

APPENDIX M. INCREASED ELECTRIC LOAD OR INDUSTRIAL DEMAND SENSITIVITIES – S18 AND S19

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1 S18: HIGH ELECTRIC LOAD GROWTH

1.1 RGDS S18 WINTER 2018

Figure M1 summarizes the affected generation during the Winter 2018 peak hour by PPA.

Figure M1. RGDS S18 Winter 2018: Peak Hour Affected Generation

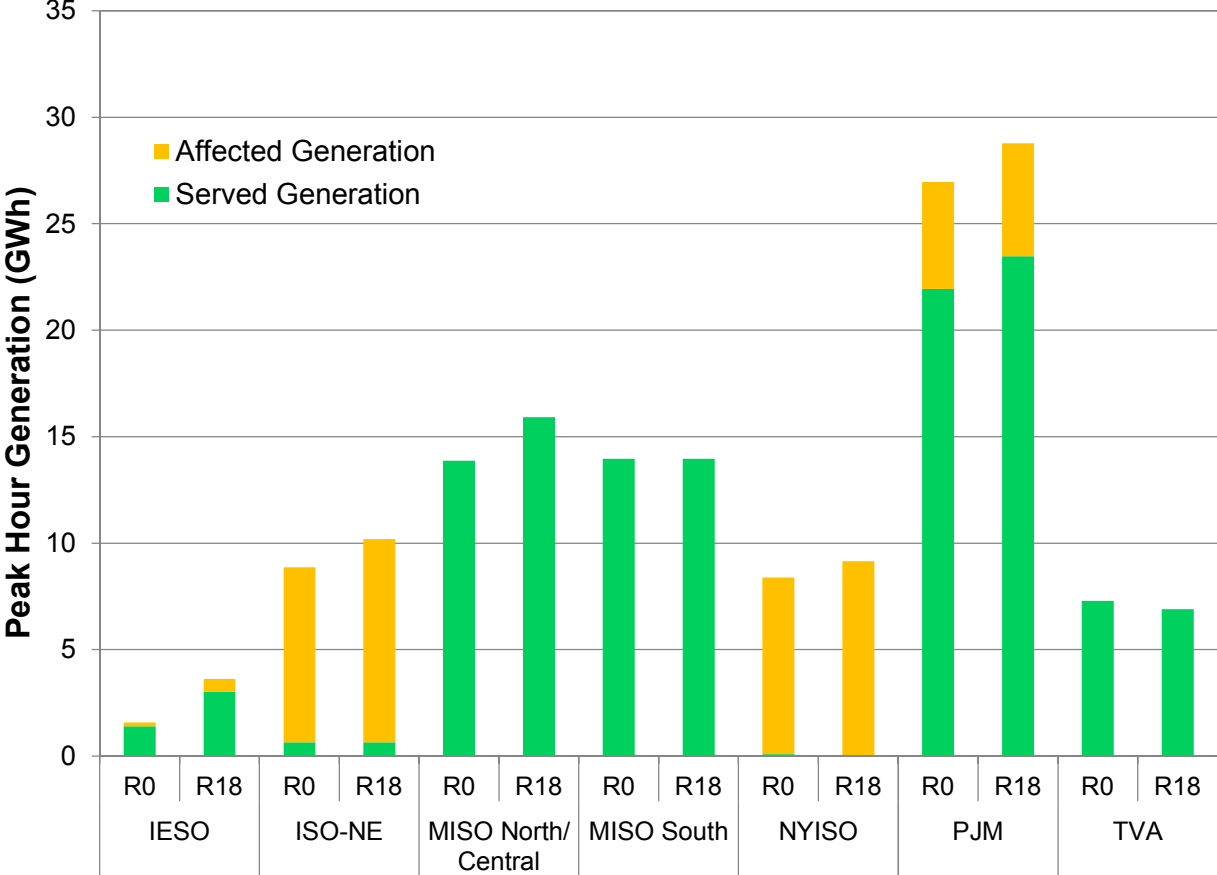


Figure M2 summarizes the unserved demand by GPCM location. The unserved demand and affected generation by location are quantified in Table M1.

Figure M2. RGDS S18 Winter 2018: Locations with Peak Hour Affected Generation

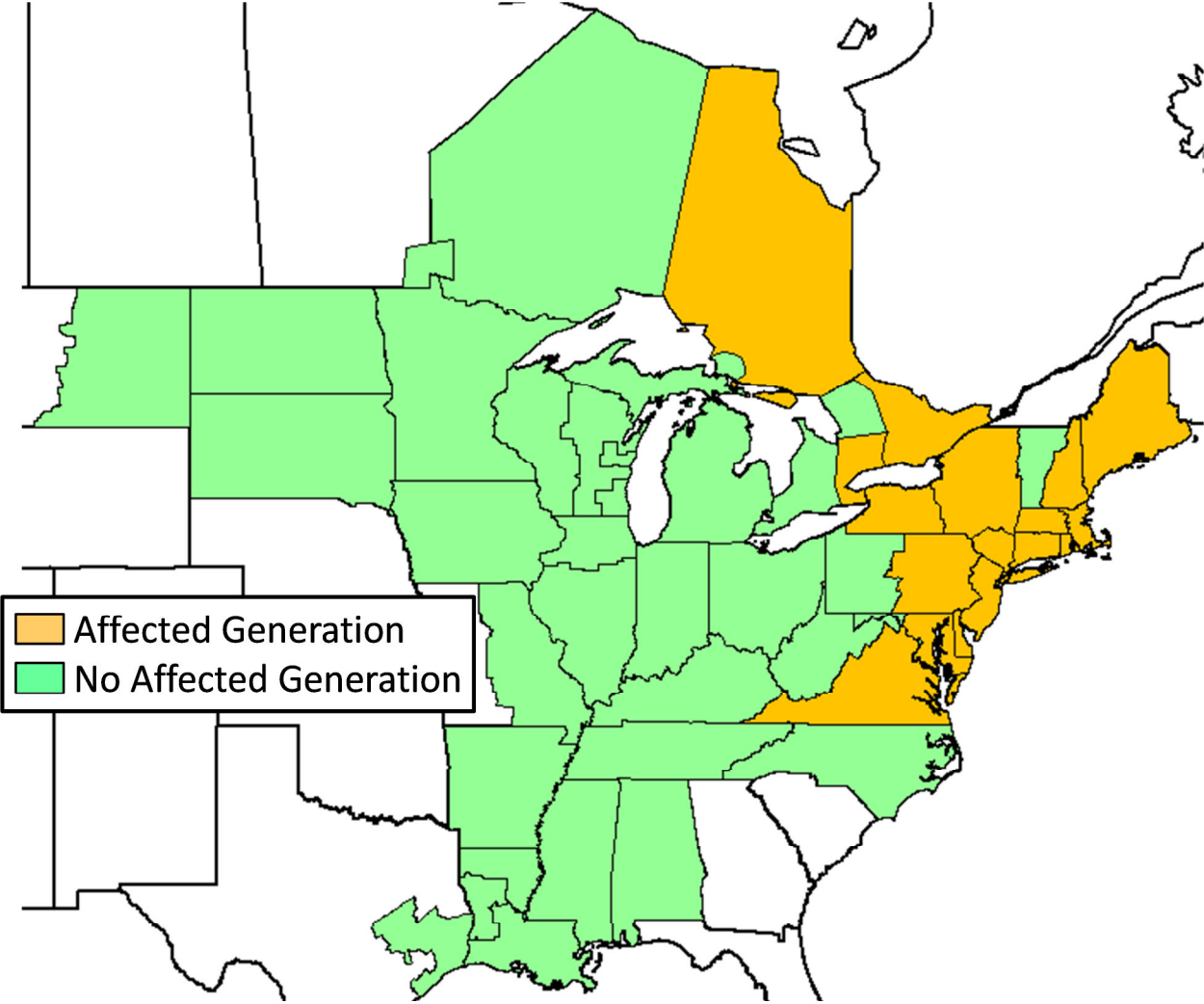


Table M1. RGDS S18 Winter 2018: Unserved Peak Hour Generation Demand and Affected Generation

Location	Unserved Generation Gas Demand (MDth)	Affected Generation (MWh)
Connecticut	20.5	2,696
Delaware	1.8	220
Maine	9.5	1,292
Maryland Eastern	5.0	539
Massachusetts Eastern	16.6	2,299
Massachusetts Western	7.8	1,059
New Hampshire	9.4	1,245
New Jersey	15.0	1,858
New York Central Northern	26.3	3,710
New York City	18.3	2,399
New York Long Island	9.6	1,073
New York Southern	10.9	1,312
New York Western	1.6	179
Ontario (CDA)	0.5	56
Ontario (EDA)	4.1	424
Ontario (NDA)	0.8	114
Pennsylvania Eastern	2.5	360
Rhode Island	7.1	936
Virginia	21.0	2,755

Figure M3 shows the constrained pipeline segments, in red, that result in the affected generation shown in Figure M1 during the Winter 2018 peak hour.

Figure M3. RGDS S18 Winter 2018: Peak Hour Constraints

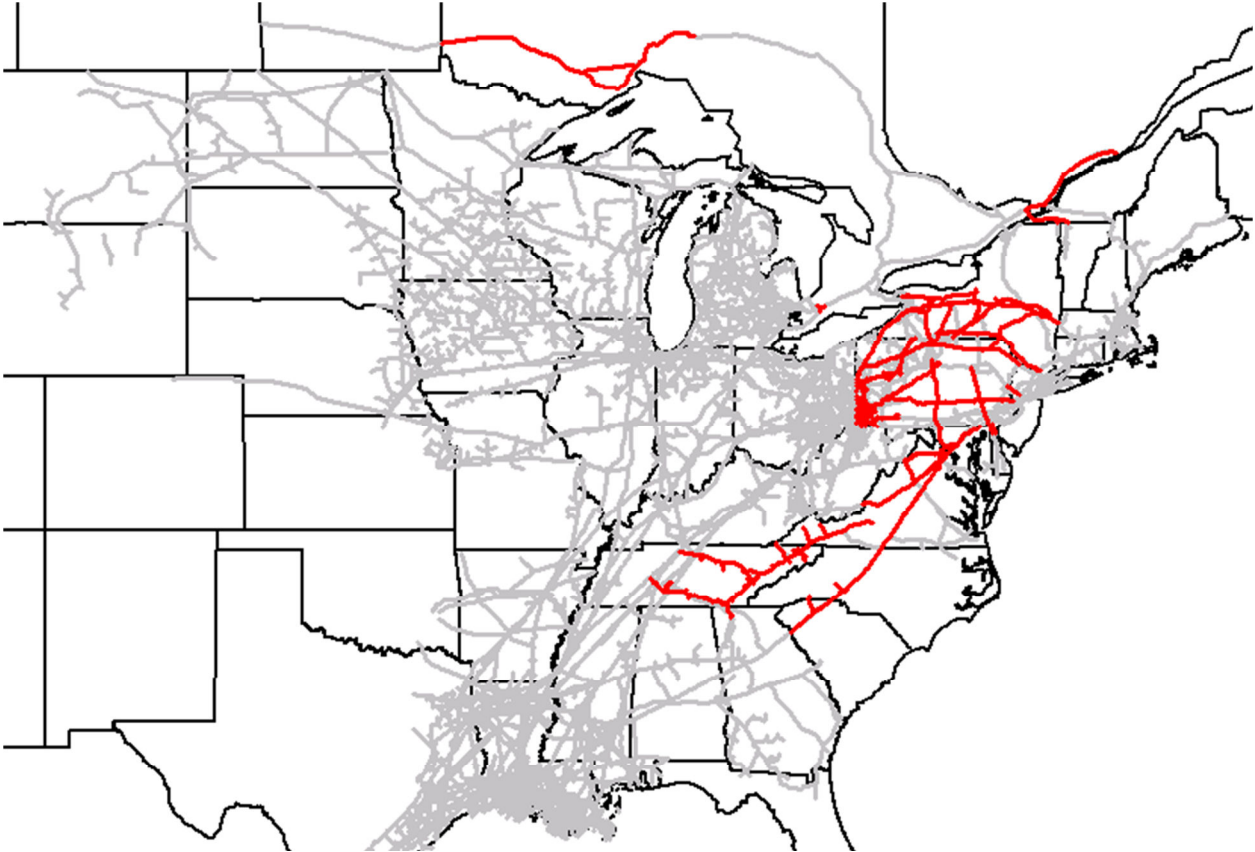


Table M2 summarizes the results of the frequency and duration analysis.

Table M2. RGDS S18 Winter 2018: Frequency and Duration of Constraints

Constraint	# of Events	Min. Duration (Days)	Max. Duration (Days)	Total # of Days
Columbia Gas VA/MD	13	1	5	22
Columbia Gas W PA/NY	9	1	3	15
Constitution	2	31	59	90
Dominion Eastern NY	5	1	9	16
Dominion Western NY	1	4	4	4
Dominion Southeast	2	1	2	3
East Tennessee Mainline	8	1	2	9
Eastern Shore	14	1	9	57
Empire Mainline	4	1	12	22
Millennium	7	1	38	69
NB/NS Supply	14	1	20	58
Tennessee Z4 PA	10	1	13	39
Tennessee Z5 NY	2	31	59	90
Texas Eastern M2 PA South	10	1	15	52
Texas Eastern M3 North	11	1	11	44
TransCanada Ontario West	6	1	11	26
TransCanada Quebec	7	1	20	31
Transco Leidy Atlantic	7	2	23	60
Transco Z5	4	1	3	7
Transco Z6 Leidy to 210	5	1	3	8
Union Gas Dawn	2	1	3	4

1.1.1 Columbia Gas Virginia / Maryland

The 100% peak hour utilization on Columbia Gas's Virginia/Maryland segment, which is modeled with a capacity of 2,477 MDth/d, potentially affects generators directly connected to Columbia in Maryland and Virginia; generators behind LDCs served by Columbia Gas in Maryland and Virginia; and generators served by Dominion Cove Point and PPL Interstate downstream of interconnections with Columbia Gas. The locations of these generators are shown in Figure 80 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N1 and Figure N2 relative to the capacity of the segment.

1.1.2 Columbia Gas Western Pennsylvania / New York

The 100% peak hour utilization on Columbia Gas's Western Pennsylvania / New York segment, which is modeled with a capacity of 1,131 MDth/d, potentially affects generators directly connected to Columbia in Pennsylvania, New Jersey, Virginia and Maryland, and generators behind LDCs served by Columbia Gas in Pennsylvania, New Jersey, Delaware, Maryland and Virginia. The locations of these generators are shown in Figure 81 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N3 and Figure N4 relative to the capacity of the segment

1.1.3 Constitution Pipeline

Constitution's proposed delivery capacity is 650 MDth/d. The 100% peak hour utilization on Constitution potentially affects generators served by Iroquois both directly and behind LDCs in New York and Connecticut. The locations of these generators are shown in Figure 82 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N5 and Figure N6 relative to the capacity of the segment.

1.1.4 Dominion Eastern New York

Dominion's Eastern New York segment is modeled with a capacity of 907 MDth/d. The 100% peak hour utilization on Dominion's Eastern New York segment potentially affects generators directly connected to Dominion and behind LDCs served by Dominion. The locations of these generators are shown in Figure 83 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N7 and Figure N8 relative to the capacity of the segment.

1.1.5 Dominion Western New York

Dominion Western New York is modeled with a capacity of 557 MDth/d. The 100% utilization on Dominion's Western New York segment potentially affects generators directly served by Dominion and behind LDCs served by Dominion. The locations of the plants in each category are shown in Figure 84 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N9 and Figure N10 relative to the capacity of the segment.

1.1.6 Dominion Southeast

Dominion Southeast is modeled with a capacity of 540 MDth/d. The 100% peak hour utilization on Dominion's Southeast segment serving Virginia and Maryland potentially affects generators directly served by Dominion, generators behind LDCs served by Dominion, and generators served by Dominion Cove Point via interconnect. The locations of these generators are shown in Figure 85 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N11 and Figure N12 relative to the capacity of the segment.

1.1.7 East Tennessee Mainline

The East Tennessee mainline is modeled with a capacity of 800 MDth/d. The 100% peak hour utilization on East Tennessee's mainline potentially affects generators directly connected to East

Tennessee and generators behind LDCs served by East Tennessee. The locations of these generators are shown in Figure 86 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N13 and Figure N14 relative to the capacity of the segment.

1.1.8 Eastern Shore

Eastern Shore is modeled with a capacity of 203 MDth/d. The 100% peak hour utilization rate on Eastern Shore's Receipt Zone 1 and Delivery Zone 2 potentially affects generators on the Delmarva Peninsula that are served by Eastern Shore. The locations of these generators are shown in Figure 87 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segments are shown in Figure N15 and Figure N16 relative to the capacity of the segments.

1.1.9 Empire Mainline

The Empire mainline is modeled with a capacity of 525 MDth/d. The 100% peak hour utilization on the Empire mainline across upstate New York potentially affects generators on the Niagara Mohawk LDC system. The locations of these generators are shown in Figure 88 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N17 and Figure N18 relative to the capacity of the segment.

1.1.10 Millennium

Millennium is modeled with a capacity of 784 MDth/d. The 100% peak hour utilization on Millennium's mainline potentially affects generators directly connected to Millennium, generators behind LDCs served by Millennium, and generators served by Algonquin, particularly in southern New England. The locations of these generators are shown in Figure 89 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N19 and Figure N20 relative to the capacity of the segment.

1.1.11 New Brunswick Supply / Nova Scotia Offshore Supply

Production from Atlantic Canada is capped at approximately 24 MDth/d in New Brunswick and approximately 599 MDth/d for Nova Scotia Offshore. This supply limitation potentially affects generators directly connected to M&N in Maine and New Hampshire as well as generators located behind LDCs served by M&N in Maine. The locations of these generators are shown in Figure 90 of the report. Generators located in the Canadian Maritimes could also be affected by this supply constraint, but have not been included in the summary results shown below.

The seasonal daily forecasts of RCI and generator gas demand downstream of the supply limitation are shown in Figure N21 and Figure N22 relative to the total production capacity. The generator gas demand in these figures only reflects generators located in the Study Region.

1.1.12 Tennessee Zone 4 Pennsylvania

Tennessee Zone 4 Pennsylvania is modeled with a capacity of 1,887 MDth/d. The 100% peak hour utilization on Tennessee's Zone 4 segment in Pennsylvania potentially affects generators directly connected to Tennessee in Pennsylvania and New Jersey; generators behind LDCs served by Tennessee in Pennsylvania, New Jersey, downstate New York and Connecticut; and generators served by Algonquin either directly or via LDC in New England. The locations of these generators are shown in Figure 91 of the report.

The peak hour demand forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N23 and Figure N24 relative to the capacity of the segment.

1.1.13 Tennessee Zone 5 New York

Tennessee Zone 5 New York is modeled with a capacity of 1,189 MDth/d. The 100% peak hour utilization on Tennessee's Z5 New York segment potentially affects generators directly connected to Tennessee in upstate New York, Massachusetts, Rhode Island and New Hampshire; generators behind LDCs served by Tennessee in upstate New York, Massachusetts, Connecticut and Rhode Island; and generators served by Iroquois, Granite State and PNGTS either directly or behind an LDC. The locations of these generators are shown in Figure 92 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N25 and Figure N26 relative to the capacity of the segment.

