

APPENDIX K. IMPACT OF GAS INFRASTRUCTURE EXPANSIONS: S13, S14, AND S16

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**1 S13: INCREASED INFRASTRUCTURE TO ENABLE ADDITIONAL MARCELLUS/UTICA FLOWS TO NEIGHBORING PPAS**

**1.1 RGDS S13 WINTER 2018**

Figure K1 summarizes the affected generation during the Winter 2018 peak hour by PPA.

**Figure K1. RGDS S13 Winter 2018: Peak Hour Affected Generation**

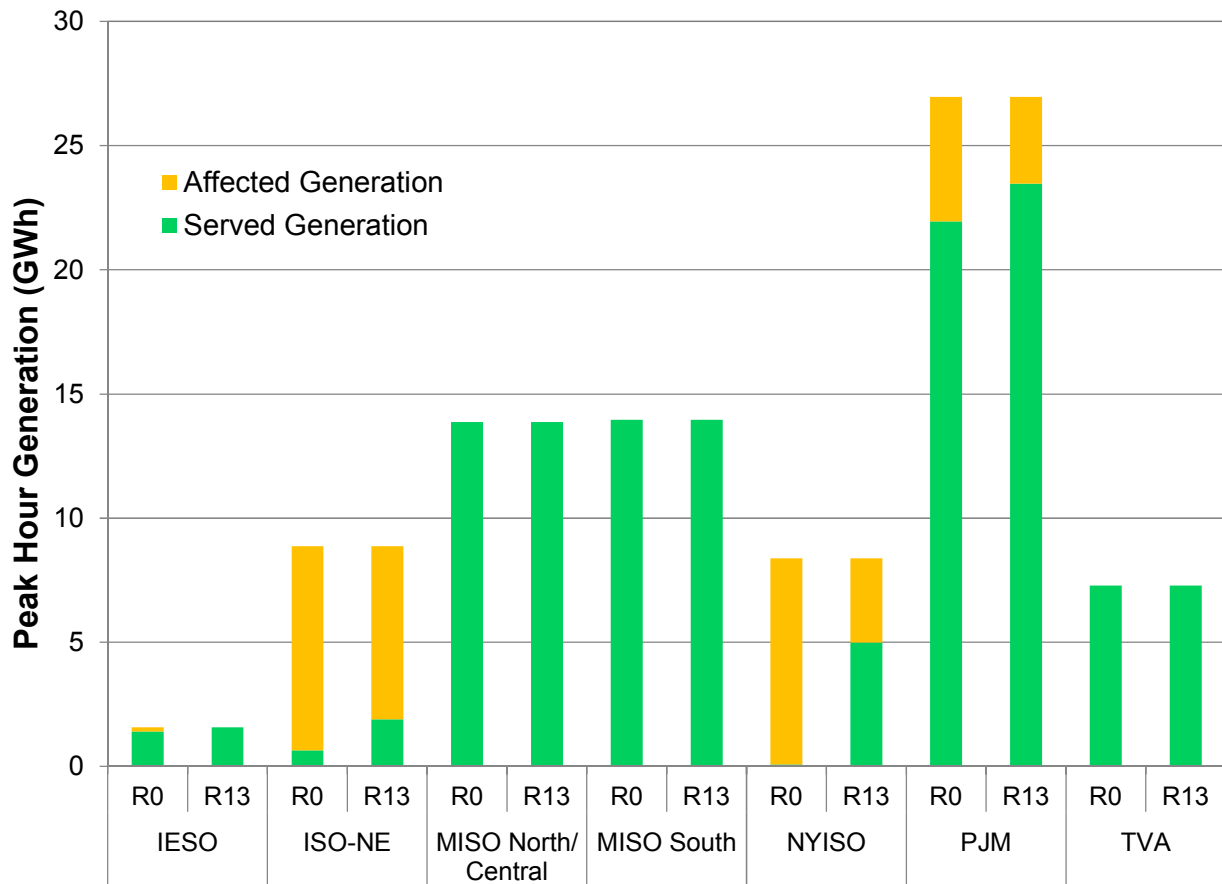


Figure K2 summarizes the unserved demand by GPCM location. The unserved demand and affected generation by location are quantified in Table K1.



