity - Value Ratio	Debt - Value Ratio
	[1]	[2]	[3]	[4]	[5]	[6]
Atmos Energy	74.3%	0.0%	25.7%	65.7%	0.0%	34.3%
Chesapeake Utilities	74.1%	0.0%	25.9%	73.0%	0.0%	27.0%
Northwest Nat. Gas	69.1%	0.0%	30.9%	63.3%	0.0%	36.7%
ONE Gas Inc.	75.4%	0.0%	24.6%	69.9%	0.0%	30.1%
Southwest Gas	64.3%	0.0%	35.7%	63.0%	0.0%	37.0%
NiSource	49.8%	2.1%	48.2%	42.3%	0.2%	57.5%
Spire Inc.	61.5%	0.0%	38.5%	54.8%	0.0%	45.2%
South Jersey Industries	51.7%	0.0%	48.3%	60.8%	0.0%	39.2%
New Jersey Resources	76.3%	0.0%	23.7%	74.1%	0.0%	25.9%
Average	66.3%	0.2%	33.5%	63.0%	0.0%	37.0%

Sources and Notes:

[1], [4]: Supporting Schedule #1 to Table No. BV-4.

[2], [5]: Supporting Schedule #2 to Table No. BV-4.

[3], [6]: Supporting Schedule #3 to Table No. BV-4.

Values in this table may not add up exactly to 100% because of rounding.

Supporting Schedule #1 to Table No. BV-4

Calculation of the Average Common Equity - Market Value Ratio

Company	DCF Capital Structure [1]	3rd Quarter, 2018 [2]	3rd Quarter, 2017 [3]	3rd Quarter, 2016 [4]	3rd Quarter, 2015 [5]	3rd Quarter, 2014 [6]	3rd Quarter, 2013 [7]	5-Year Average [8]
Atmos Energy	74.3%	74.3%	69.9%	69.2%	64.5%	60.7%	53.9%	65.7%
Chesapeake Utilities	74.1%	74.1%	76.1%	76.1%	70.8%	70.5%	69.0%	73.0%
Northwest Nat. Gas	69.1%	69.1%	68.9%	68.0%	59.7%	58.9%	53.4%	63.3%
ONE Gas Inc.	75.4%	75.4%	76.6%	73.2%	63.6%	57.1%	n/a	69.9%
Southwest Gas	64.3%	64.3%	65.6%	65.9%	60.7%	60.7%	60.1%	63.0%
NiSource	49.8%	49.8%	48.8%	48.9%	42.0%	32.9%	28.4%	42.3%
Spire Inc.	61.5%	61.5%	58.8%	54.0%	50.9%	49.9%	59.1%	54.8%
South Jersey Industries	51.7%	51.7%	64.9%	64.3%	55.2%	61.2%	65.4%	60.8%
New Jersey Resources	76.3%	76.3%	74.7%	72.1%	73.6%	74.9%	74.2%	74.1%

Sources and Notes:

[1] - [7]: Table No. BV-3; Panels A - I, [v].

[8]: Average of [2] - [7] with 1/2 weighting to 3Q2018 and 3Q2013 for the purposes of calculating average capital structure during the period.

[1]: Reflects the current capital structure.

ONE Gas Inc. average reflects available data.

Supporting Schedule #2 to Table No. BV-4

Calculation of the Average Preferred Equity - Market Value Ratio

Company	DCF Capital Structure [1]	3rd Quarter, 2018 [2]	3rd Quarter, 2017 [3]	3rd Quarter, 2016 [4]	3rd Quarter, 2015 [5]	3rd Quarter, 2014 [6]	3rd Quarter, 2013 [7]	5-Year Average [8]
Atmos Energy	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Chesapeake Utilities	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Northwest Nat. Gas	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
ONE Gas Inc.	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	n/a	0.0%
Southwest Gas	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
NiSource	2.1%	2.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%
Spire Inc.	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
South Jersey Industries	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
New Jersey Resources	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Sources and Notes:

[1] - [7]: Table No. BV-3; Panels A - I, [w].

[8]: Average of [2] - [7] with 1/2 weighting to 3Q2018 and 3Q2013 for the purposes of calculating average capital structure during the period.

[1]: Reflects the current capital structure.

ONE Gas Inc. average reflects available data.

Supporting Schedule #3 to Table No. BV-4

Calculation of the Average Debt - Market Value Ratio

Company	DCF Capital Structure [1]	3rd Quarter, 2018 [2]	3rd Quarter, 2017 [3]	3rd Quarter, 2016 [4]	3rd Quarter, 2015 [5]	3rd Quarter, 2014 [6]	3rd Quarter, 2013 [7]	5-Year Average [8]
Atmos Energy	25.7%	25.7%	30.1%	30.8%	35.5%	39.3%	46.1%	34.3%
Chesapeake Utilities	25.9%	25.9%	23.9%	23.9%	29.2%	29.5%	31.0%	27.0%
Northwest Nat. Gas	30.9%	30.9%	31.1%	32.0%	40.3%	41.1%	46.6%	36.7%
ONE Gas Inc.	24.6%	24.6%	23.4%	26.8%	36.4%	42.9%	n/a	30.1%
Southwest Gas	35.7%	35.7%	34.4%	34.1%	39.3%	39.3%	39.9%	37.0%
NiSource	48.2%	48.2%	51.2%	51.1%	58.0%	67.1%	71.6%	57.5%
Spire Inc.	38.5%	38.5%	41.2%	46.0%	49.1%	50.1%	40.9%	45.2%
South Jersey Industries	48.3%	48.3%	35.1%	35.7%	44.8%	38.8%	34.6%	39.2%
New Jersey Resources	23.7%	23.7%	25.3%	27.9%	26.4%	25.1%	25.8%	25.9%

Sources and Notes:

[1] - [7]: Table No. BV-3; Panels A - I, [x].

[8]: Average of [2] - [7] with 1/2 weighting to 3Q2018 and 3Q2013 for the purposes of calculating average capital structure during the period.

[1]: Reflects the current capital structure.

ONE Gas Inc. average reflects available data.