1.1.14 Texas Eastern M2 PA – Southern Branch

The Texas Eastern M2 PA – Southern Branch is modeled with a capacity of 2,068 MDth/d. The 100% peak hour utilization on the southern branch of Texas Eastern's Zone M2 segment through Pennsylvania potentially affects generators directly connected to Texas Eastern in Pennsylvania, generators behind LDCs in Pennsylvania, Delaware and downstate New York. Generators that are served by Algonquin and Eastern Shore either directly or behind an LDC would also potentially be affected. The locations of these generators are shown in Figure 93 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N27 and Figure N28 relative to the capacity of the segment.

1.1.15 Texas Eastern M3 – Northern Line

The Texas Eastern M3 Northern Line is modeled with a capacity of 2,987 MDth/d. The 100% peak hour utilization on the Northern line through Pennsylvania potentially affects generators directly connected to Texas Eastern in New Jersey and Pennsylvania, generators behind LDCs served by Texas Eastern in New Jersey, Pennsylvania and downstate New York, as well as generators served by Algonquin both directly and behind LDCs. The locations of these generators are shown in Figure 94 of the report.

The seasonal daily forecasts of RCI and generator peak hour gas demand downstream of the constrained segment are shown in Figure N29 and Figure N30 relative to the capacity of the segment.

1.1.16 TransCanada Ontario West

TransCanada's Western Ontario segment is modeled with a capacity of 3,148 MDth/d. The 100% peak hour utilization on TransCanada's Western Ontario segment potentially affects generators directly connected to TransCanada and generators behind the Enbridge and Union local distribution systems. The locations of these generators are shown in Figure 95 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N31 and Figure N32 relative to the capacity of the segment.

1.1.17 TransCanada Quebec

TransCanada Quebec is modeled with a capacity of 1,320 MDth/d. The 100% peak hour utilization on TransCanada's Quebec segment potentially affects generators served by PNGTS, North Country and Vermont Gas. The locations of these generators are shown in Figure 96 of the report. Limitations for customers in Quebec could arise from this constraint, but such limitations have not been included in the results reported below.

The seasonal daily forecasts of RCI and generator peak hour demand downstream of the constrained segment are shown in Figure N33 and Figure N34 relative to the capacity of the segment. The generator gas demand in these figures includes only gas demand at generators in the Study Region. Gas demand from non-Study Region generators is not included in the tabulation of results.

1.1.18 Transco Leidy Atlantic

The Transco Leidy Atlantic segment is modeled with a capacity of 1,700 MDth/d. The 100% peak hour utilization on Transco's Leidy Atlantic segment potentially affects generators directly connected to Transco in New Jersey, Maryland, Pennsylvania and Virginia and generators behind LDCs served by Transco in Delaware, New Jersey, Pennsylvania, Maryland, Virginia and North Carolina. The locations of these generators are shown in Figure 97 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N35 and Figure N36 relative to the capacity of the segment.

1.1.19 Transco Zone 5

Transco Zone 5 is modeled with a capacity of 3,967 MDth/d. The 100% peak hour utilization on Transco's Zone 5 segment potentially affects Study Region generators directly connected to Transco in Virginia and generators behind LDCs served by Transco in North Carolina and Virginia. The locations of these generators are shown in Figure 98 of the report. Non-Study Region generators in North Carolina and South Carolina could also be affected, but are not included in the results shown below.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N37 and Figure N38 relative to the capacity of the segment.

1.1.20 Transco Zone 6 Leidy Line to Station 210

The Transco Zone 6 Leidy to Station 210 segment is modeled with a capacity of 3,310 MDth/d. The 100% peak hour utilization on this segment potentially affects generators directly connected to Transco in New Jersey and Pennsylvania and generators behind LDCs served by Transco in New Jersey, Pennsylvania, New York City and Long Island. The locations of generators served along this Transco segment are shown in Figure 99 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N39 and Figure N40 relative to the capacity of the segment.

1.1.21 Union Gas Dawn

The 100% peak hour utilization on Union Gas's Dawn segment, which is modeled with a capacity of 5,000 MDth/d, potentially affects generators directly connected to Union, generators directly connected to TransCanada, and generators served by the Union Gas and Enbridge distribution systems. The locations of these generators are shown in Figure 100 of the report.

The seasonal daily forecasts of RCI and generator peak hour gas demand downstream of the constrained segment are shown in Figure N41 and Figure N42 relative to the capacity of the segment.

1.2 RGDS S18 SUMMER 2018

Figure M4 summarizes the affected generation during the Summer 2018 peak hour by PPA.

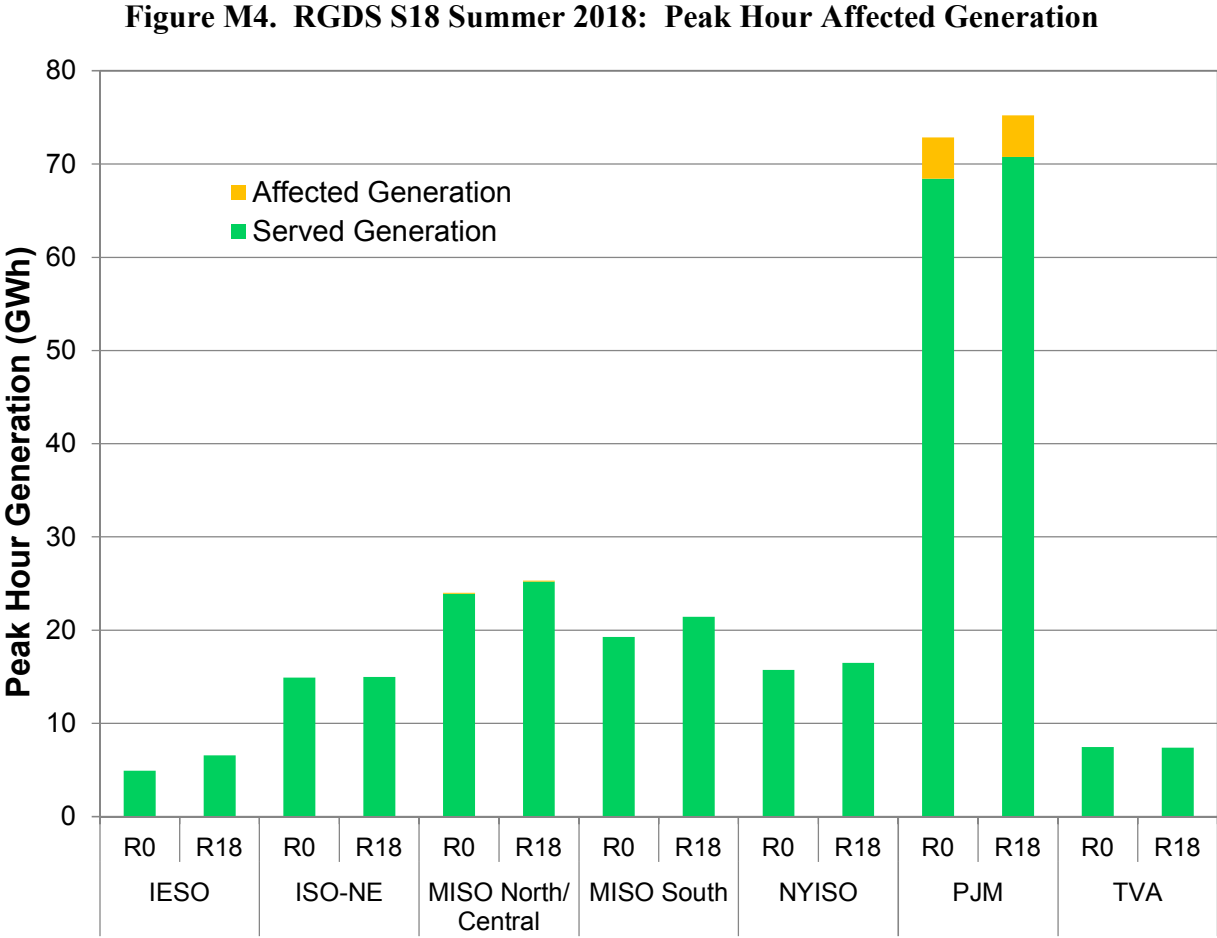


Figure M5 summarizes the unserved demand by GPCM location. The unserved demand and affected generation by location are quantified in Table M3.

Figure M5. RGDS S18 Summer 2018: Locations with Peak Hour Affected Generation

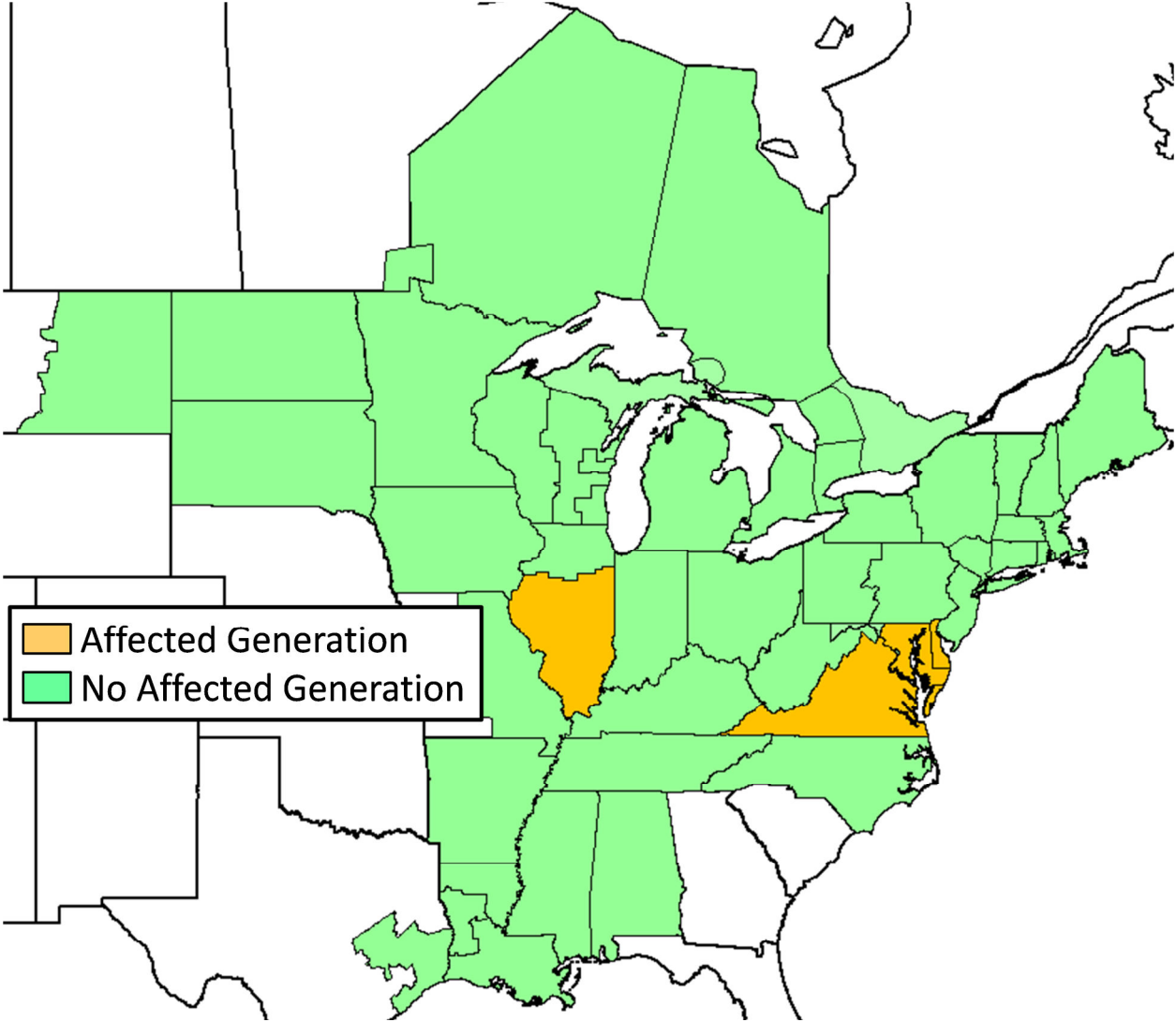


Table M3. RGDS S18 Summer 2018 Unserved Peak Hour Generation Demand and Affected Generation

Location	Unserved Generation Gas Demand (MDth)	Affected Generation (MWh)
Delaware	8.3	1,149
Illinois Southern	1.0	110
Maryland Eastern	16.7	2,361
Virginia	8.4	936

Figure M6 shows the constrained pipeline segments, in red, that result in the affected generation shown in Figure M4 during the Summer 2018 peak hour.

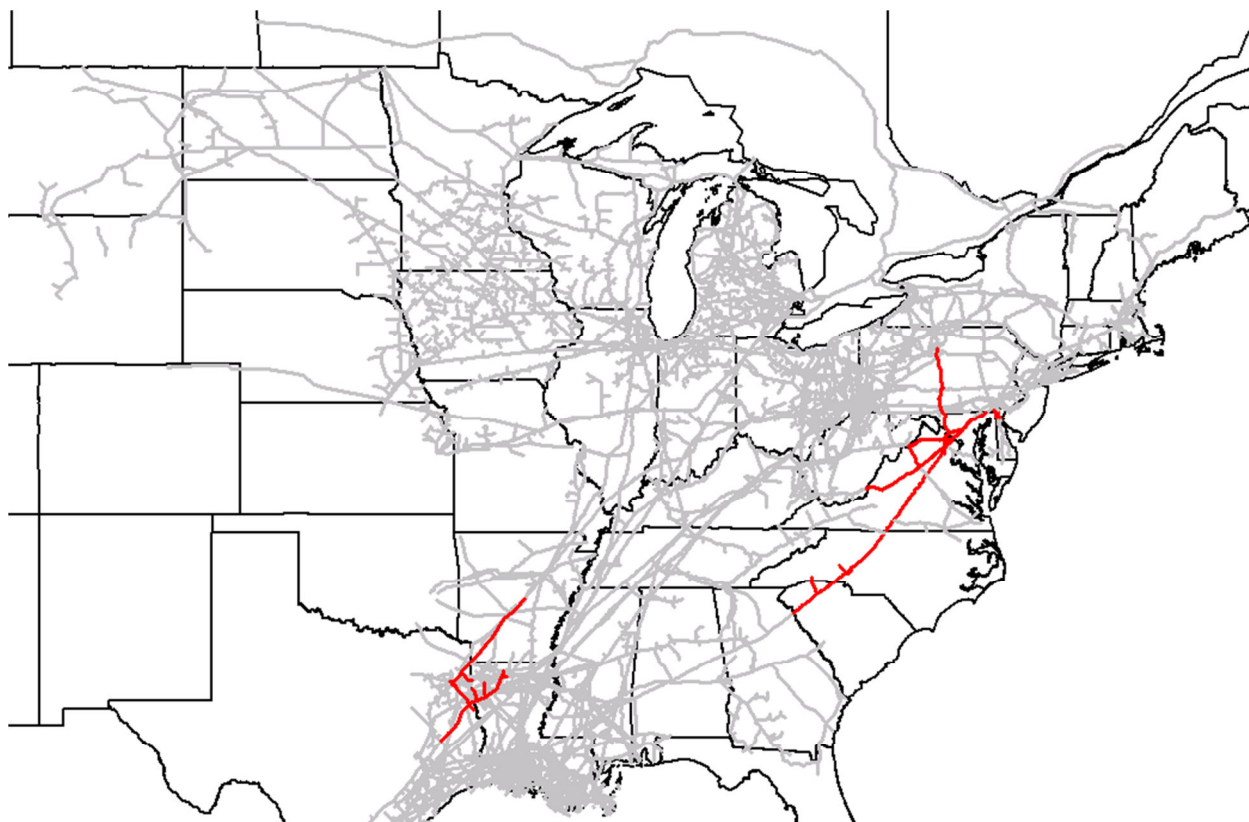
Figure M6. RGDS S18 Summer 2018: Peak Hour Constraints

Table M4 summarizes the results of the frequency and duration analysis.

Table M4. RGDS S18 Summer 2018: Frequency and Duration of Constraints

Constraint	# of Events	Min. Duration (Days)	Max. Duration (Days)	Total # of Days
Columbia Gas VA/MD	1	1	1	1
Dominion Southeast	4	1	2	6
Eastern Shore	9	1	6	23
Transco Z5	7	1	6	16
Texas Eastern Zone ETX	7	1	6	18

1.2.1 Columbia Gas Virginia / Maryland

The 100% peak hour utilization on Columbia Gas’s Virginia/Maryland segment is modeled with a capacity of 2,679 MDth/d, an increase of 202 MDth/d for 2023 as compared with 2018. The locations of the potentially affected generators are shown in Figure 80 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N43 and Figure N44 relative to the capacity of the segment.

1.2.2 Dominion Southeast

Dominion Southeast is modeled with a capacity of 555 MDth/d, an increase over the capacity modeled for the summer 2018 of 15 MDth/d. The locations of the potentially affected generators are shown in Figure 85 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N45 and Figure N46 relative to the capacity of the segment.

1.2.3 Eastern Shore

Eastern Shore is modeled with a capacity of 203 MDth/d, the same as the capacity modeled for the summer of 2018. The locations of the potentially affected generators are shown in Figure 87 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segments are shown in Figure N47 and Figure N48 relative to the capacity of the segments.

1.2.4 Texas Eastern Zone ETX

The 100% peak hour utilization on Texas Eastern's East Texas segment is modeled with a capacity of 623 MDth/d, the same capacity as modeled for 2018. The locations of the potentially affected generators are shown in Figure 104 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N49 and Figure N50 relative to the capacity of the segment.

1.2.5 Transco Zone 5

Transco Zone 5 is modeled with a capacity of 3,967 MDth/d, the same capacity as modeled for 2018. The locations of the potentially affected generators are shown in Figure 98 of the report. Generators located in outside the Study Region in North Carolina and South Carolina could also be affected, but are not included in the results shown below.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N51 and Figure N52 relative to the capacity of the segment.

1.3 RGDS S18 WINTER 2023

Figure M7 summarizes the affected generation during the Winter 2023 peak hour by PPA.