Figure K2. RGDS S13 Winter 2018: Locations with Peak Hour Affected Generation

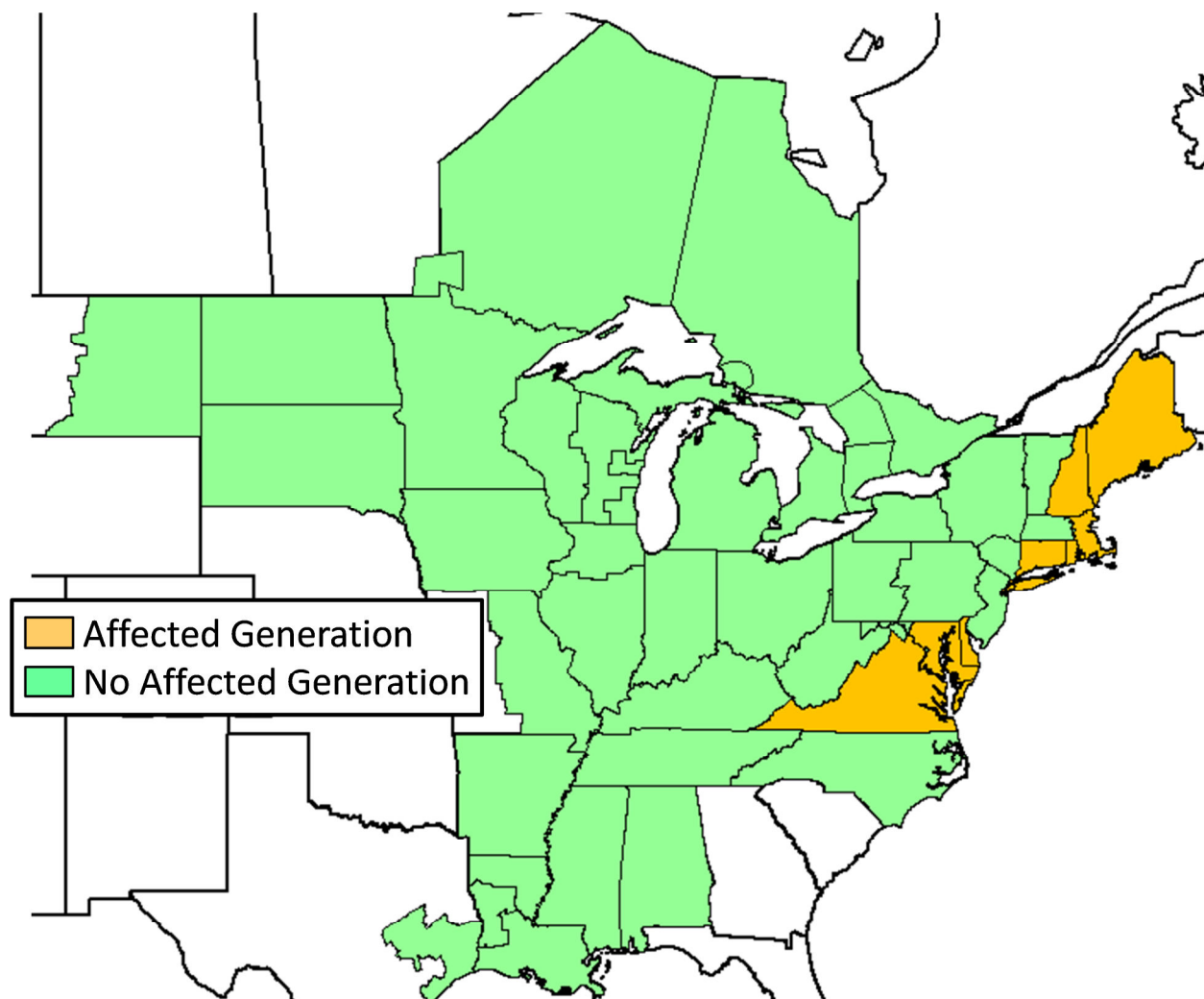


Table K1. RGDS S13 Winter 2018: Unserviced Peak Hour Generation Demand and Affected Generation

Location	Unserviced Generation Gas Demand (MDth)	Affected Generation (MWh)
Connecticut	16.0	2,200
Delaware	1.6	199
Maine	7.6	1,045
Maryland Eastern	5.0	539
Massachusetts Eastern	12.8	1,781
New Hampshire	8.7	1,159
New York City	17.7	2,336
New York Long Island	9.4	1,054
Rhode Island	5.9	783
Virginia	21.0	2,755

Figure K3 shows the constrained pipeline segments, in red, that result in the affected generation shown in Figure K1 during the Winter 2018 peak hour.

**Figure K3. RGDS S0 Winter 2018: Peak Hour Constraints**

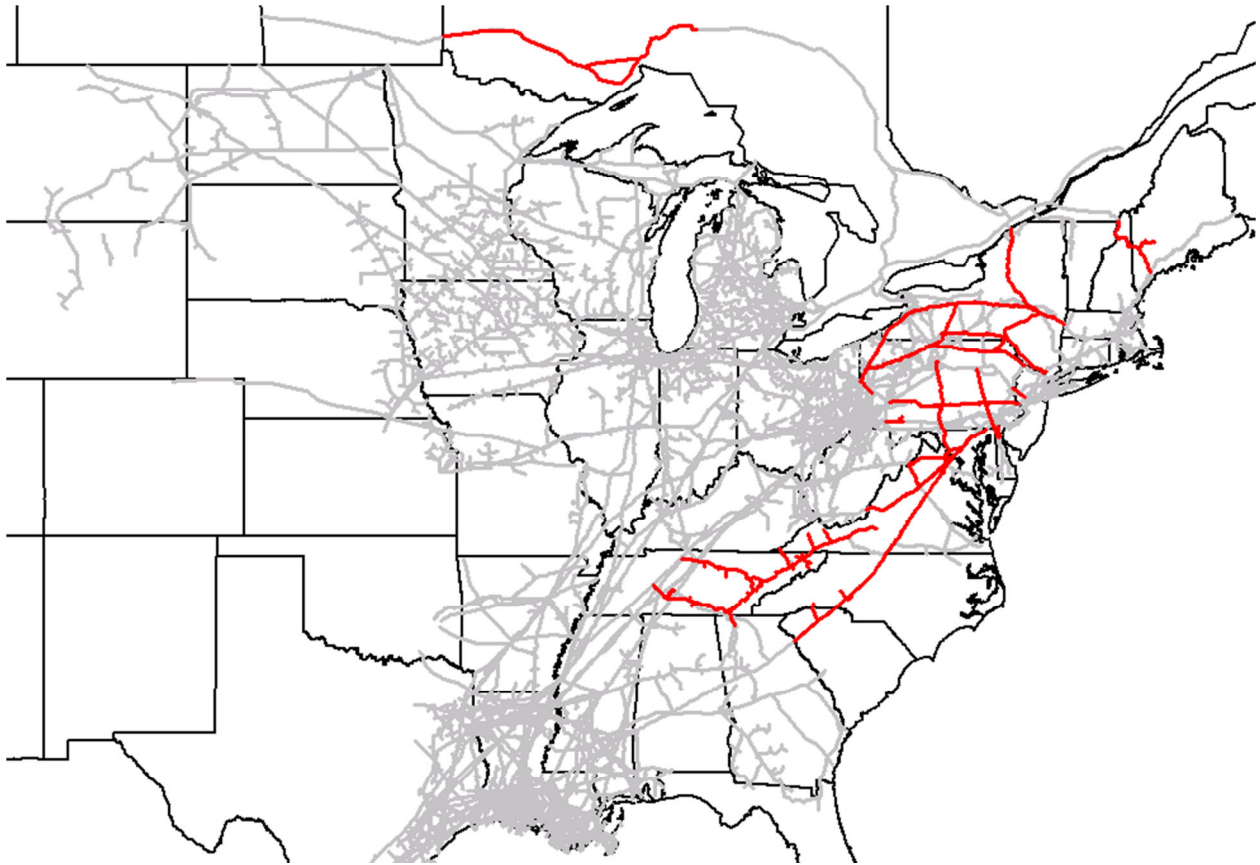


Table K2 summarizes the results of the frequency and duration analysis.