Figure M7. RGDS S18 Winter 2023: Peak Hour Affected Generation

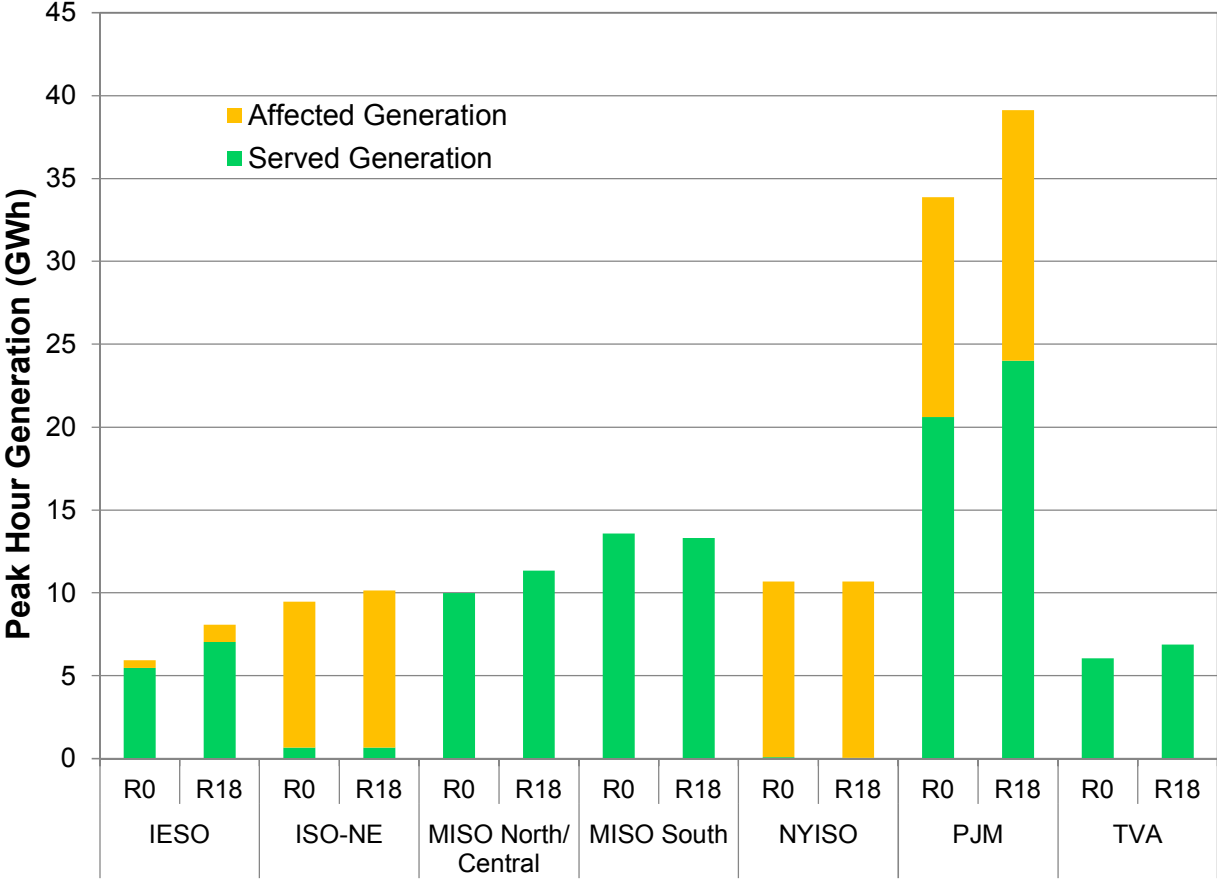


Figure M8 summarizes the unserved demand by GPCM location. The unserved demand and affected generation by location are quantified in Table M5.

Figure M8. RGDS S18 Winter 2023: Locations with Peak Hour Affected Generation

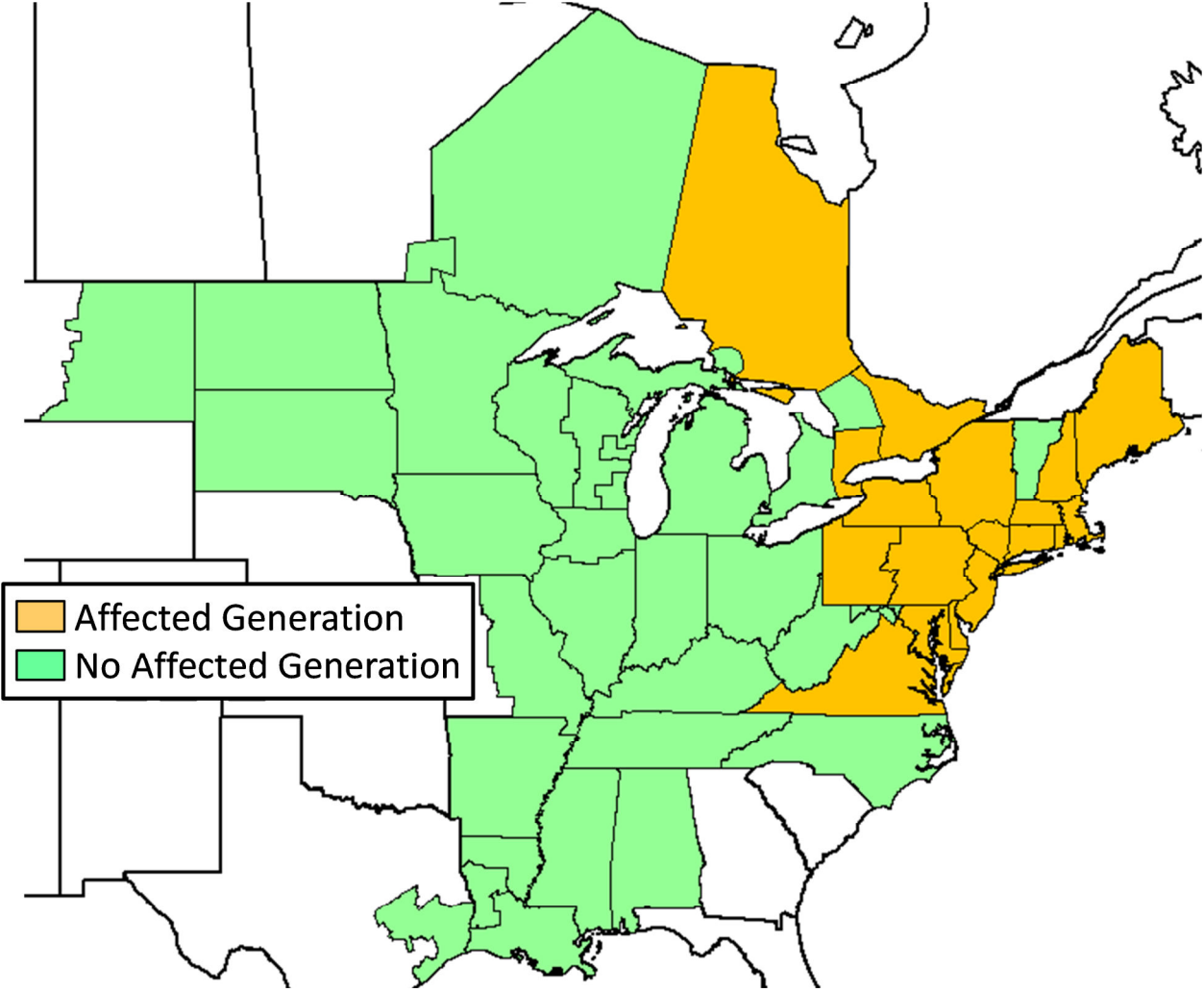


Table M5. RGDS S18 Winter 2023: Unserved Peak Hour Generation Demand and Affected Generation

Location	Unserved Generation Gas Demand (MDth)	Affected Generation (MWh)
Connecticut	15.6	2,140
Delaware	1.3	173
Maine	8.3	1,130
Maryland Eastern	5.0	539
Massachusetts Eastern	18.2	2,545
Massachusetts Western	9.1	1,219
New Hampshire	9.4	1,245
New Jersey	13.2	1,650
New York Central Northern	40.2	4,751
New York City	19.2	2,545
New York Long Island	12.3	1,335
New York Southern	16.4	1,753
New York Western	2.2	247
Ontario (CDA)	0.2	28
Ontario (EDA)	6.5	891
Ontario (NDA)	0.8	114
Pennsylvania Eastern	50.2	6,789
Pennsylvania Western	5.9	842
Rhode Island	9.2	1,206
Virginia	41.6	5,121

Figure M9 shows the constrained pipeline segments, in red, that result in the affected generation shown in Figure M7 during the Winter 2023 peak hour.

Figure M9. RGDS S18 Winter 2023: Peak Hour Constraints

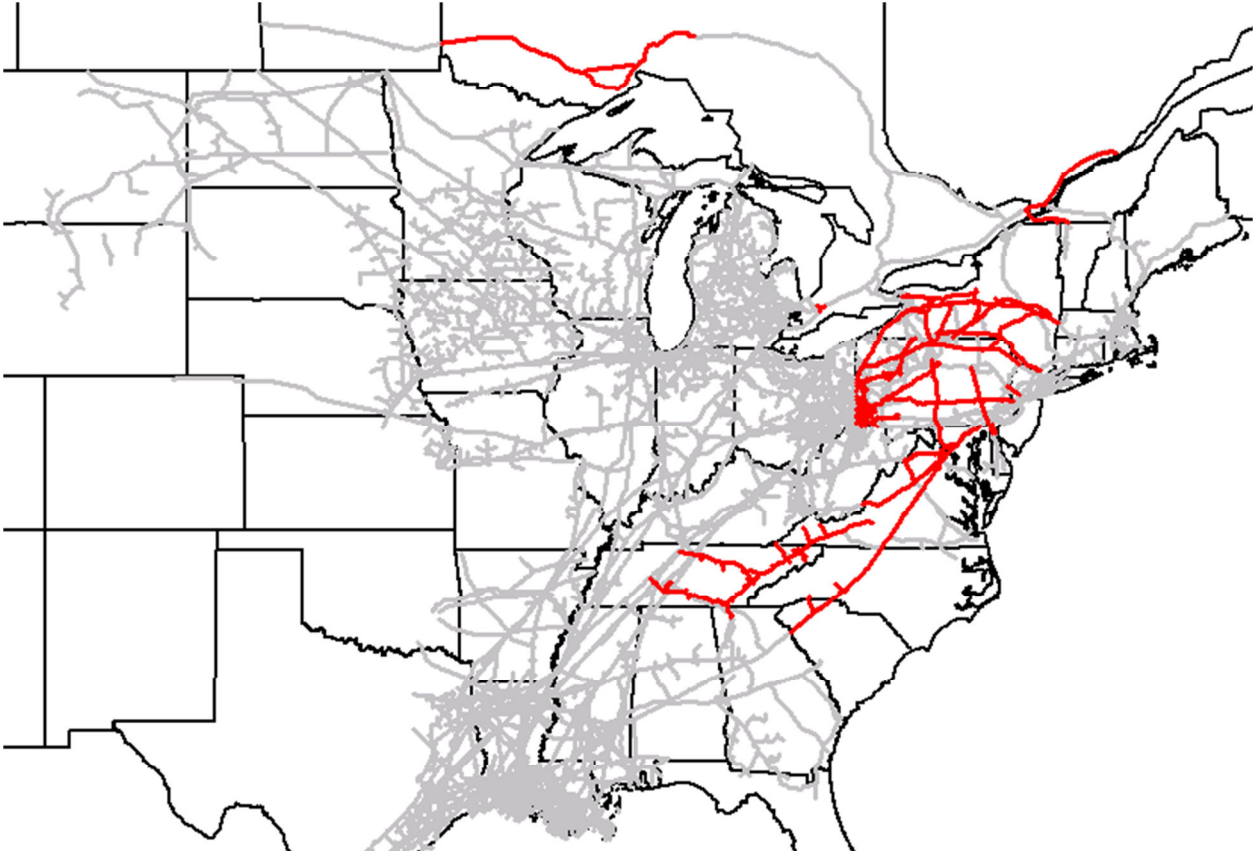


Table M6 summarizes the results of the frequency and duration analysis.

Table M6. RGDS S18 Winter 2023: Frequency and Duration of Constraints

Constraint	# of Events	Min. Duration (Days)	Max. Duration (Days)	Total # of Days
Columbia Gas VA/MD	6	1	52	80
Columbia Gas W PA/NY	2	31	59	90
Constitution	2	31	59	90
Dominion Eastern NY	7	1	16	58
Dominion Western NY	1	5	5	5
Dominion Southeast	5	4	31	69
East Tennessee Mainline	5	1	4	12
Eastern Shore	11	1	26	67
Empire Mainline	9	1	42	62
Millennium	7	1	38	69
NB/NS Supply	2	31	59	90
Tennessee Z4 PA	6	2	16	47
Tennessee Z5 NY	2	31	59	90
Texas Eastern M2 PA South	6	1	27	66
Texas Eastern M3 North	11	1	10	50
TransCanada Ontario West	6	1	12	27
TransCanada Quebec	8	1	14	33
Transco Leidy Atlantic	9	1	27	66
Transco Z5	8	1	2	9
Transco Z6 Leidy to 210	4	1	55	88
Union Gas Dawn	5	1	2	6

1.3.1 Columbia Gas Virginia / Maryland

The 100% peak hour utilization on Columbia Gas’s Virginia/Maryland segment, which is modeled with a capacity of 2,477 MDth/d, potentially affects generators directly connected to Columbia in Maryland and Virginia; generators behind LDCs served by Columbia Gas in Maryland and Virginia; and generators served by Dominion Cove Point and PPL Interstate downstream of interconnections with Columbia Gas. The locations of these generators are shown in Figure 80 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N53 and Figure N54 relative to the capacity of the segment.

1.3.2 Columbia Gas Western Pennsylvania / New York

The 100% peak hour utilization on Columbia Gas’s Western Pennsylvania / New York segment, which is modeled with a capacity of 1,131 MDth/d, potentially affects generators directly connected to Columbia in Pennsylvania, New Jersey, Virginia and Maryland, and generators behind LDCs served by Columbia Gas in Pennsylvania, New Jersey, Delaware, Maryland and Virginia. The locations of these generators are shown in Figure 81 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N55 and Figure N56 relative to the capacity of the segment

1.3.3 Constitution Pipeline

Constitution's proposed delivery capacity is 650 MDth/d. The 100% peak hour utilization on Constitution potentially affects generators served by Iroquois both directly and behind LDCs in New York and Connecticut. The locations of these generators are shown in Figure 82 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N57 and Figure N58 relative to the capacity of the segment.

1.3.4 Dominion Eastern New York

Dominion's Eastern New York segment is modeled with a capacity of 907 MDth/d. The 100% peak hour utilization on Dominion's Eastern New York segment potentially affects generators directly connected to Dominion and behind LDCs served by Dominion. The locations of these generators are shown in Figure 83 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N59 and Figure N60 relative to the capacity of the segment.

1.3.5 Dominion Western New York

Dominion Western New York is modeled with a capacity of 557 MDth/d. The 100% utilization on Dominion's Western New York segment potentially affects generators directly served by Dominion and behind LDCs served by Dominion. The locations of the plants in each category are shown in Figure 84 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N61 and Figure N62 relative to the capacity of the segment.

1.3.6 Dominion Southeast

Dominion Southeast is modeled with a capacity of 540 MDth/d. The 100% peak hour utilization on Dominion's Southeast segment serving Virginia and Maryland potentially affects generators directly served by Dominion, generators behind LDCs served by Dominion, and generators served by Dominion Cove Point via interconnect. The locations of these generators are shown in Figure 85 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N63 and Figure N64 relative to the capacity of the segment.

1.3.7 East Tennessee Mainline

The East Tennessee mainline is modeled with a capacity of 800 MDth/d. The 100% peak hour utilization on East Tennessee's mainline potentially affects generators directly connected to East

Tennessee and generators behind LDCs served by East Tennessee. The locations of these generators are shown in Figure 86 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N65 and Figure N66 relative to the capacity of the segment.

1.3.8 Eastern Shore

Eastern Shore is modeled with a capacity of 203 MDth/d. The 100% peak hour utilization rate on Eastern Shore's Receipt Zone 1 and Delivery Zone 2 potentially affects generators on the Delmarva Peninsula that are served by Eastern Shore. The locations of these generators are shown in Figure 87 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segments are shown in Figure N67 and Figure N68 relative to the capacity of the segments.

1.3.9 Empire Mainline

The Empire mainline is modeled with a capacity of 525 MDth/d. The 100% peak hour utilization on the Empire mainline across upstate New York potentially affects generators on the Niagara Mohawk LDC system. The locations of these generators are shown in Figure 88 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N69 and Figure N70 relative to the capacity of the segment.

1.3.10 Millennium

Millennium is modeled with a capacity of 784 MDth/d. The 100% peak hour utilization on Millennium's mainline potentially affects generators directly connected to Millennium, generators behind LDCs served by Millennium, and generators served by Algonquin, particularly in southern New England. The locations of these generators are shown in Figure 89 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N71 and Figure N72 relative to the capacity of the segment.

1.3.11 New Brunswick Supply / Nova Scotia Offshore Supply

Production from Atlantic Canada is capped at approximately 24 MDth/d in New Brunswick and approximately 599 MDth/d for Nova Scotia Offshore. This supply limitation potentially affects generators directly connected to M&N in Maine and New Hampshire as well as generators located behind LDCs served by M&N in Maine. The locations of these generators are shown in Figure 90 of the report. Generators located in the Canadian Maritimes could also be affected by this supply constraint, but have not been included in the summary results shown below.

The seasonal daily forecasts of RCI and generator gas demand downstream of the supply limitation are shown in Figure N73 and Figure N74 relative to the total production capacity. The generator gas demand in these figures only reflects generators located in the Study Region.

1.3.12 Tennessee Zone 4 Pennsylvania

Tennessee Zone 4 Pennsylvania is modeled with a capacity of 1,887 MDth/d. The 100% peak hour utilization on Tennessee's Zone 4 segment in Pennsylvania potentially affects generators directly connected to Tennessee in Pennsylvania and New Jersey; generators behind LDCs served by Tennessee in Pennsylvania, New Jersey, downstate New York and Connecticut; and generators served by Algonquin either directly or via LDC in New England. The locations of these generators are shown in Figure 91 of the report.

The peak hour demand forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N75 and Figure N76 relative to the capacity of the segment.

1.3.13 Tennessee Zone 5 New York

Tennessee Zone 5 New York is modeled with a capacity of 1,189 MDth/d. The 100% peak hour utilization on Tennessee's Z5 New York segment potentially affects generators directly connected to Tennessee in upstate New York, Massachusetts, Rhode Island and New Hampshire; generators behind LDCs served by Tennessee in upstate New York, Massachusetts, Connecticut and Rhode Island; and generators served by Iroquois, Granite State and PNGTS either directly or behind an LDC. The locations of these generators are shown in Figure 92 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N77 and Figure N78 relative to the capacity of the segment.

1.3.14 Texas Eastern M2 PA – Southern Branch

The Texas Eastern M2 PA – Southern Branch is modeled with a capacity of 2,068 MDth/d. The 100% peak hour utilization on the southern branch of Texas Eastern's Zone M2 segment through Pennsylvania potentially affects generators directly connected to Texas Eastern in Pennsylvania, generators behind LDCs in Pennsylvania, Delaware and downstate New York. Generators that are served by Algonquin and Eastern Shore either directly or behind an LDC would also potentially be affected. The locations of these generators are shown in Figure 93 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N79 and Figure N80 relative to the capacity of the segment.

1.3.15 Texas Eastern M3 – Northern Line

The Texas Eastern M3 Northern Line is modeled with a capacity of 2,987 MDth/d. The 100% peak hour utilization on the Northern line through Pennsylvania potentially affects generators directly connected to Texas Eastern in New Jersey and Pennsylvania, generators behind LDCs served by Texas Eastern in New Jersey, Pennsylvania and downstate New York, as well as generators served by Algonquin both directly and behind LDCs. The locations of these generators are shown in Figure 94 of the report.

The seasonal daily forecasts of RCI and generator peak hour gas demand downstream of the constrained segment are shown in Figure N81 and Figure N82 relative to the capacity of the segment.

1.3.16 TransCanada Ontario West

TransCanada's Western Ontario segment is modeled with a capacity of 3,148 MDth/d. The 100% peak hour utilization on TransCanada's Western Ontario segment potentially affects generators directly connected to TransCanada and generators behind the Enbridge and Union local distribution systems. The locations of these generators are shown in Figure 95 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N83 and Figure N84 relative to the capacity of the segment.

1.3.17 TransCanada Quebec

TransCanada Quebec is modeled with a capacity of 1,320 MDth/d. The 100% peak hour utilization on TransCanada's Quebec segment potentially affects generators served by PNGTS, North Country and Vermont Gas. The locations of these generators are shown in Figure 96 of the report. Limitations for customers in Quebec could arise from this constraint, but such limitations have not been included in the results reported below.

The seasonal daily forecasts of RCI and generator peak hour demand downstream of the constrained segment are shown in Figure N85 and Figure N86 relative to the capacity of the segment. The generator gas demand in these figures includes only gas demand at generators in the Study Region. Gas demand from non-Study Region generators is not included in the tabulation of results.