**Table K2. RGDS S13 Winter 2018: Frequency and Duration of Constraints**

<b>Constraint</b>	<b># of Events</b>	<b>Min. Duration (Days)</b>	<b>Max. Duration (Days)</b>	<b>Total # of Days</b>
Columbia Gas VA/MD	12	1	5	23
Constitution	5	1	12	25
Dominion Southeast	7	1	12	22
East Tennessee	7	1	2	9
Eastern Shore	11	1	10	51
Iroquois Z1	10	1	15	54
Millennium	4	1	59	83
NB/NS Offshore	13	1	20	58
PNGTS N of Westbrook	10	1	26	71
Tennessee Z4 PA	10	1	7	30
Tennessee Z5 NY	2	31	59	90
Texas Eastern M2 PA South	10	1	15	50
Texas Eastern M3 North	10	2	7	39
Transco Leidy Atlantic	8	2	23	59
Transco Z5	3	1	7	9
Transco Z6 Leidy to 210	5	1	3	8

### 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 L1 and Figure L2 relative to the capacity of the segment.

### 1.1.2 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 L3 and Figure L4 relative to the capacity of the segment.

### 1.1.3 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 L5 and Figure L6 relative to the capacity of the segment.

#### **1.1.4 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 L7 and Figure L8 relative to the capacity of the segment.

#### **1.1.5 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 L9 and Figure L10 relative to the capacity of the segments.

#### **1.1.6 Iroquois Zone 1**

The 100% peak hour utilization on Iroquois's Zone 1, which is modeled with a capacity of 1,195 MDth/d, potentially affects generators directly connected to Iroquois and generators behind LDCs served by Iroquois. The locations of these generators are shown in Figure D10.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure L11 and Figure L12 relative to the capacity of the segment.

#### **1.1.7 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 L13 and Figure L14 relative to the capacity of the segment.

### **1.1.8 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 L15 and Figure L16 relative to the total production capacity. The generator gas demand in these figures only reflects generators located in the Study Region.

### **1.1.9 PNGTS North of Westbrook**

The 100% peak hour utilization on PNGTS's North of Westbrook segment, which is modeled with a capacity of 300 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 peak hour gas demand downstream of the constrained segment are shown in Figure L17 and Figure L18 relative to the capacity of the segment.

### **1.1.10 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 L19 and Figure L20 relative to the capacity of the segment.

### **1.1.11 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 L21 and Figure L22 relative to the capacity of the segment.

#### **1.1.12 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 L23 and Figure L24 relative to the capacity of the segment.

#### **1.1.13 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 L25 and Figure L26 relative to the capacity of the segment.

#### **1.1.14 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 L27 and Figure L28 relative to the capacity of the segment.

#### **1.1.15 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 L29 and Figure L30 relative to the capacity of the segment.

### 1.1.16 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 L31 and Figure L32 relative to the capacity of the segment.

## 1.2 RGDS S13 SUMMER 2018

Figure K4 summarizes the affected generation during the Summer 2018 peak hour by PPA.