1.3.18 Transco Leidy Atlantic

The Transco Leidy Atlantic segment is modeled with a capacity of 1,700 MDth/d. The 100% peak hour utilization on Transco's Leidy Atlantic segment potentially affects generators directly connected to Transco in New Jersey, Maryland, Pennsylvania and Virginia and generators behind LDCs served by Transco in Delaware, New Jersey, Pennsylvania, Maryland, Virginia and North Carolina. The locations of these generators are shown in Figure 97 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N87 and Figure N88 relative to the capacity of the segment.

1.3.19 Transco Zone 5

Transco Zone 5 is modeled with a capacity of 3,967 MDth/d. The 100% peak hour utilization on Transco's Zone 5 segment potentially affects Study Region generators directly connected to Transco in Virginia and generators behind LDCs served by Transco in North Carolina and Virginia. The locations of these generators are shown in Figure 98 of the report. Non-Study Region generators in North Carolina and South Carolina could also be affected, but are not included in the results shown below.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N89 and Figure N90 relative to the capacity of the segment.

1.3.20 Transco Zone 6 Leidy Line to Station 210

The Transco Zone 6 Leidy to Station 210 segment is modeled with a capacity of 3,310 MDth/d. The 100% peak hour utilization on this segment potentially affects generators directly connected to Transco in New Jersey and Pennsylvania and generators behind LDCs served by Transco in New Jersey, Pennsylvania, New York City and Long Island. The locations of generators served along this Transco segment are shown in Figure 99 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N91 and Figure N92 relative to the capacity of the segment.

1.3.21 Union Gas Dawn

The 100% peak hour utilization on Union Gas's Dawn segment, which is modeled with a capacity of 5,000 MDth/d, potentially affects generators directly connected to Union, generators directly connected to TransCanada, and generators served by the Union Gas and Enbridge distribution systems. The locations of these generators are shown in Figure 100 of the report.

The seasonal daily forecasts of RCI and generator peak hour gas demand downstream of the constrained segment are shown in Figure N93 and Figure N94 relative to the capacity of the segment.

1.4 RGDS S18 SUMMER 2023

Figure M10 summarizes the affected generation during the Summer 2023 peak hour by PPA.

Figure M10. RGDS S18 Summer 2023: Peak Hour Affected Generation

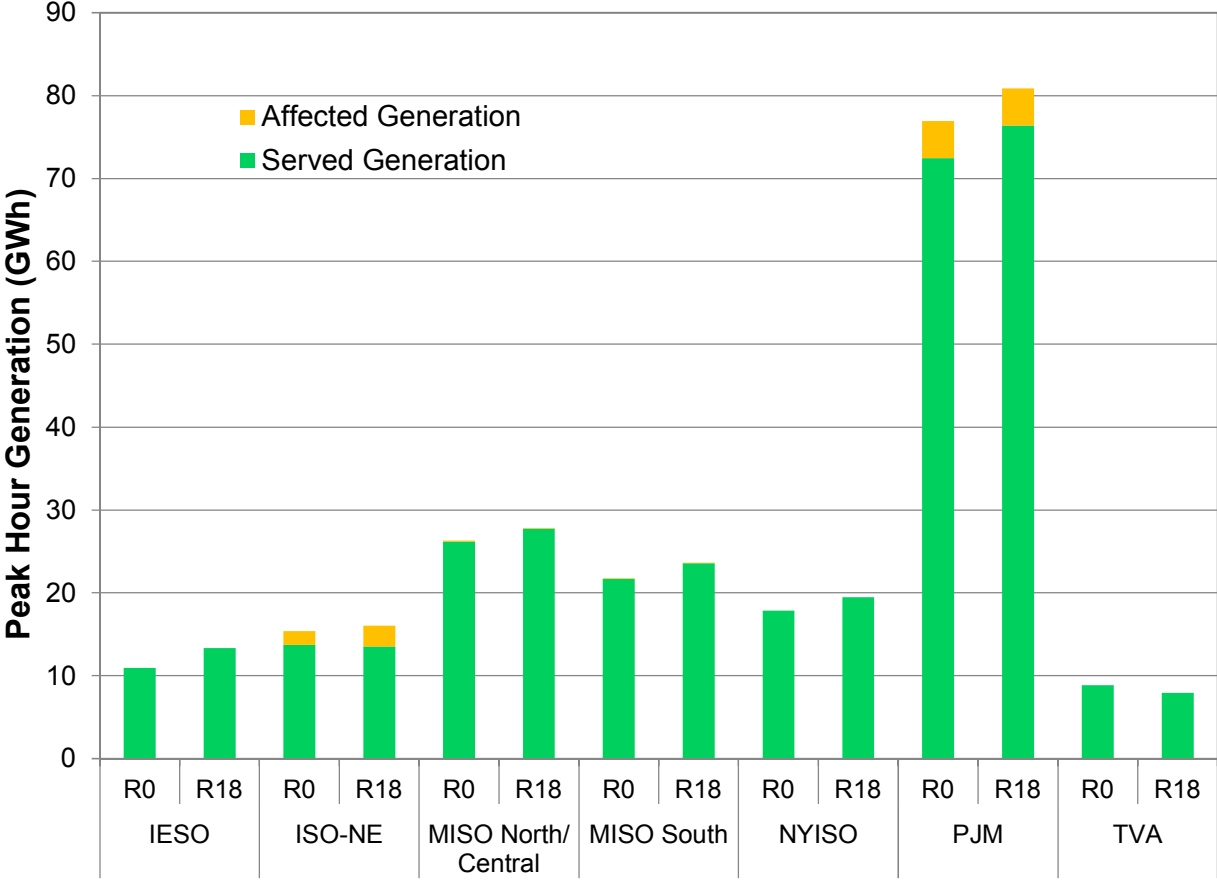


Figure M11 summarizes the unserved demand by GPCM location. The unserved demand and affected generation by location are quantified in Table M7.

Figure M11. RGDS S18 Summer 2023: Locations with Peak Hour Affected Generation

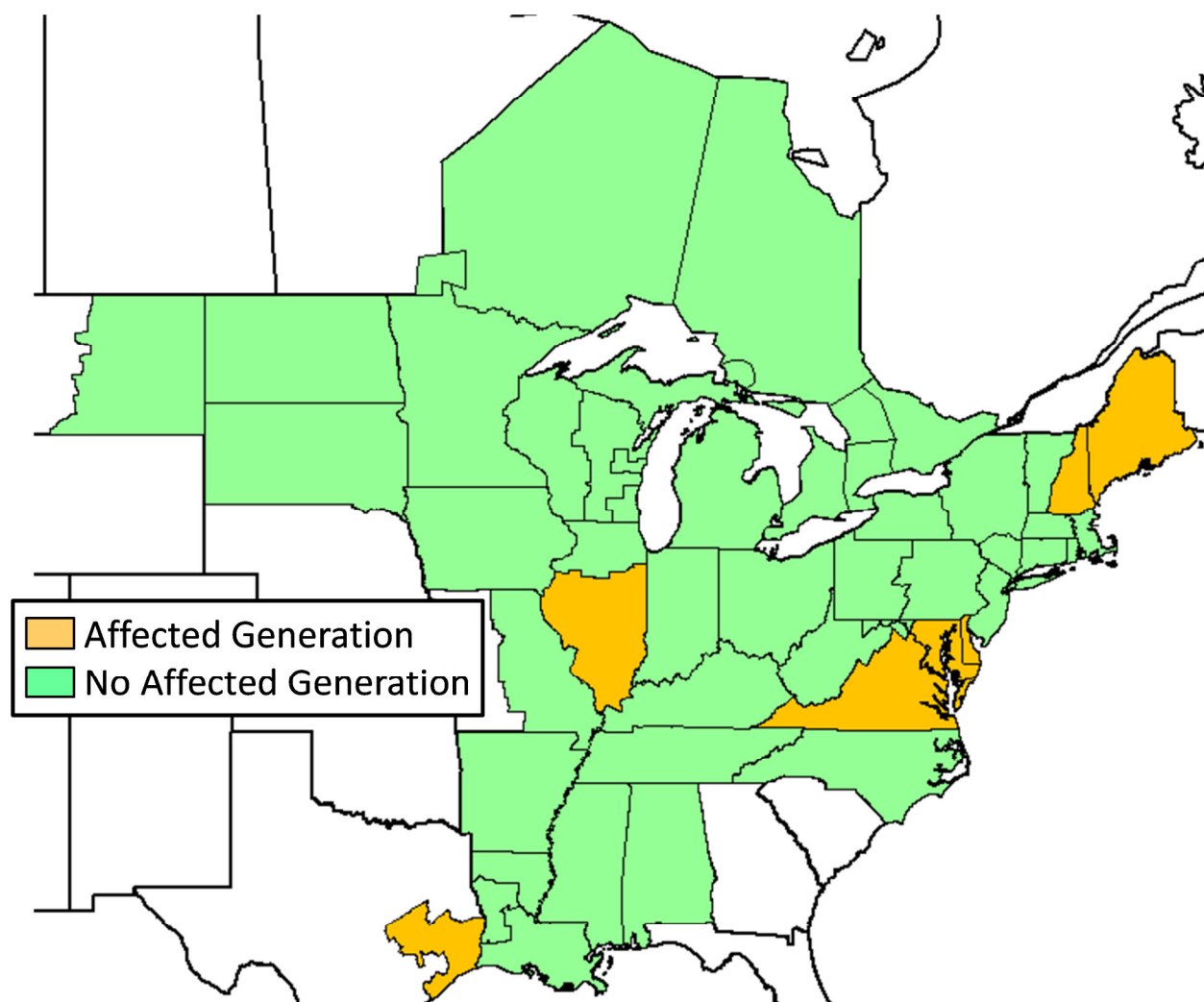


Table M7. RGDS S18 Summer 2023: Unserved Peak Hour Generation Demand and Affected Generation

Location	Unserved Generation Gas Demand (MDth)	Affected Generation (MWh)
Delaware	8.5	1,175
Illinois Southern	1.0	112
Maine	10.5	1,357
Maryland Eastern	16.7	2,361
New Hampshire	9.7	1,135
Texas East (SERC)	0.6	81
Virginia	8.4	936

Figure M12 shows the constrained pipeline segments, in red, that result in the affected generation shown in Figure M10 during the Summer 2023 peak hour.

Figure M12. RGDS S18 Summer 2023: Peak Hour Constraints

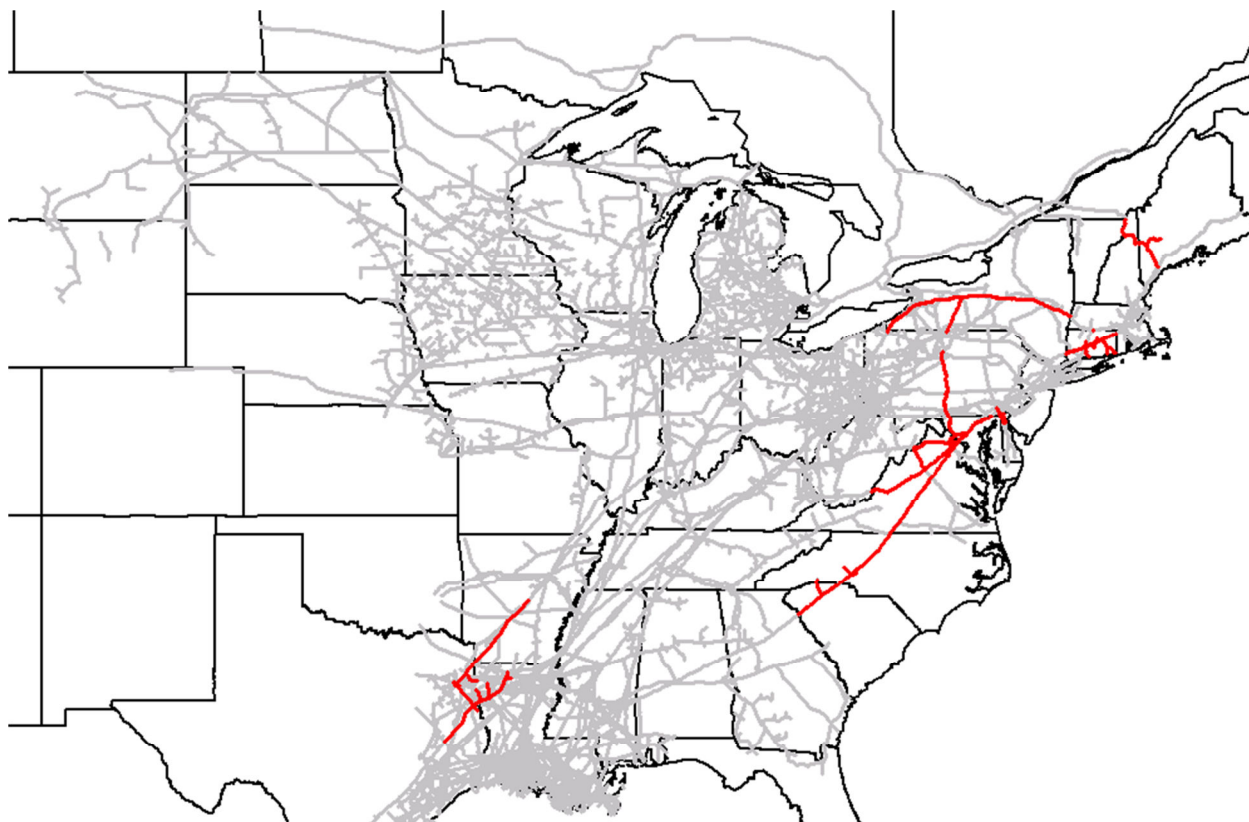


Table M8 summarizes the results of the frequency and duration analysis.

Table M8. RGDS S18 Summer 2023: Frequency and Duration of Constraints

Constraint	# of Events	Min. Duration (Days)	Max. Duration (Days)	Total # of Days
Algonquin Connecticut	8	1	5	20
Columbia Gas VA/MD	2	1	3	4
Dominion Southeast	8	1	8	25
Eastern Shore	10	1	8	31
NB/NS Supply	6	3	27	73
PNGTS N of Westbrook	13	1	12	46
Tennessee Z5 NY	1	92	92	92
Texas Eastern Zone ETX	7	1	10	23
Transco Z5	6	1	6	17

1.4.1 Algonquin Connecticut

The 100% peak hour utilization on Algonquin's Connecticut segment, which is modeled with a capacity of 1,827 MDth/d, potentially affects generators directly connected to Algonquin in Connecticut, Massachusetts and Rhode Island, generators directly connected to M&N in Maine

and New Hampshire, and generators served by LDCs connected to Algonquin and M&N. The locations of these generators are shown in Figure 111 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N95 and Figure N96 relative to the capacity of the segment.

1.4.2 Columbia Gas Virginia / Maryland

The 100% peak hour utilization on Columbia Gas's Virginia/Maryland segment is modeled with a capacity of 2,679 MDth/d, an increase of 202 MDth/d for 2023 as compared with 2018. The locations of the potentially affected generators are shown in Figure 80 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N97 and Figure N98 relative to the capacity of the segment.

1.4.3 Dominion Southeast

Dominion Southeast is modeled with a capacity of 555 MDth/d, an increase over the capacity modeled for the summer 2018 of 15 MDth/d. The locations of the potentially affected generators are shown in Figure 85 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N99 and Figure N100 relative to the capacity of the segment.

1.4.4 Eastern Shore

Eastern Shore is modeled with a capacity of 203 MDth/d, the same as the capacity modeled for the summer of 2018. The locations of the potentially affected generators are shown in Figure 87 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segments are shown in Figure N101 and Figure N102 relative to the capacity of the segments.

1.4.5 New Brunswick Supply / Nova Scotia Offshore Supply

Production from Atlantic Canada is capped at approximately 40 MDth/d in New Brunswick and approximately 243 MDth/d for Nova Scotia Offshore. This supply limitation potentially affects generators directly connected to M&N in Maine and New Hampshire as well as generators located behind LDCs served by M&N in Maine. The locations of these generators are shown in Figure 90 of the report. Generators located in the Canadian Maritimes could also be affected by this supply constraint, but have not been included in the summary results shown below.

The seasonal daily forecasts of RCI and generator gas demand downstream of the supply limitation are shown in Figure N103 and Figure N104 relative to the total production capacity.

1.4.6 PNGTS North of Westbrook

The 100% peak hour utilization on PNGTS's North of Westbrook segment, which is modeled with a capacity of 223 MDth/d, potentially affects generators directly connected to PNGTS in New Hampshire in Maine, generators served by LDCs connected to PNGTS, and generators served by M&N either directly or via LDC. The locations of these generators are shown in Figure 112 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N105 and Figure N106 relative to the capacity of the segment.

1.4.7 Tennessee Zone 5 New York

Tennessee Zone 5 New York is modeled with a capacity of 1,189 MDth/d. The 100% peak hour utilization on Tennessee's Z5 New York segment potentially affects generators directly connected to Tennessee in upstate New York, Massachusetts, Rhode Island and New Hampshire; generators behind LDCs served by Tennessee in upstate New York, Massachusetts, Connecticut and Rhode Island; and generators served by Iroquois, Granite State and PNGTS either directly or behind an LDC. The locations of these generators are shown in Figure 92 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N107 and Figure N108 relative to the capacity of the segment.

1.4.8 Texas Eastern Zone ETX

The 100% peak hour utilization on Texas Eastern's East Texas segment is modeled with a capacity of 623 MDth/d, the same capacity as modeled for 2018. The locations of the potentially affected generators are shown in Figure 104 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N109 and Figure N110 relative to the capacity of the segment.

1.4.9 Transco Zone 5

Transco Zone 5 is modeled with a capacity of 3,967 MDth/d, the same capacity as modeled for 2018. The locations of the potentially affected generators are shown in Figure 98 of the report. Generators located in outside the Study Region in North Carolina and South Carolina could also be affected, but are not included in the results shown below.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N111 and Figure N112 relative to the capacity of the segment.

2 S19: HIGH INDUSTRIAL SECTOR GAS LOAD GROWTH

2.1 RGDS S19 WINTER 2018

Figure M13 summarizes the affected generation during the Winter 2018 peak hour by PPA.