**Figure K4. RGDS S13 Summer 2018: Peak Hour Affected Generation**

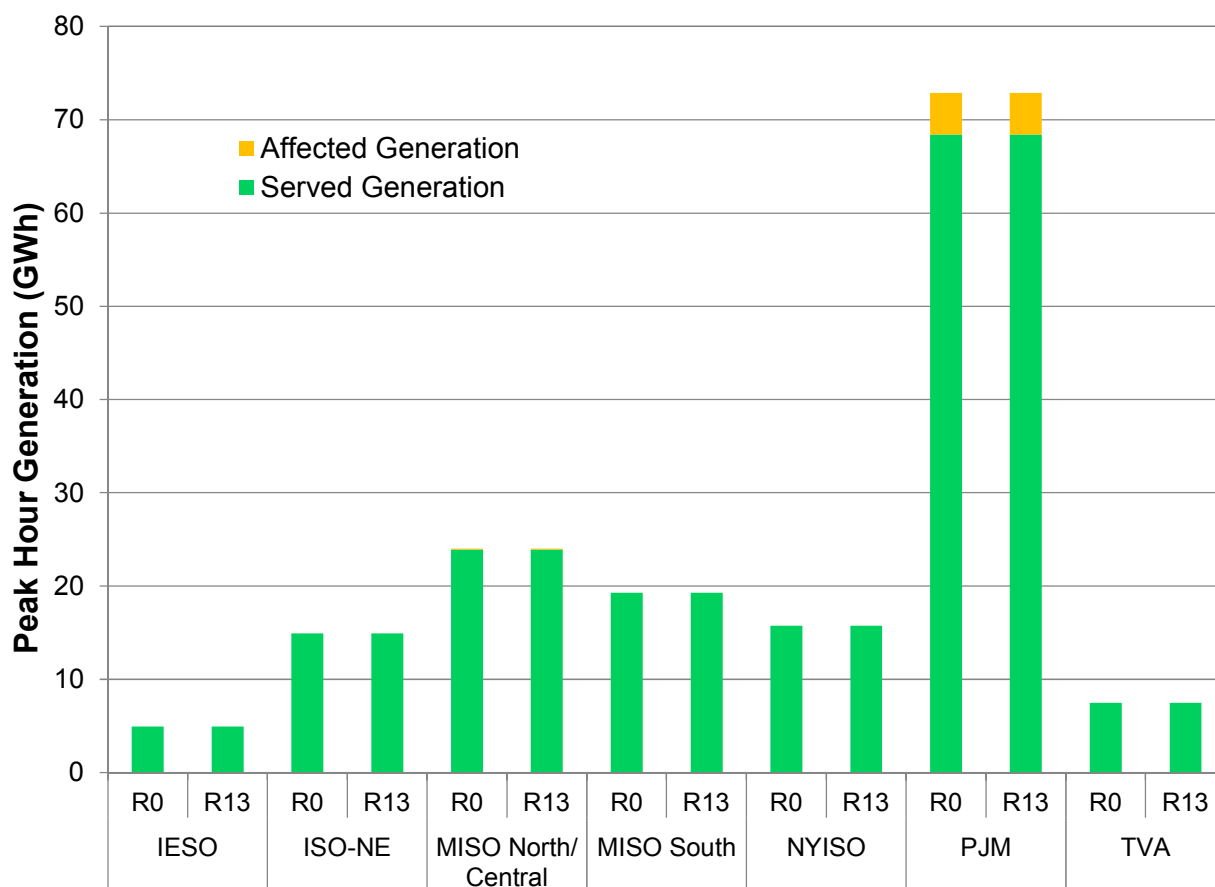
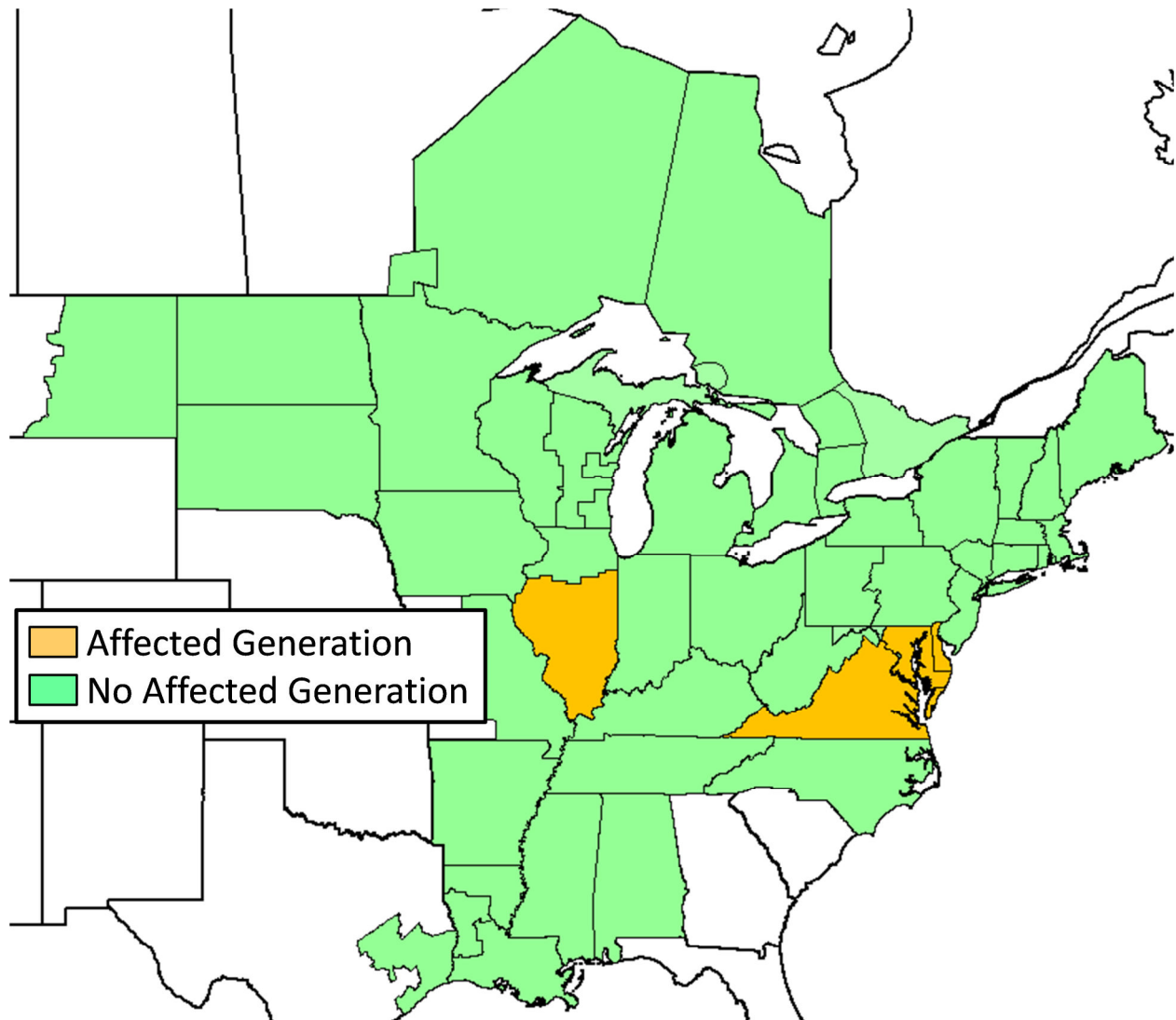


Figure K5 summarizes the unserved demand by GPCM location. The unserved demand and affected generation by location are quantified in Table K3.

**Figure K5. RGDS S13 Summer 2018: Locations with Peak Hour Affected Generation**



**Table K3. RGDS S13 Summer 2018 Unserved Peak Hour Generation Demand and Affected Generation**

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

Figure K6 shows the constrained pipeline segments, in red, that result in the affected generation shown in Figure K4 during the Summer 2018 peak hour.