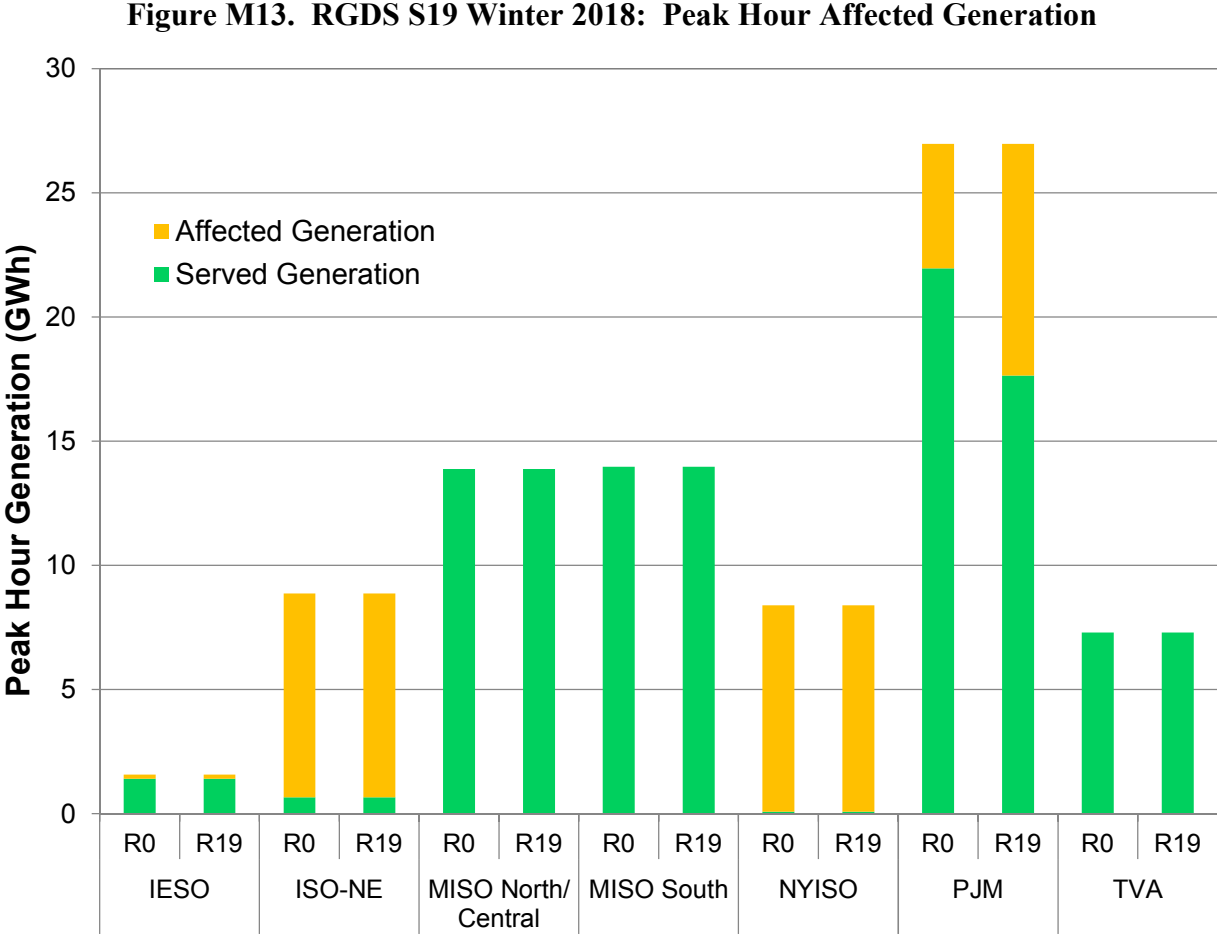


Figure M14 summarizes the unserved demand by GPCM location. The unserved demand and affected generation by location are quantified in Table M9.

Figure M14. RGDS S19 Winter 2018: Locations with Peak Hour Affected Generation

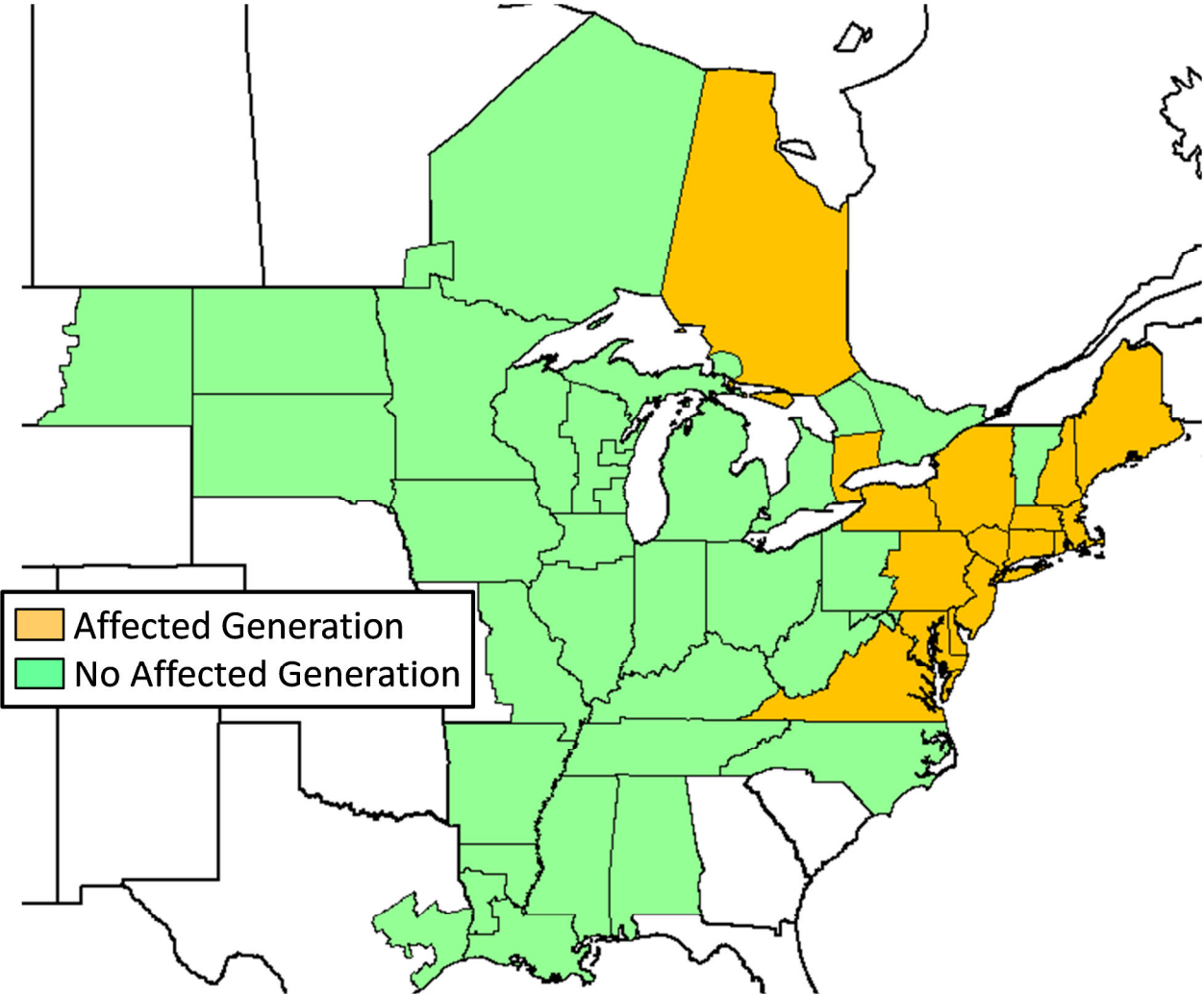


Table M9. RGDS S19 Winter 2018: Unserved Peak Hour Generation Demand and Affected Generation

Location	Unserved Generation Gas Demand (MDth)	Affected Generation (MWh)
Connecticut	16.0	2,200
Delaware	1.8	222
Maine	7.6	1,045
Maryland Eastern	5.0	539
Massachusetts Eastern	12.8	1,781
Massachusetts Western	7.8	1,059
New Hampshire	9.4	1,245
New Jersey	15.9	1,951
New York Central Northern	24.4	3,419
New York City	17.7	2,336
New York Long Island	9.4	1,054
New York Southern	10.9	1,312
New York Western	1.6	179
Ontario (CDA)	0.5	55
Ontario (NDA)	0.8	114
Pennsylvania Eastern	28.8	3,862
Rhode Island	6.7	887
Virginia	21.0	2,755

Figure M15 shows the constrained pipeline segments, in red, that result in the affected generation shown in Figure M13 during the Winter 2018 peak hour.

Figure M15. RGDS S19 Winter 2018: Peak Hour Constraints

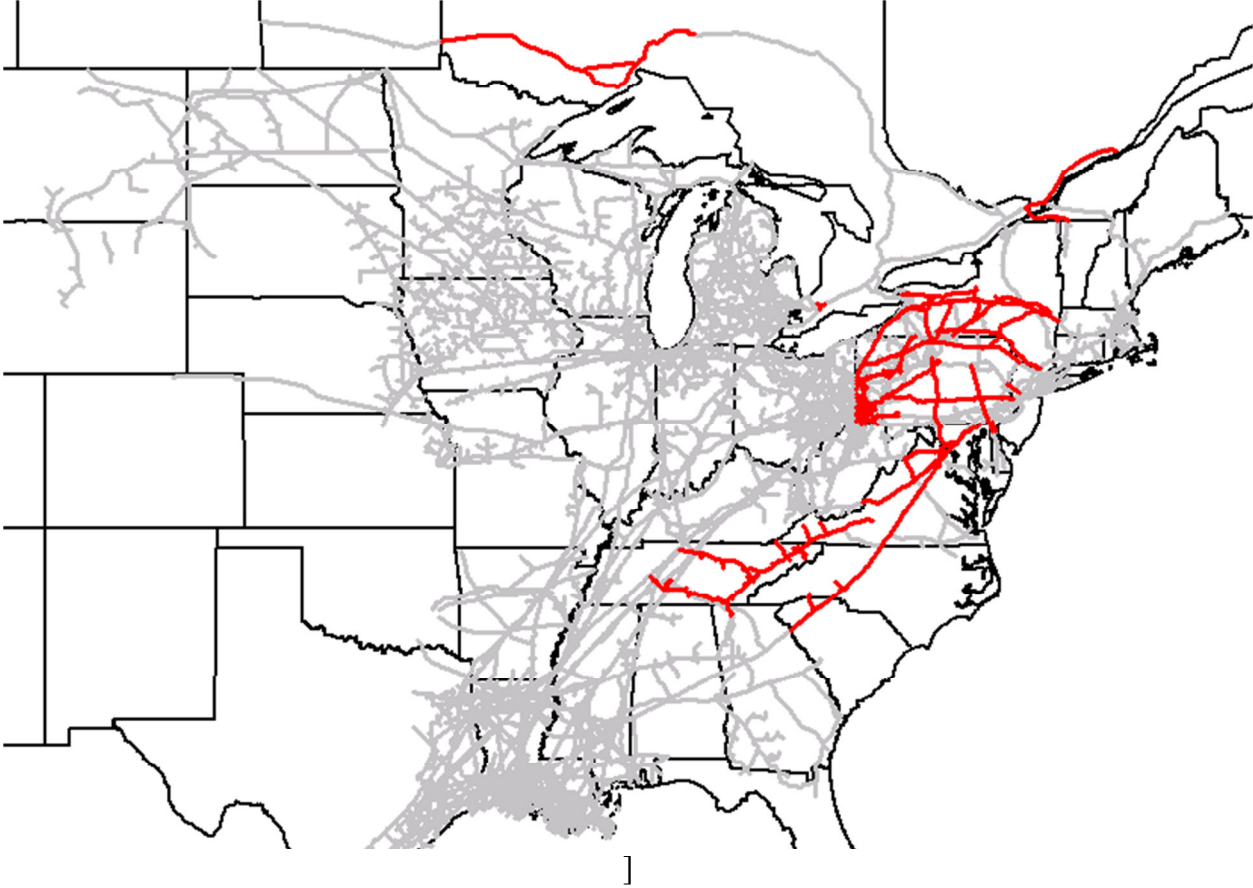


Table M10 summarizes the results of the frequency and duration analysis.

Table M10. RGDS S19 Winter 2018: Frequency and Duration of Constraints

Constraint	# of Events	Min. Duration (Days)	Max. Duration (Days)	Total # of Days
Columbia Gas VA/MD	11	1	7	26
Columbia Gas W PA/NY	15	1	6	31
Constitution	5	1	12	25
Dominion Eastern NY	5	1	9	17
Dominion Western NY	1	4	4	4
Dominion Southeast	7	1	12	22
East Tennessee Mainline	7	1	2	9
Eastern Shore	9	1	16	68
Empire Mainline	4	1	12	22
Millennium	4	1	59	83
NB/NS Supply	13	1	20	58
Tennessee Z4 PA	10	1	7	30
Tennessee Z5 NY	2	31	59	90
Texas Eastern M2 PA South	12	1	19	62
Texas Eastern M3 North	12	1	7	46
TransCanada Ontario West	5	1	5	15
TransCanada Quebec	9	1	13	29
Transco Leidy Atlantic	9	1	23	60
Transco Z5	3	1	7	9
Transco Z6 Leidy to 210	10	1	24	66
Union Gas Dawn	2	1	3	4

2.1.1 Columbia Gas Virginia / Maryland

The 100% peak hour utilization on Columbia Gas's Virginia/Maryland segment, which is modeled with a capacity of 2,477 MDth/d, potentially affects generators directly connected to Columbia in Maryland and Virginia; generators behind LDCs served by Columbia Gas in Maryland and Virginia; and generators served by Dominion Cove Point and PPL Interstate downstream of interconnections with Columbia Gas. The locations of these generators are shown in Figure 80 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N113 and Figure N114 relative to the capacity of the segment.

2.1.2 Columbia Gas Western Pennsylvania / New York

The 100% peak hour utilization on Columbia Gas's Western Pennsylvania / New York segment, which is modeled with a capacity of 1,131 MDth/d, potentially affects generators directly connected to Columbia in Pennsylvania, New Jersey, Virginia and Maryland, and generators behind LDCs served by Columbia Gas in Pennsylvania, New Jersey, Delaware, Maryland and Virginia. The locations of these generators are shown in Figure 81 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N115 and Figure N116 relative to the capacity of the segment

2.1.3 Constitution Pipeline

Constitution's proposed delivery capacity is 650 MDth/d. The 100% peak hour utilization on Constitution potentially affects generators served by Iroquois both directly and behind LDCs in New York and Connecticut. The locations of these generators are shown in Figure 82 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N117 and Figure N118 relative to the capacity of the segment.

2.1.4 Dominion Eastern New York

Dominion's Eastern New York segment is modeled with a capacity of 907 MDth/d. The 100% peak hour utilization on Dominion's Eastern New York segment potentially affects generators directly connected to Dominion and behind LDCs served by Dominion. The locations of these generators are shown in Figure 83 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N119 and Figure N120 relative to the capacity of the segment.

2.1.5 Dominion Western New York

Dominion Western New York is modeled with a capacity of 557 MDth/d. The 100% utilization on Dominion's Western New York segment potentially affects generators directly served by Dominion and behind LDCs served by Dominion. The locations of the plants in each category are shown in Figure 84 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N121 and Figure N122 relative to the capacity of the segment.

2.1.6 Dominion Southeast

Dominion Southeast is modeled with a capacity of 540 MDth/d. The 100% peak hour utilization on Dominion's Southeast segment serving Virginia and Maryland potentially affects generators directly served by Dominion, generators behind LDCs served by Dominion, and generators served by Dominion Cove Point via interconnect. The locations of these generators are shown in Figure 85 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N123 and Figure N124 relative to the capacity of the segment.

2.1.7 East Tennessee Mainline

The East Tennessee mainline is modeled with a capacity of 800 MDth/d. The 100% peak hour utilization on East Tennessee's mainline potentially affects generators directly connected to East

Tennessee and generators behind LDCs served by East Tennessee. The locations of these generators are shown in Figure 86 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N125 and Figure N126 relative to the capacity of the segment.

2.1.8 Eastern Shore

Eastern Shore is modeled with a capacity of 204 MDth/d. The 100% peak hour utilization rate on Eastern Shore's Receipt Zone 1 and Delivery Zone 2 potentially affects generators on the Delmarva Peninsula that are served by Eastern Shore. The locations of these generators are shown in Figure 87 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segments are shown in Figure N127 and Figure N128 relative to the capacity of the segments.

2.1.9 Empire Mainline

The Empire mainline is modeled with a capacity of 525 MDth/d. The 100% peak hour utilization on the Empire mainline across upstate New York potentially affects generators on the Niagara Mohawk LDC system. The locations of these generators are shown in Figure 88 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N129 and Figure N130 relative to the capacity of the segment.

2.1.10 Millennium

Millennium is modeled with a capacity of 784 MDth/d. The 100% peak hour utilization on Millennium's mainline potentially affects generators directly connected to Millennium, generators behind LDCs served by Millennium, and generators served by Algonquin, particularly in southern New England. The locations of these generators are shown in Figure 89 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N131 and Figure N132 relative to the capacity of the segment.

2.1.11 New Brunswick Supply / Nova Scotia Offshore Supply

Production from Atlantic Canada is capped at approximately 24 MDth/d in New Brunswick and approximately 599 MDth/d for Nova Scotia Offshore. This supply limitation potentially affects generators directly connected to M&N in Maine and New Hampshire as well as generators located behind LDCs served by M&N in Maine. The locations of these generators are shown in Figure 90 of the report. Generators located in the Canadian Maritimes could also be affected by this supply constraint, but have not been included in the summary results shown below.

The seasonal daily forecasts of RCI and generator gas demand downstream of the supply limitation are shown in Figure N133 and Figure N134 relative to the total production capacity. The generator gas demand in these figures only reflects generators located in the Study Region.

2.1.12 Tennessee Zone 4 Pennsylvania

Tennessee Zone 4 Pennsylvania is modeled with a capacity of 1,887 MDth/d. The 100% peak hour utilization on Tennessee's Zone 4 segment in Pennsylvania potentially affects generators directly connected to Tennessee in Pennsylvania and New Jersey; generators behind LDCs served by Tennessee in Pennsylvania, New Jersey, downstate New York and Connecticut; and generators served by Algonquin either directly or via LDC in New England. The locations of these generators are shown in Figure 91 of the report.

The peak hour demand forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N135 and Figure N136 relative to the capacity of the segment.

2.1.13 Tennessee Zone 5 New York

Tennessee Zone 5 New York is modeled with a capacity of 1,189 MDth/d. The 100% peak hour utilization on Tennessee's Z5 New York segment potentially affects generators directly connected to Tennessee in upstate New York, Massachusetts, Rhode Island and New Hampshire; generators behind LDCs served by Tennessee in upstate New York, Massachusetts, Connecticut and Rhode Island; and generators served by Iroquois, Granite State and PNGTS either directly or behind an LDC. The locations of these generators are shown in Figure 92 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N137 and Figure N138 relative to the capacity of the segment.

2.1.14 Texas Eastern M2 PA – Southern Branch

The Texas Eastern M2 PA – Southern Branch is modeled with a capacity of 2,068 MDth/d. The 100% peak hour utilization on the southern branch of Texas Eastern's Zone M2 segment through Pennsylvania potentially affects generators directly connected to Texas Eastern in Pennsylvania, generators behind LDCs in Pennsylvania, Delaware and downstate New York. Generators that are served by Algonquin and Eastern Shore either directly or behind an LDC would also potentially be affected. The locations of these generators are shown in Figure 93 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N139 and Figure N140 relative to the capacity of the segment.

2.1.15 Texas Eastern M3 – Northern Line

The Texas Eastern M3 Northern Line is modeled with a capacity of 2,987 MDth/d. The 100% peak hour utilization on the Northern line through Pennsylvania potentially affects generators directly connected to Texas Eastern in New Jersey and Pennsylvania, generators behind LDCs served by Texas Eastern in New Jersey, Pennsylvania and downstate New York, as well as generators served by Algonquin both directly and behind LDCs. The locations of these generators are shown in Figure 94 of the report.

The seasonal daily forecasts of RCI and generator peak hour gas demand downstream of the constrained segment are shown in Figure N141 and Figure N142 relative to the capacity of the segment.

2.1.16 TransCanada Ontario West

TransCanada's Western Ontario segment is modeled with a capacity of 3,148 MDth/d. The 100% peak hour utilization on TransCanada's Western Ontario segment potentially affects generators directly connected to TransCanada and generators behind the Enbridge and Union local distribution systems. The locations of these generators are shown in Figure 95 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N143 and Figure N144 relative to the capacity of the segment.