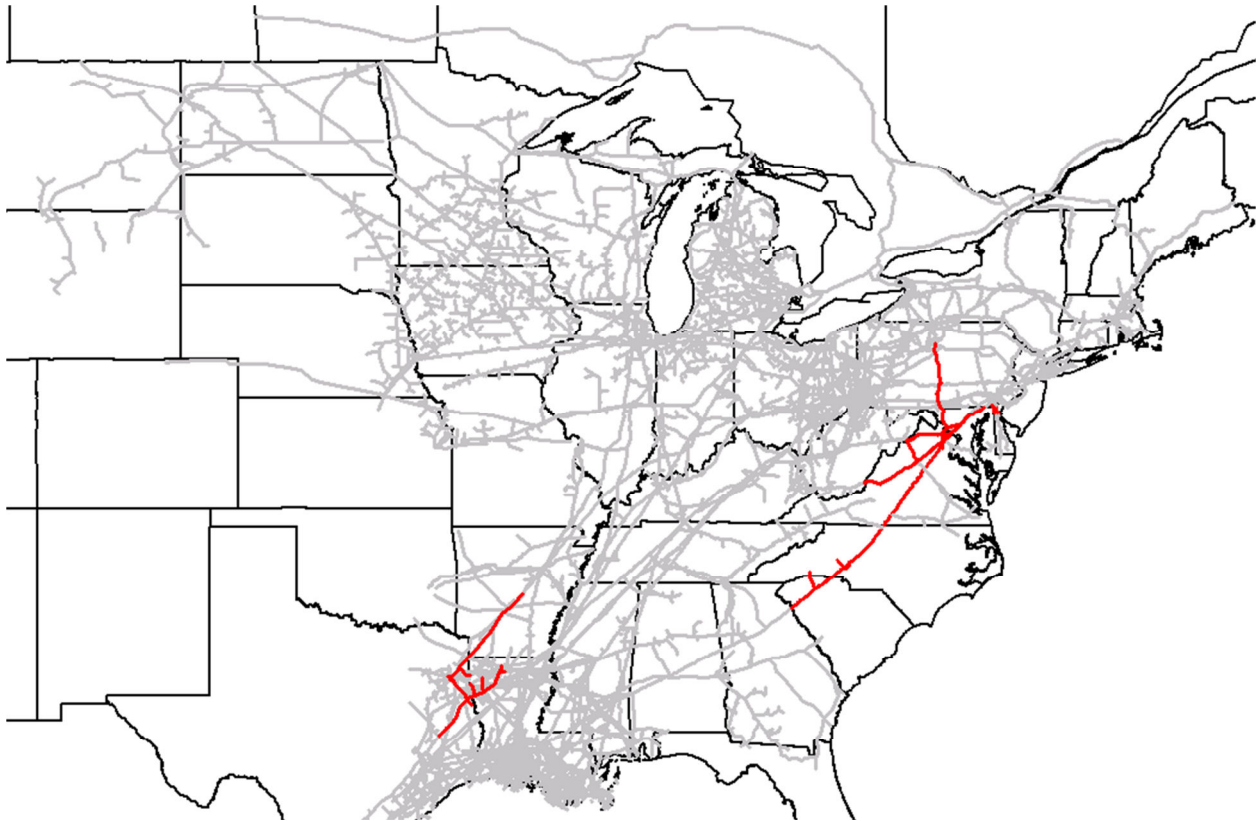
**Figure K6. RGDS S13 Summer 2018: Peak Hour Constraints**

Table K4 summarizes the results of the frequency and duration analysis.

**Table K4. RGDS S13 Summer 2018: Frequency and Duration of Constraints**

<b>Constraint</b>	<b># of Events</b>	<b>Min. Duration (Days)</b>	<b>Max. Duration (Days)</b>	<b>Total # of Days</b>
Columbia Gas VA/MD	1	1	1	1
Dominion Southeast	3	1	2	5
Eastern Shore	7	1	6	19
Texas Eastern Zone ETX	4	1	6	12
Transco Z5	7	2	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 L33 and Figure L34 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 L35 and Figure L36 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 L37 and Figure L38 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 L39 and Figure L40 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 L41 and Figure L42 relative to the capacity of the segment.

1.3 RGDS S13 WINTER 2023

Figure K7 summarizes the affected generation during the Winter 2023 peak hour by PPA.