2.1.17 TransCanada Quebec

TransCanada Quebec is modeled with a capacity of 1,320 MDth/d. The 100% peak hour utilization on TransCanada's Quebec segment potentially affects generators served by PNGTS, North Country and Vermont Gas. The locations of these generators are shown in Figure 96 of the report. Limitations for customers in Quebec could arise from this constraint, but such limitations have not been included in the results reported below.

The seasonal daily forecasts of RCI and generator peak hour demand downstream of the constrained segment are shown in Figure N145 and Figure N146 relative to the capacity of the segment. The generator gas demand in these figures includes only gas demand at generators in the Study Region. Gas demand from non-Study Region generators is not included in the tabulation of results.

2.1.18 Transco Leidy Atlantic

The Transco Leidy Atlantic segment is modeled with a capacity of 1,700 MDth/d. The 100% peak hour utilization on Transco's Leidy Atlantic segment potentially affects generators directly connected to Transco in New Jersey, Maryland, Pennsylvania and Virginia and generators behind LDCs served by Transco in Delaware, New Jersey, Pennsylvania, Maryland, Virginia and North Carolina. The locations of these generators are shown in Figure 97 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N147 and Figure N148 relative to the capacity of the segment.

2.1.19 Transco Zone 5

Transco Zone 5 is modeled with a capacity of 3,967 MDth/d. The 100% peak hour utilization on Transco's Zone 5 segment potentially affects Study Region generators directly connected to Transco in Virginia and generators behind LDCs served by Transco in North Carolina and Virginia. The locations of these generators are shown in Figure 98 of the report. Non-Study Region generators in North Carolina and South Carolina could also be affected, but are not included in the results shown below.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N149 and Figure N150 relative to the capacity of the segment.

2.1.20 Transco Zone 6 Leidy Line to Station 210

The Transco Zone 6 Leidy to Station 210 segment is modeled with a capacity of 3,310 MDth/d. The 100% peak hour utilization on this segment potentially affects generators directly connected to Transco in New Jersey and Pennsylvania and generators behind LDCs served by Transco in New Jersey, Pennsylvania, New York City and Long Island. The locations of generators served along this Transco segment are shown in Figure 99 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N151 and Figure N152 relative to the capacity of the segment.

2.1.21 Union Gas Dawn

The 100% peak hour utilization on Union Gas's Dawn segment, which is modeled with a capacity of 5,000 MDth/d, potentially affects generators directly connected to Union, generators directly connected to TransCanada, and generators served by the Union Gas and Enbridge distribution systems. The locations of these generators are shown in Figure 100 of the report.

The seasonal daily forecasts of RCI and generator peak hour gas demand downstream of the constrained segment are shown in Figure N153 and Figure N154 relative to the capacity of the segment.

2.2 RGDS S19 SUMMER 2018

Figure M16 summarizes the affected generation during the Summer 2018 peak hour by PPA.

Figure M16. RGDS S19 Summer 2018: Peak Hour Affected Generation

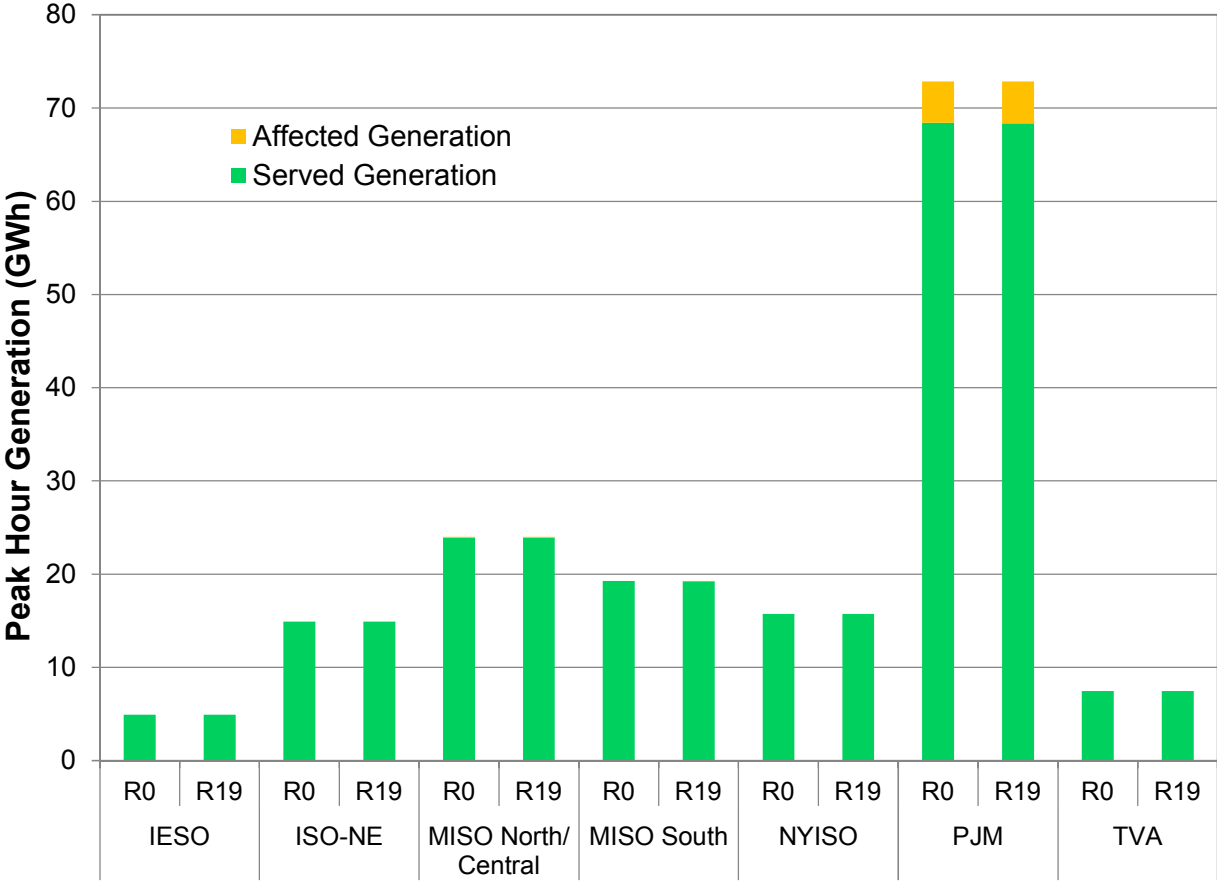


Figure M17 summarizes the unserved demand by GPCM location. The unserved demand and affected generation by location are quantified in Table M11.

Figure M17. RGDS S19 Summer 2018: Locations with Peak Hour Affected Generation

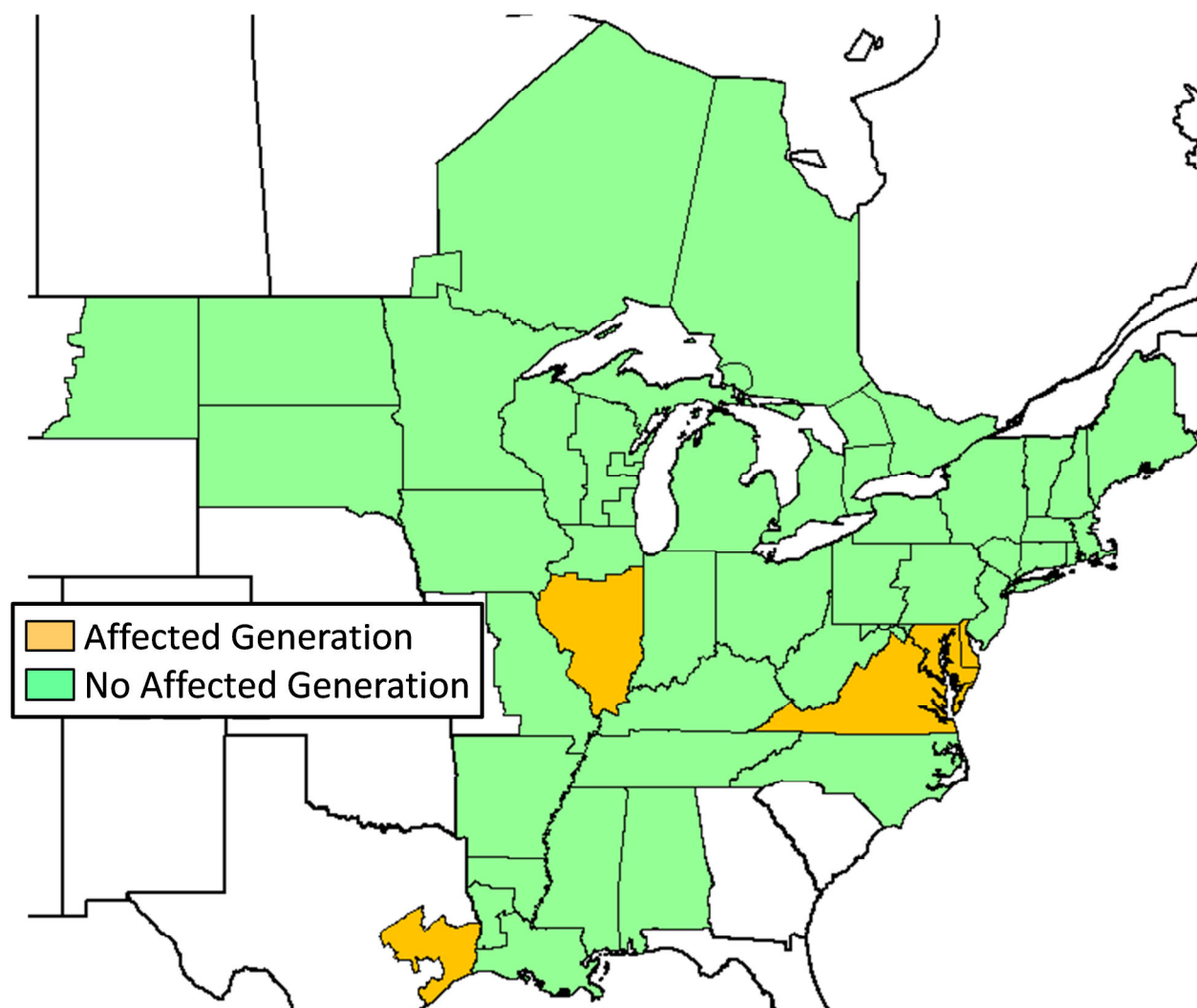


Table M11. RGDS S19 Summer 2018 Unserved Peak Hour Generation Demand and Affected Generation

Location	Unserved Generation Gas Demand (MDth)	Affected Generation (MWh)
Delaware	8.9	1,223
Illinois Southern	1.0	112
Maryland Eastern	16.7	2,361
Texas East (SERC)	0.2	35
Virginia	8.4	936

Figure M18 shows the constrained pipeline segments, in red, that result in the affected generation shown in Figure M16 during the Summer 2018 peak hour.

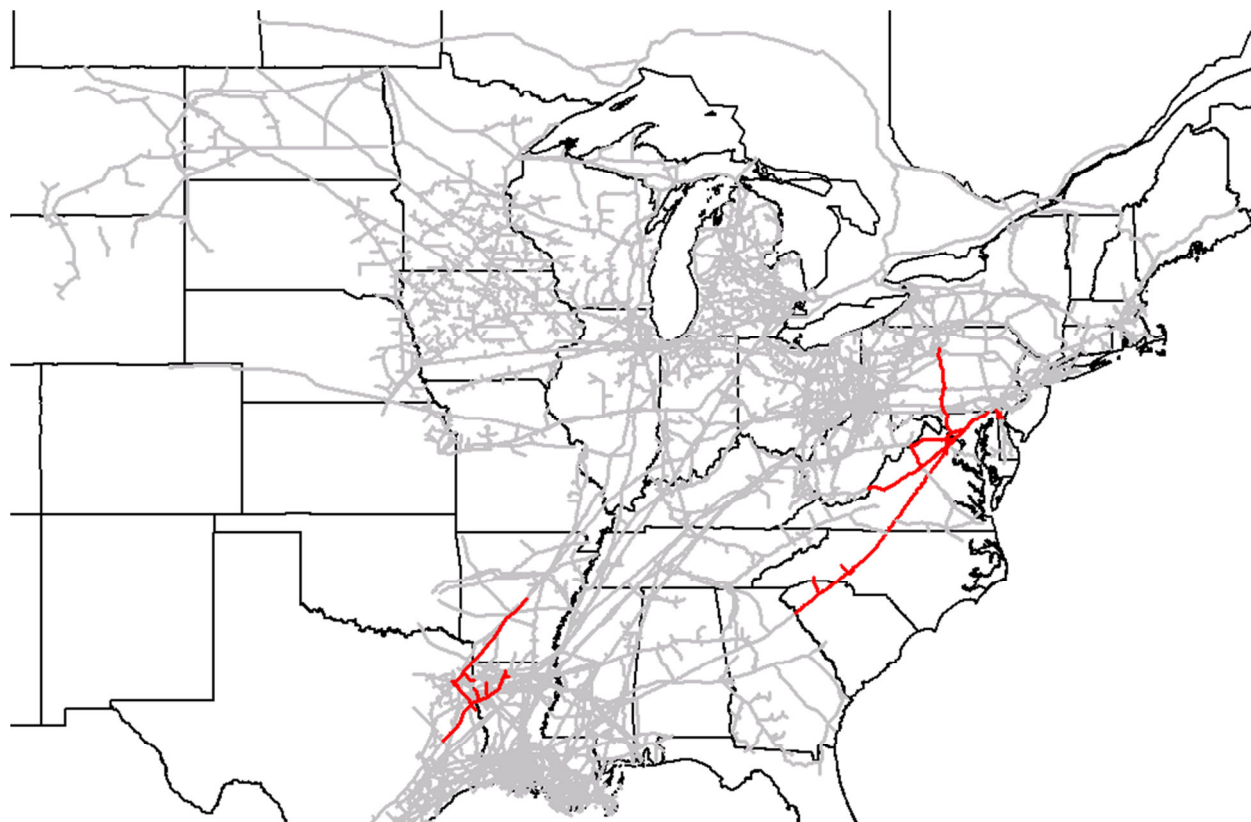
Figure M18. RGDS S19 Summer 2018: Peak Hour Constraints

Table M12 summarizes the results of the frequency and duration analysis.

Table M12. RGDS S19 Summer 2018: Frequency and Duration of Constraints

Constraint	# of Events	Min. Duration (Days)	Max. Duration (Days)	Total # of Days
Columbia Gas VA/MD	1	1	1	1
Dominion Southeast	3	1	2	5
Eastern Shore	8	1	6	21
Texas Eastern Zone ETX	4	1	6	12
Transco Z5	7	1	6	18

2.2.1 Columbia Gas Virginia / Maryland

The 100% peak hour utilization on Columbia Gas's Virginia/Maryland segment, which is modeled with a capacity of 2,477 MDth/d, potentially affects generators directly connected to Columbia in Maryland and Virginia, generators behind LDCs served by Columbia Gas in Maryland and Virginia, and generators served by Dominion Cove Point and PPL Interstate downstream of interconnections with Columbia Gas. The locations of these generators are shown in Figure 80 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N155 and Figure N156 relative to the capacity of the segment.

2.2.2 Dominion Southeast

Dominion Southeast is modeled with a capacity of 540 MDth/d. The 100% peak hour utilization on Dominion's Southeast segment serving Virginia and Maryland potentially affects generators directly served by Dominion, generators behind LDCs served by Dominion, and generators served by Dominion Cove Point via interconnect. The locations of these generators are shown in Figure 85 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N157 and Figure N158 relative to the capacity of the segment.

2.2.3 Eastern Shore

Eastern Shore is modeled with a capacity of 203 MDth/d. The 100% peak hour utilization rate on Eastern Shore's Receipt Zone 1 and Delivery Zone 2 potentially affects generators on the Delmarva Peninsula that are served by Eastern Shore. The locations of these generators are shown in Figure 87 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segments are shown in Figure N159 and Figure N160 relative to the capacity of the segments.

2.2.4 Texas Eastern Zone ETX

The 100% peak hour utilization on Texas Eastern's East Texas segment, which is modeled with a capacity of 623 MDth/d, potentially affects generators directly connected to Texas Eastern in Texas, Arkansas and Illinois. The locations of these generators are shown in Figure 104 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N161 and Figure N162 relative to the capacity of the segment.

2.2.5 Transco Zone 5

Transco Zone 5 is modeled with a capacity of 3,967 MDth/d. The 100% peak hour utilization on Transco's Zone 5 segment potentially affects Study Region generators directly connected to Transco in Virginia and generators behind LDCs served by Transco in North Carolina and Virginia. The locations of these generators are shown in Figure 98 of the report. Non-Study Region generators in North Carolina and South Carolina could also be affected, but are not included in the results shown below.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N163 and Figure N164 relative to the capacity of the segment.

2.3 RGDS S19 WINTER 2023

Figure M19 summarizes the affected generation during the Winter 2023 peak hour by PPA.

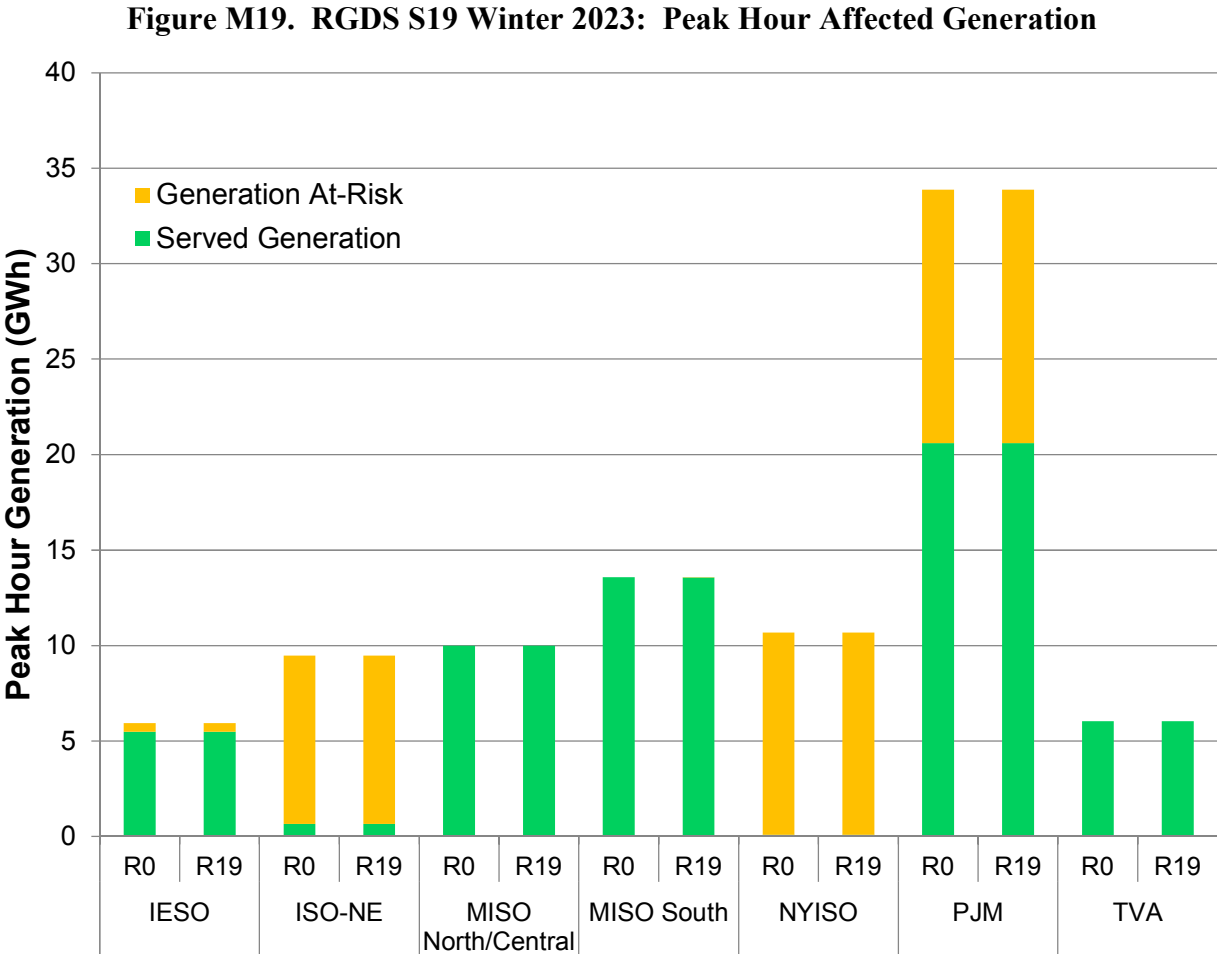


Figure M20 summarizes the unserved demand by GPCM location. The unserved demand and affected generation by location are quantified in Table M13.

Figure M20. RGDS S19 Winter 2023: Locations with Peak Hour Affected Generation

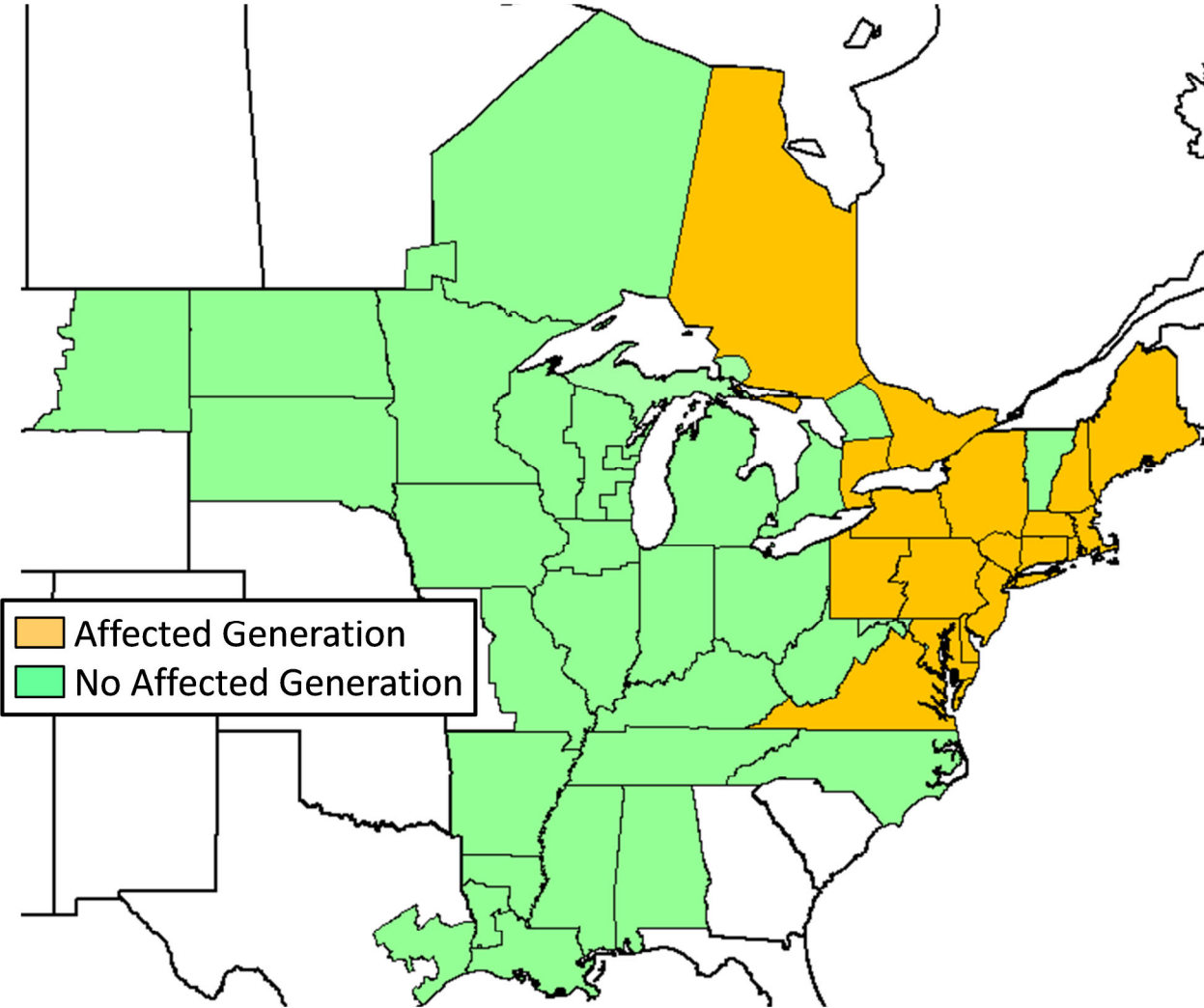


Table M13. RGDS S19 Winter 2023: Unserved Peak Hour Generation Demand and Affected Generation

Location	Unserved Generation Gas Demand (MDth)	Affected Generation (MWh)
Connecticut	15.6	2,140
Delaware	1.3	175
Maine	9.1	1,232
Maryland Eastern	5.0	539
Massachusetts Eastern	14.6	2,025
Massachusetts Western	9.3	1,239
New Hampshire	9.4	1,245
New Jersey	10.7	1,372
New York Central Northern	40.1	4,764
New York City	19.8	2,665
New York Long Island	12.8	1,292
New York Southern	15.1	1,629
New York Western	2.2	247
Ontario (CDA)	0.5	55
Ontario (EDA)	2.1	249
Ontario (NDA)	1.2	155
Pennsylvania Eastern	43.5	5,990
Pennsylvania Western	6.7	961
Rhode Island	7.1	936
Virginia	35.4	4,237

Figure M21 shows the constrained pipeline segments, in red, that result in the affected generation shown in Figure M19 during the Winter 2023 peak hour.

Figure M21. RGDS S19 Winter 2023: Peak Hour Constraints

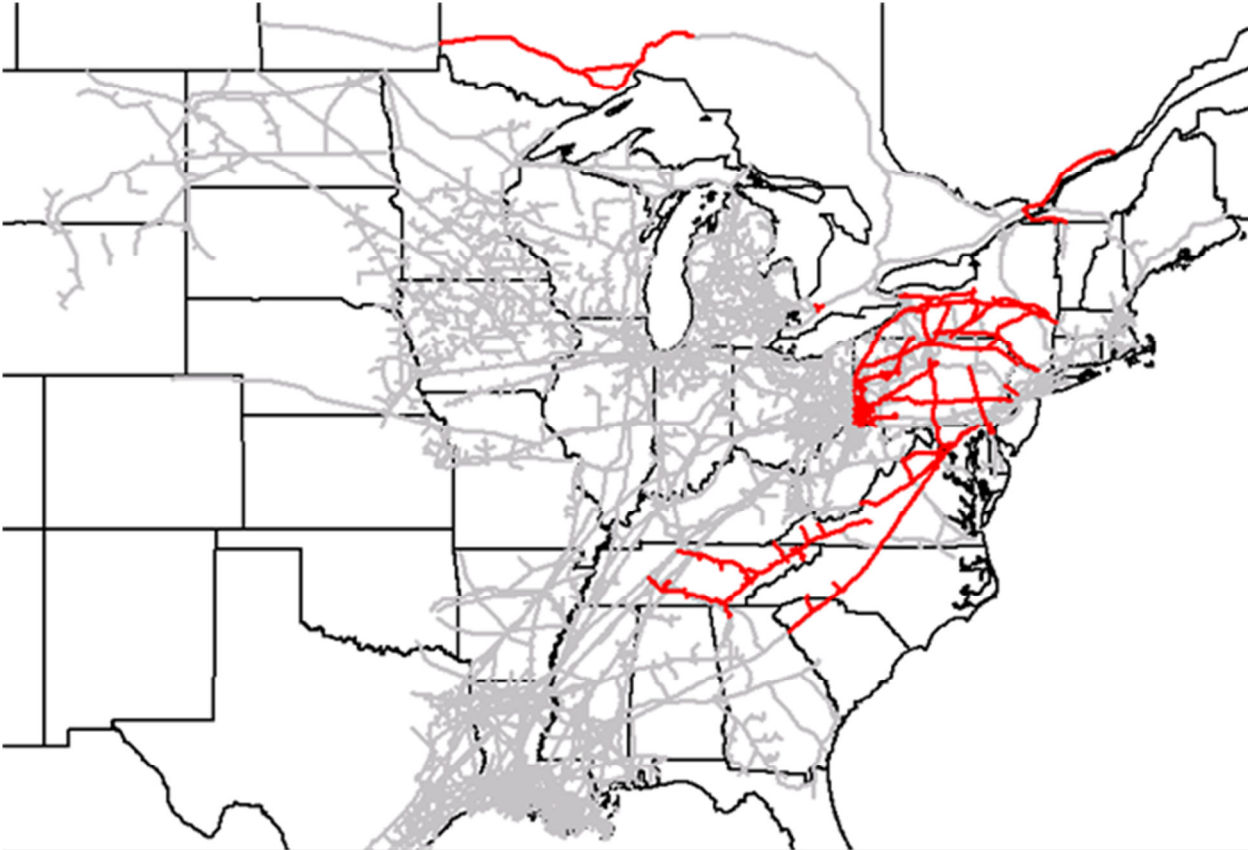


Table M14 summarizes the results of the frequency and duration analysis.

Table M14. RGDS S19 Winter 2023: Frequency and Duration of Constraints

Constraint	# of Events	Min. Duration (Days)	Max. Duration (Days)	Total # of Days
Columbia Gas VA/MD	4	3	59	86
Columbia Gas W PA/NY	15	1	5	28
Constitution	2	31	59	90
Dominion Eastern NY	9	1	16	58
Dominion Western NY	1	5	5	5
Dominion Southeast	4	1	52	85
East Tennessee Mainline	5	1	5	11
Eastern Shore	12	1	15	63
Empire Mainline	8	1	44	61
Millennium	7	1	37	68
NB/NS Supply	2	31	59	90
Tennessee Z4 PA	6	1	15	27
Tennessee Z5 NY	2	31	59	90
Texas Eastern M2 PA South	7	1	46	81
Texas Eastern M3 North	12	1	10	49
TransCanada Ontario West	4	1	10	15
TransCanada Quebec	6	1	14	34
Transco Leidy Atlantic	3	4	59	89
Transco Z5	8	1	2	9
Transco Z6 Leidy to 210	5	1	55	86
Union Gas Dawn	3	1	4	8

2.3.1 Columbia Gas Virginia / Maryland

The 100% peak hour utilization on Columbia Gas’s Virginia/Maryland segment, which is modeled with a capacity of 2,679 MDth/d, an increase of 202 MDth/d over the 2018 capacity. The locations of the potentially affected generators are shown in Figure 80 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N165 and Figure N166 relative to the capacity of the segment.

2.3.2 Columbia Gas Western Pennsylvania / New York

The 100% peak hour utilization on Columbia Gas’s Western Pennsylvania / New York segment, which is modeled with a capacity of 1,131 MDth/d, potentially affects generators directly connected to Columbia in Pennsylvania, New Jersey, Virginia and Maryland, and generators behind LDCs served by Columbia Gas in Pennsylvania, New Jersey, Delaware, Maryland and Virginia. The locations of these generators are shown in Figure 81 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N167 and Figure N168 relative to the capacity of the segment

2.3.3 Constitution Pipeline

Constitution's proposed delivery capacity is 650 MDth/d. The 100% peak hour utilization on Constitution potentially affects generators served by Iroquois both directly and behind LDCs in New York and Connecticut. The locations of these generators are shown in Figure 82 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N169 and Figure N170 relative to the capacity of the segment.

2.3.4 Dominion Eastern New York

Dominion's Eastern New York segment is modeled with a capacity of 907 MDth/d. The 100% peak hour utilization on Dominion's Eastern New York segment potentially affects generators directly connected to Dominion and behind LDCs served by Dominion. The locations of these generators are shown in Figure 83 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N171 and Figure N172 relative to the capacity of the segment.

2.3.5 Dominion Western New York

Dominion Western New York is modeled with a capacity of 557 MDth/d. The 100% utilization on Dominion's Western New York segment potentially affects generators directly served by Dominion and behind LDCs served by Dominion. The locations of the plants in each category are shown in Figure 84 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N173 and Figure N174 relative to the capacity of the segment.

2.3.6 Dominion Southeast

Dominion Southeast is modeled with a capacity of 555 MDth/d, an increase of 15 MDth/d over 2018. The 100% peak hour utilization on Dominion's Southeast segment serving Virginia and Maryland potentially affects generators directly served by Dominion, generators behind LDCs served by Dominion, and generators served by Dominion Cove Point via interconnect. The locations of these generators are shown in Figure 85 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N175 and Figure N176 relative to the capacity of the segment.

2.3.7 East Tennessee Mainline

The East Tennessee mainline is modeled with a capacity of 800 MDth/d. The 100% peak hour utilization on East Tennessee's mainline potentially affects generators directly connected to East Tennessee and generators behind LDCs served by East Tennessee. The locations of these generators are shown in Figure 86 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N177 and Figure N178 relative to the capacity of the segment.

2.3.8 Eastern Shore

Eastern Shore is modeled with a capacity of 213 MDth/d. The 100% peak hour utilization rate on Eastern Shore's Receipt Zone 1 and Delivery Zone 2 potentially affects generators on the Delmarva Peninsula that are served by Eastern Shore. The locations of these generators are shown in Figure 87 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segments are shown in Figure N179 and Figure N180 relative to the capacity of the segments.

2.3.9 Empire Mainline

The Empire mainline is modeled with a capacity of 525 MDth/d. The 100% peak hour utilization on the Empire mainline across upstate New York potentially affects generators on the Niagara Mohawk LDC system. The locations of these generators are shown in Figure 88 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N181 and Figure N182 relative to the capacity of the segment.

2.3.10 Millennium

Millennium is modeled with a capacity of 784 MDth/d. The 100% peak hour utilization on Millennium's mainline potentially affects generators directly connected to Millennium, generators behind LDCs served by Millennium, and generators served by Algonquin, particularly in southern New England. The locations of these generators are shown in Figure 89 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N183 and Figure N184 relative to the capacity of the segment.

2.3.11 New Brunswick Supply / Nova Scotia Offshore Supply

Production from Atlantic Canada is capped at approximately 40 MDth/d in New Brunswick and approximately 243 MDth/d for Nova Scotia Offshore. This supply limitation potentially affects generators directly connected to M&N in Maine and New Hampshire as well as generators located behind LDCs served by M&N in Maine. The locations of these generators are shown in Figure 90 of the report. Generators located in the Canadian Maritimes could also be affected by this supply constraint, but have not been included in the summary results shown below.

The seasonal daily forecasts of RCI and generator gas demand downstream of the supply limitation are shown in Figure N185 and Figure N186 relative to the total production capacity. The generator gas demand in these figures only reflects generators located in the Study Region.

2.3.12 Tennessee Zone 4 Pennsylvania

Tennessee Zone 4 Pennsylvania is modeled with a capacity of 1,887 MDth/d. The 100% peak hour utilization on Tennessee's Zone 4 segment in Pennsylvania potentially affects generators directly connected to Tennessee in Pennsylvania and New Jersey; generators behind LDCs served by Tennessee in Pennsylvania, New Jersey, downstate New York and Connecticut; and generators served by Algonquin either directly or via LDC in New England. The locations of these generators are shown in Figure 91 of the report.

The peak hour demand forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N187 and Figure N188 relative to the capacity of the segment.

2.3.13 Tennessee Zone 5 New York

Tennessee Zone 5 New York is modeled with a capacity of 1,189 MDth/d. The 100% peak hour utilization on Tennessee's Z5 New York segment potentially affects generators directly connected to Tennessee in upstate New York, Massachusetts, Rhode Island and New Hampshire; generators behind LDCs served by Tennessee in upstate New York, Massachusetts, Connecticut and Rhode Island; and generators served by Iroquois, Granite State and PNGTS either directly or behind an LDC. The locations of these generators are shown in Figure 92 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N189 and Figure N190 relative to the capacity of the segment.

2.3.14 Texas Eastern M2 PA – Southern Branch

The Texas Eastern M2 PA – Southern Branch is modeled with a capacity of 2,068 MDth/d. The 100% peak hour utilization on the southern branch of Texas Eastern's Zone M2 segment through Pennsylvania potentially affects generators directly connected to Texas Eastern in Pennsylvania, generators behind LDCs in Pennsylvania, Delaware and downstate New York. Generators that are served by Algonquin and Eastern Shore either directly or behind an LDC would also potentially be affected. The locations of these generators are shown in Figure 93 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N191 and Figure N192 relative to the capacity of the segment.

2.3.15 Texas Eastern M3 – Northern Line

The Texas Eastern M3 Northern Line is modeled with a capacity of 2,987 MDth/d. The 100% peak hour utilization on the Northern line through Pennsylvania potentially affects generators directly connected to Texas Eastern in New Jersey and Pennsylvania, generators behind LDCs served by Texas Eastern in New Jersey, Pennsylvania and downstate New York, as well as generators served by Algonquin both directly and behind LDCs. The locations of these generators are shown in Figure 94 of the report.

The seasonal daily forecasts of RCI and generator peak hour gas demand downstream of the constrained segment are shown in Figure N193 and Figure N194 relative to the capacity of the segment.

2.3.16 TransCanada Ontario West

TransCanada's Western Ontario segment is modeled with a capacity of 3,148 MDth/d. The 100% peak hour utilization on TransCanada's Western Ontario segment potentially affects generators directly connected to TransCanada and generators behind the Enbridge and Union local distribution systems. The locations of these generators are shown in Figure 95 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N195 and Figure N196 relative to the capacity of the segment.

2.3.17 TransCanada Quebec

TransCanada Quebec is modeled with a capacity of 1,320 MDth/d. The 100% peak hour utilization on TransCanada's Quebec segment potentially affects generators served by PNGTS, North Country and Vermont Gas. The locations of these generators are shown in Figure 96 of the report. Limitations for customers in Quebec could arise from this constraint, but such limitations have not been included in the results reported below.

The seasonal daily forecasts of RCI and generator peak hour demand downstream of the constrained segment are shown in Figure N197 and Figure N198 relative to the capacity of the segment. The generator gas demand in these figures includes only gas demand at generators in the Study Region. Gas demand from non-Study Region generators is not included in the tabulation of results.

2.3.18 Transco Leidy Atlantic

The Transco Leidy Atlantic segment is modeled with a capacity of 1,700 MDth/d. The 100% peak hour utilization on Transco's Leidy Atlantic segment potentially affects generators directly connected to Transco in New Jersey, Maryland, Pennsylvania and Virginia and generators behind LDCs served by Transco in Delaware, New Jersey, Pennsylvania, Maryland, Virginia and North Carolina. The locations of these generators are shown in Figure 97 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N199 and Figure N200 relative to the capacity of the segment.

2.3.19 Transco Zone 5

Transco Zone 5 is modeled with a capacity of 3,967 MDth/d. The 100% peak hour utilization on Transco's Zone 5 segment potentially affects Study Region generators directly connected to Transco in Virginia and generators behind LDCs served by Transco in North Carolina and Virginia. The locations of these generators are shown in Figure 98 of the report. Non-Study Region generators in North Carolina and South Carolina could also be affected, but are not included in the results shown below.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N201 and Figure N202 relative to the capacity of the segment.