**Figure K7. RGDS S13 Winter 2023: Peak Hour Affected Generation**

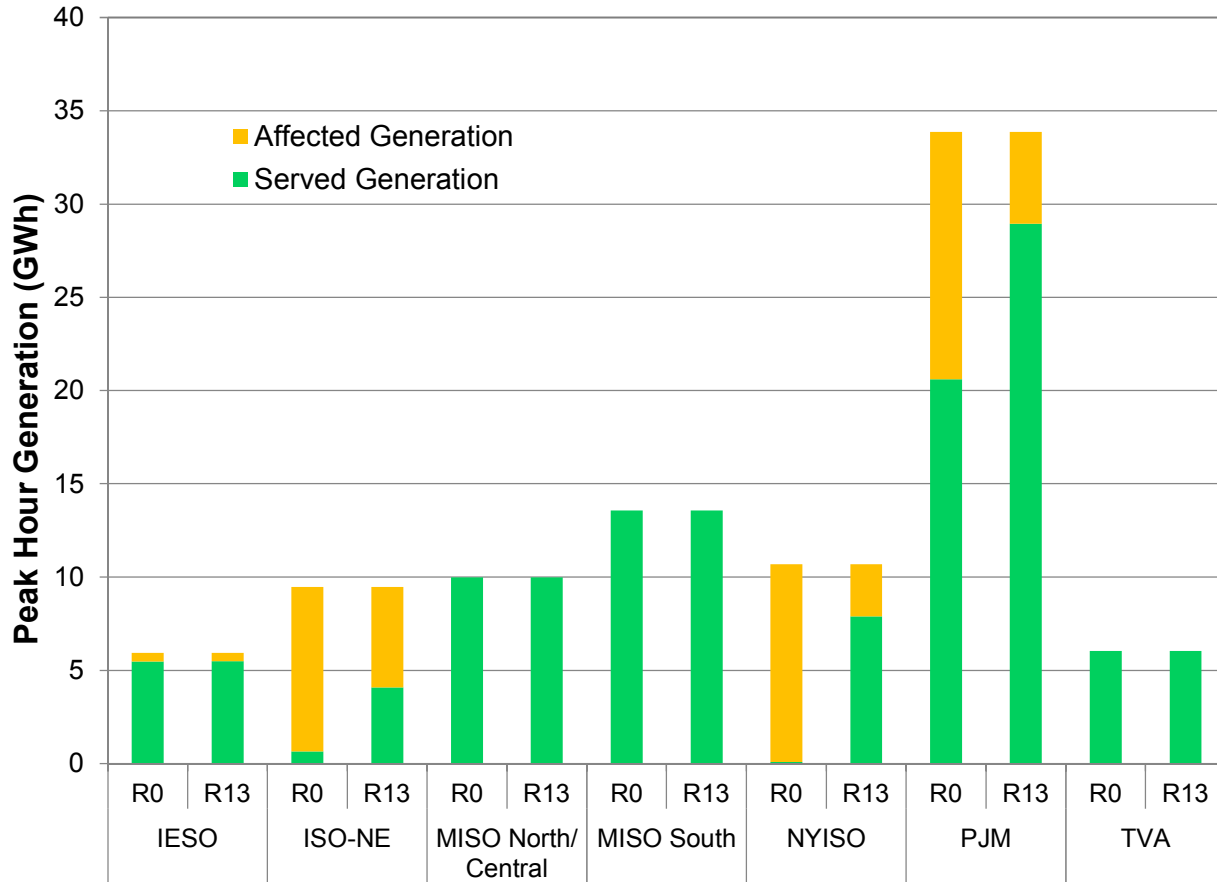
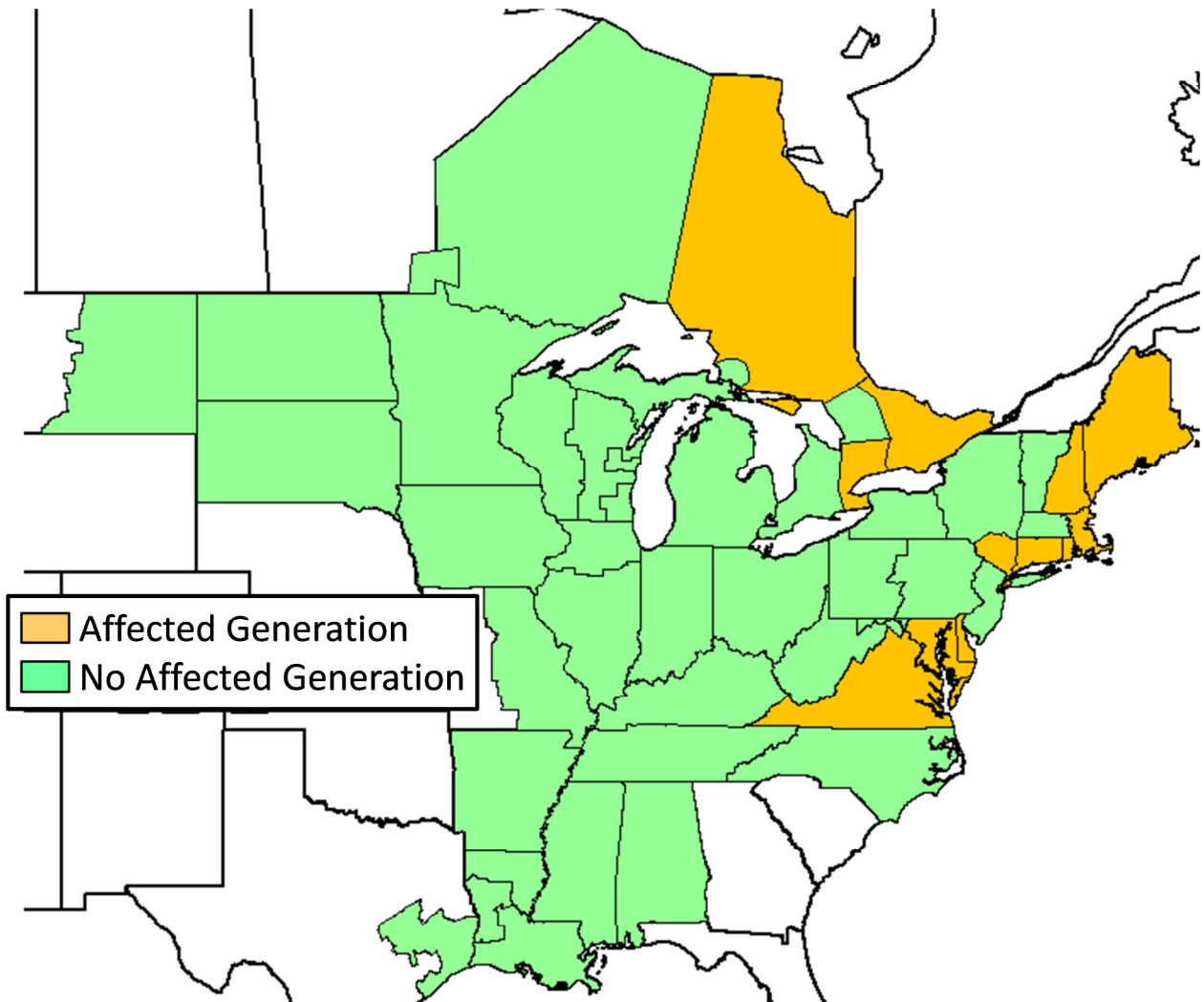


Figure K8 summarizes the unserved demand by GPCM location. The unserved demand and affected generation by location are quantified in Table K5.