2.3.20 Transco Zone 6 Leidy Line to Station 210

The Transco Zone 6 Leidy to Station 210 segment is modeled with a capacity of 3,310 MDth/d. The 100% peak hour utilization on this segment potentially affects generators directly connected to Transco in New Jersey and Pennsylvania and generators behind LDCs served by Transco in New Jersey, Pennsylvania, New York City and Long Island. The locations of generators served along this Transco segment are shown in Figure 99 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N203 and Figure N204 relative to the capacity of the segment.

2.3.21 Union Gas Dawn

The 100% peak hour utilization on Union Gas's Dawn segment, which is modeled with a capacity of 5,000 MDth/d, potentially affects generators directly connected to Union, generators directly connected to TransCanada, and generators served by the Union Gas and Enbridge distribution systems. The locations of these generators are shown in Figure 100 of the report.

The seasonal daily forecasts of RCI and generator peak hour gas demand downstream of the constrained segment are shown in Figure N205 and Figure N206 relative to the capacity of the segment.

2.4 RGDS S19 SUMMER 2023

Figure M22 summarizes the affected generation during the Summer 2023 peak hour by PPA.

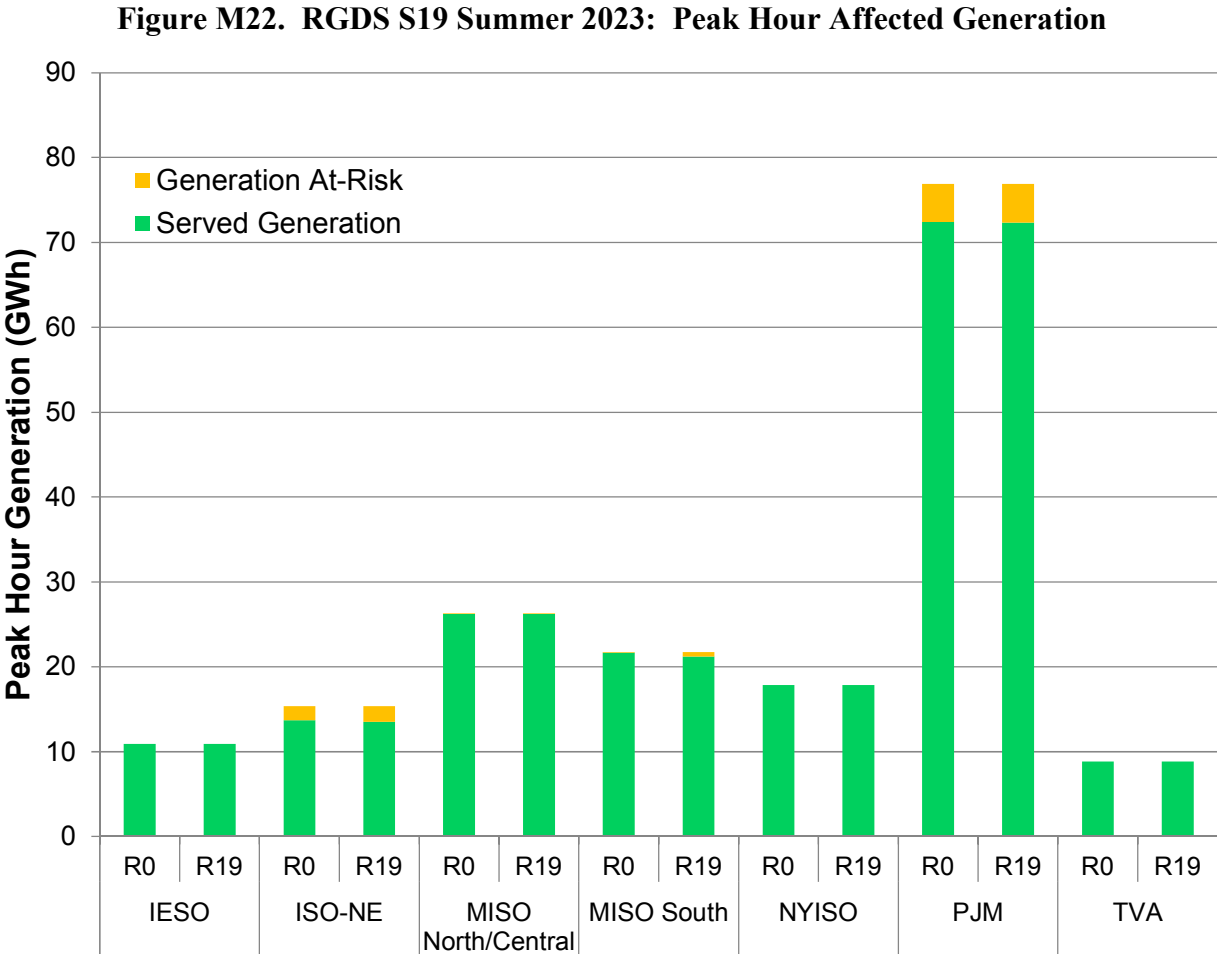


Figure M23 summarizes the unserved demand by GPCM location. The unserved demand and affected generation by location are quantified in Table M15.

Figure M23. RGDS S19 Summer 2023: Locations with Peak Hour Affected Generation

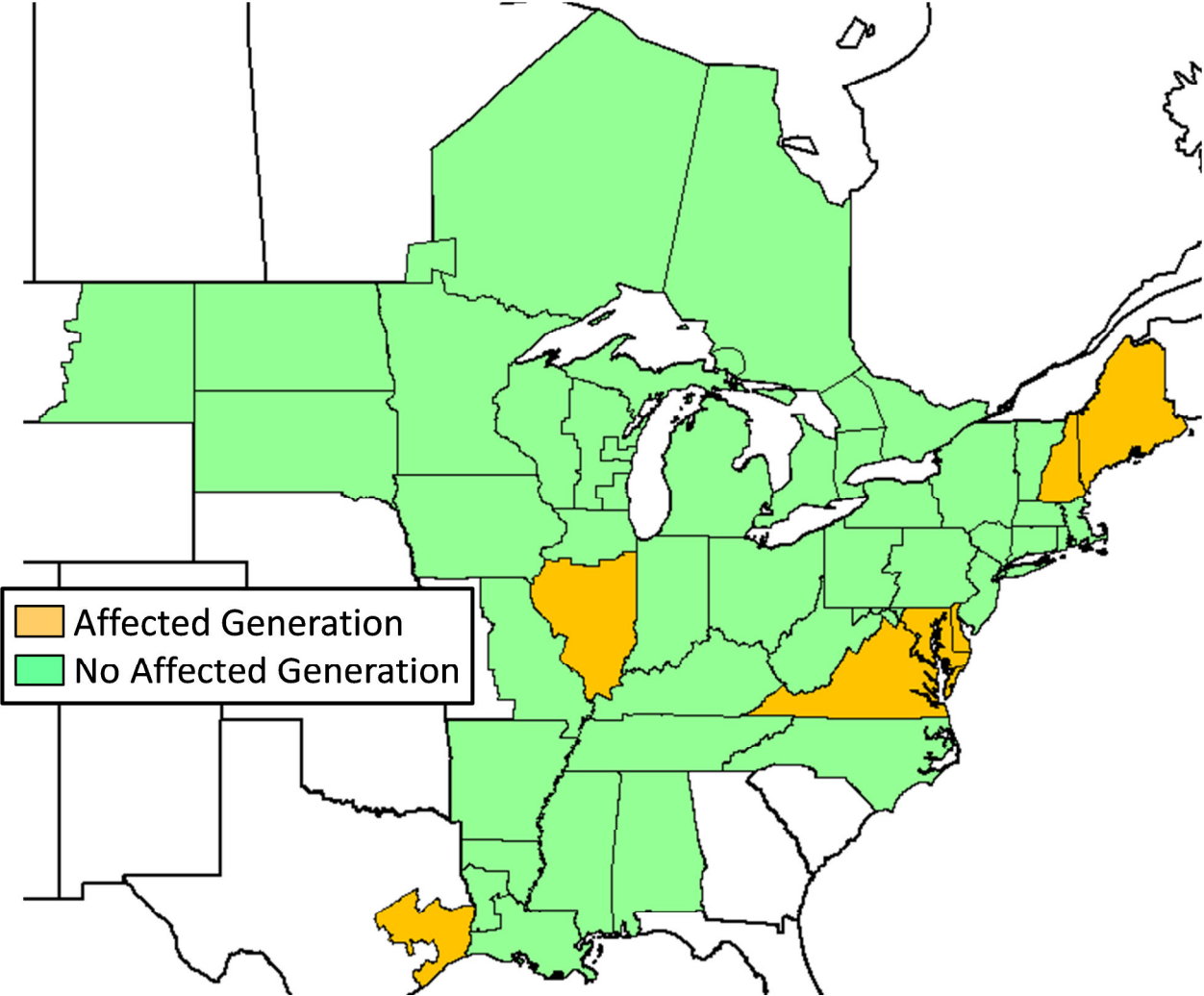


Table M15. RGDS S19 Summer 2023: Unserved Peak Hour Generation Demand and Affected Generation

Location	Unserved Generation Gas Demand (MDth)	Affected Generation (MWh)
Delaware	9.1	1,250
Illinois Southern	1.0	112
Maine	7.5	1,001
Maryland Eastern	16.7	2,361
New Hampshire	7.6	857
Texas East (SERC)	1.1	151
Virginia	8.4	936

Figure M24 shows the constrained pipeline segments, in red, that result in the affected generation shown in Figure M22 during the Summer 2023 peak hour.

Figure M24. RGDS S19 Summer 2023: Peak Hour Constraints

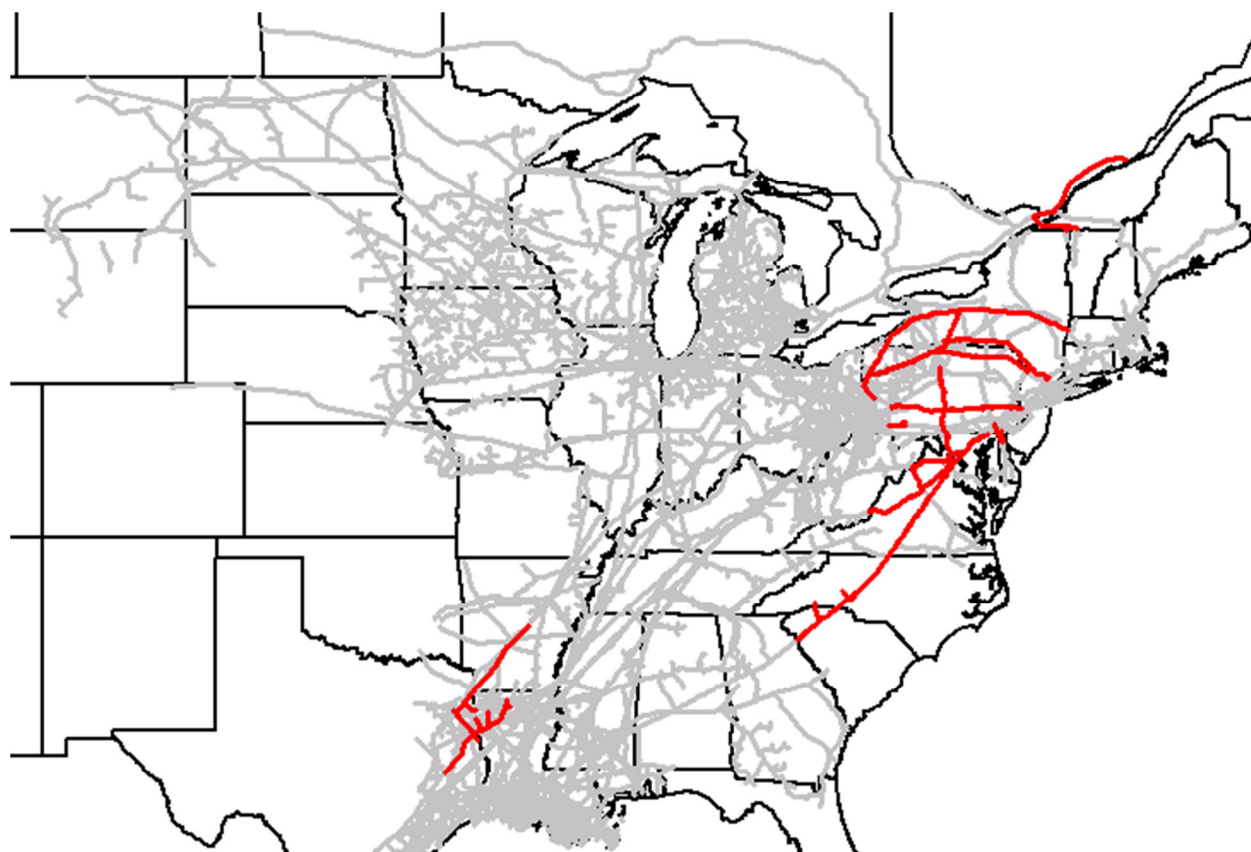


Table M16 summarizes the results of the frequency and duration analysis.

Table M16. RGDS S19 Summer 2023: Frequency and Duration of Constraints

Constraint	# of Events	Min. Duration (Days)	Max. Duration (Days)	Total # of Days
Columbia Gas VA/MD	3	1	4	7
Dominion Southeast	9	1	7	27
Eastern Shore	11	1	7	29
Millennium	1	2	2	2
NB/NS Supply	2	2	81	83
Tennessee Z4 PA	4	1	3	7
Tennessee Z5 NY	6	2	33	75
Texas Eastern ETX	7	1	6	16
Texas Eastern M2 PA South	8	1	19	45
Texas Eastern M3 North	5	1	2	6
TransCanada Quebec	2	1	1	2
Transco Z5	6	1	6	16

2.4.1 Columbia Gas Virginia / Maryland

The 100% peak hour utilization on Columbia Gas's Virginia/Maryland segment is modeled with a capacity of 2,679 MDth/d, an increase of 202 MDth/d for 2023 as compared with 2018. The locations of the potentially affected generators are shown in Figure 80 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N207 and Figure N208 relative to the capacity of the segment.

2.4.2 Dominion Southeast

Dominion Southeast is modeled with a capacity of 555 MDth/d, an increase over the capacity modeled for the summer 2018 of 15 MDth/d. The locations of the potentially affected generators are shown in Figure 85 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N209 and Figure N210 relative to the capacity of the segment.

2.4.3 Eastern Shore

Eastern Shore is modeled with a capacity of 203 MDth/d, the same as the capacity modeled for the summer of 2018. The locations of the potentially affected generators are shown in Figure 87 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segments are shown in Figure N211 and Figure N212 relative to the capacity of the segments.

2.4.4 Millennium

Millennium is modeled with a capacity of 784 MDth/d. The 100% peak hour utilization on Millennium's mainline potentially affects generators directly connected to Millennium, generators behind LDCs served by Millennium, and generators served by Algonquin, particularly in southern New England. The locations of these generators are shown in Figure 89 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N213 and Figure N214 relative to the capacity of the segment.

2.4.5 New Brunswick Supply / Nova Scotia Offshore Supply

Production from Atlantic Canada is capped at approximately 40 MDth/d in New Brunswick and approximately 243 MDth/d for Nova Scotia Offshore. This supply limitation potentially affects generators directly connected to M&N in Maine and New Hampshire as well as generators located behind LDCs served by M&N in Maine. The locations of these generators are shown in Figure 90 of the report. Generators located in the Canadian Maritimes could also be affected by this supply constraint, but have not been included in the summary results shown below.

The seasonal daily forecasts of RCI and generator gas demand downstream of the supply limitation are shown in Figure N215 and Figure N216 relative to the total production capacity.

2.4.6 Tennessee Zone 4 Pennsylvania

Tennessee Zone 4 Pennsylvania is modeled with a capacity of 1,887 MDth/d. The 100% peak hour utilization on Tennessee's Zone 4 segment in Pennsylvania potentially affects generators directly connected to Tennessee in Pennsylvania and New Jersey; generators behind LDCs served by Tennessee in Pennsylvania, New Jersey, downstate New York and Connecticut; and generators served by Algonquin either directly or via LDC in New England. The locations of these generators are shown in Figure 91 of the report.

The peak hour demand forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N217 and Figure N218 relative to the capacity of the segment.

2.4.7 Tennessee Zone 5 New York

Tennessee Zone 5 New York is modeled with a capacity of 1,189 MDth/d. The 100% peak hour utilization on Tennessee's Z5 New York segment potentially affects generators directly connected to Tennessee in upstate New York, Massachusetts, Rhode Island and New Hampshire; generators behind LDCs served by Tennessee in upstate New York, Massachusetts, Connecticut and Rhode Island; and generators served by Iroquois, Granite State and PNGTS either directly or behind an LDC. The locations of these generators are shown in Figure 92 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N219 and Figure N220 relative to the capacity of the segment.

2.4.8 Texas Eastern Zone ETX

The 100% peak hour utilization on Texas Eastern's East Texas segment is modeled with a capacity of 623 MDth/d, the same capacity as modeled for 2018. The locations of the potentially affected generators are shown in Figure 104 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N221 and Figure N222 relative to the capacity of the segment.

2.4.9 Texas Eastern M2 PA – Southern Branch

The Texas Eastern M2 PA – Southern Branch is modeled with a capacity of 2,068 MDth/d. The 100% peak hour utilization on the southern branch of Texas Eastern's Zone M2 segment through Pennsylvania potentially affects generators directly connected to Texas Eastern in Pennsylvania, generators behind LDCs in Pennsylvania, Delaware and downstate New York. Generators that are served by Algonquin and Eastern Shore either directly or behind an LDC would also potentially be affected. The locations of these generators are shown in Figure 93 of the report.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N223 and Figure N224 relative to the capacity of the segment.

2.4.10 Texas Eastern M3 – Northern Line

The Texas Eastern M3 Northern Line is modeled with a capacity of 2,987 MDth/d. The 100% peak hour utilization on the Northern line through Pennsylvania potentially affects generators directly connected to Texas Eastern in New Jersey and Pennsylvania, generators behind LDCs served by Texas Eastern in New Jersey, Pennsylvania and downstate New York, as well as generators served by Algonquin both directly and behind LDCs. The locations of these generators are shown in Figure 94 of the report.

The seasonal daily forecasts of RCI and generator peak hour gas demand downstream of the constrained segment are shown in Figure N225 and Figure N226 relative to the capacity of the segment.

2.4.11 TransCanada Quebec

TransCanada Quebec is modeled with a capacity of 1,320 MDth/d. The 100% peak hour utilization on TransCanada's Quebec segment potentially affects generators served by PNGTS, North Country and Vermont Gas. The locations of these generators are shown in Figure 96 of the report. Limitations for customers in Quebec could arise from this constraint, but such limitations have not been included in the results reported below.

The seasonal daily forecasts of RCI and generator peak hour demand downstream of the constrained segment are shown in Figure N227 and Figure N228 relative to the capacity of the segment. The generator gas demand in these figures includes only gas demand at generators in the Study Region. Gas demand from non-Study Region generators is not included in the tabulation of results.

2.4.12 Transco Zone 5

Transco Zone 5 is modeled with a capacity of 3,967 MDth/d, the same capacity as modeled for 2018. The locations of the potentially affected generators are shown in Figure 98 of the report. Generators located in outside the Study Region in North Carolina and South Carolina could also be affected, but are not included in the results shown below.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure N229 and Figure N230 relative to the capacity of the segment.