Figure K8. RGDS S13 Winter 2023: Locations with Peak Hour Affected Generation



**Table K5. RGDS S13 Winter 2023: Unserved Peak Hour Generation Demand and Affected Generation**

<b>Location</b>	<b>Unserved Generation Gas Demand (MDth)</b>	<b>Affected Generation (MWh)</b>
Connecticut	15.4	2,122
Delaware	1.1	151
Maine	3.6	506
Maryland Eastern	5.0	539
Massachusetts Eastern	14.6	2,025
New Hampshire	3.5	467
New York City	19.8	2,665
New York Southern	1.3	126
Ontario (CDA)	0.5	55
Ontario (EDA)	2.1	249
Ontario (NDA)	1.1	147
Rhode Island	1.9	262
Virginia	35.4	4,237

Figure K9 shows the constrained pipeline segments, in red, that result in the affected generation shown in Figure K7 during the Winter 2023 peak hour.

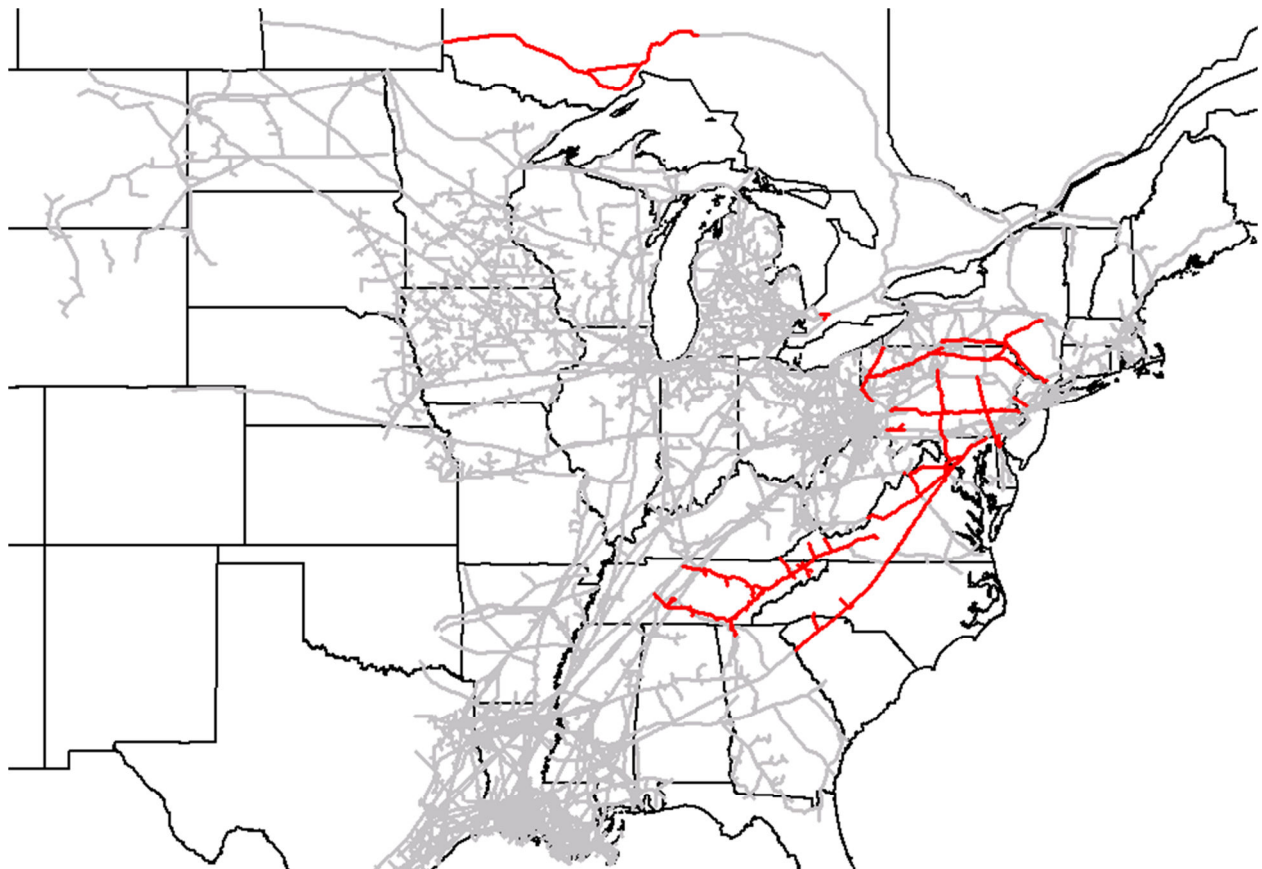
**Figure K9. RGDS S13 Winter 2023: Peak Hour Constraints**

Table K6 summarizes the results of the frequency and duration analysis.

**Table K6. RGDS S13 Winter 2023: Frequency and Duration of Constraints**

<b>Constraint</b>	<b># of Events</b>	<b>Min. Duration (Days)</b>	<b>Max. Duration (Days)</b>	<b>Total # of Days</b>
Columbia Gas VA/MD	6	1	52	80
Constitution	2	31	59	90
Dominion Southeast	4	1	52	85
East Tennessee	5	1	5	11
Eastern Shore	12	1	15	63
Iroquois Z1 → Z2	2	31	59	90
Millennium	7	1	37	68
NB/NS Offshore	2	31	59	90
Tennessee Z4 PA	7	1	8	25
Texas Eastern M2 PA South	7	1	46	81
Texas Eastern M3 North	6	1	17	47
TransCanada Ontario West	4	1	6	11
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	2	1	2	3

### 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 L43 and Figure L44 relative to the capacity of the segment.

### 1.3.2 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 L45 and Figure L46 relative to the capacity of the segment.

### **1.3.3 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 L47 and Figure L48 relative to the capacity of the segment.

### **1.3.4 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 L49 and Figure L50 relative to the capacity of the segment.

### **1.3.5 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 L51 and Figure L52 relative to the capacity of the segments.

### **1.3.6 Iroquois Zone 1 to Zone 2**

The 100% peak hour utilization of the link between Iroquois Zone 1 and Iroquois Zone 1, which is modeled with a capacity of 855 MDth/d, potentially affects generators directly connected to Iroquois in New York and Connecticut, and generators behind LDCs served by Iroquois in New York and Connecticut. The locations of these generators are shown in Figure D16.

The seasonal daily forecasts of RCI and generator gas demand downstream of the constrained segment are shown in Figure L53 and Figure L54 relative to the capacity of the segment.

### **1.3.7 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 L55 and Figure L56 relative to the capacity of the segment.

### **1.3.8 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 L57 and Figure L58 relative to the total production capacity. The generator gas demand in these figures only reflects generators located in the Study Region.

### **1.3.9 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 L59 and Figure L60 relative to the capacity of the segment.

### **1.3.10 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 L61 and Figure L62 relative to the capacity of the segment.

### **1.3.11 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 L63 and Figure L64 relative to the capacity of the segment.

### **1.3.12 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 L65 and Figure L66 relative to the capacity of the segment.

### **1.3.13 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 L67 and Figure L68 relative to the capacity of the segment.

### **1.3.14 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 L69 and Figure L70 relative to the capacity of the segment.

### **1.3.15 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 L71 and Figure L72 relative to the capacity of the segment.

### 1.3.16 Union Gas Dawn

The 100% peak hour utilization on Union Gas’s Dawn segment, which is modeled with a capacity of 6,612 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 L73 and Figure L74 relative to the capacity of the segment.

## 1.4 RGDS S13 SUMMER 2023

Figure K10 summarizes the affected generation during the Summer 2023 peak hour by PPA.

**Figure K10. RGDS S13 Summer 2023: Peak Hour Affected Generation**

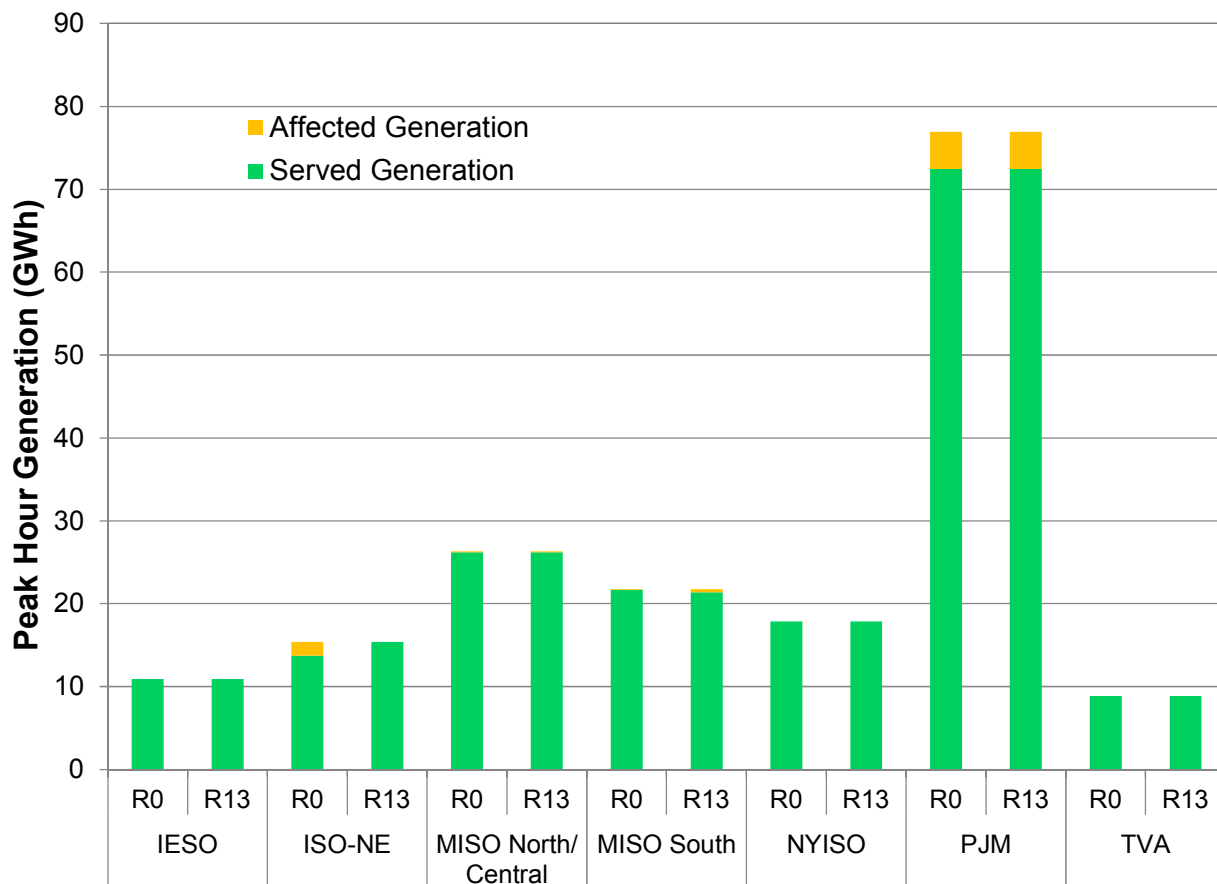
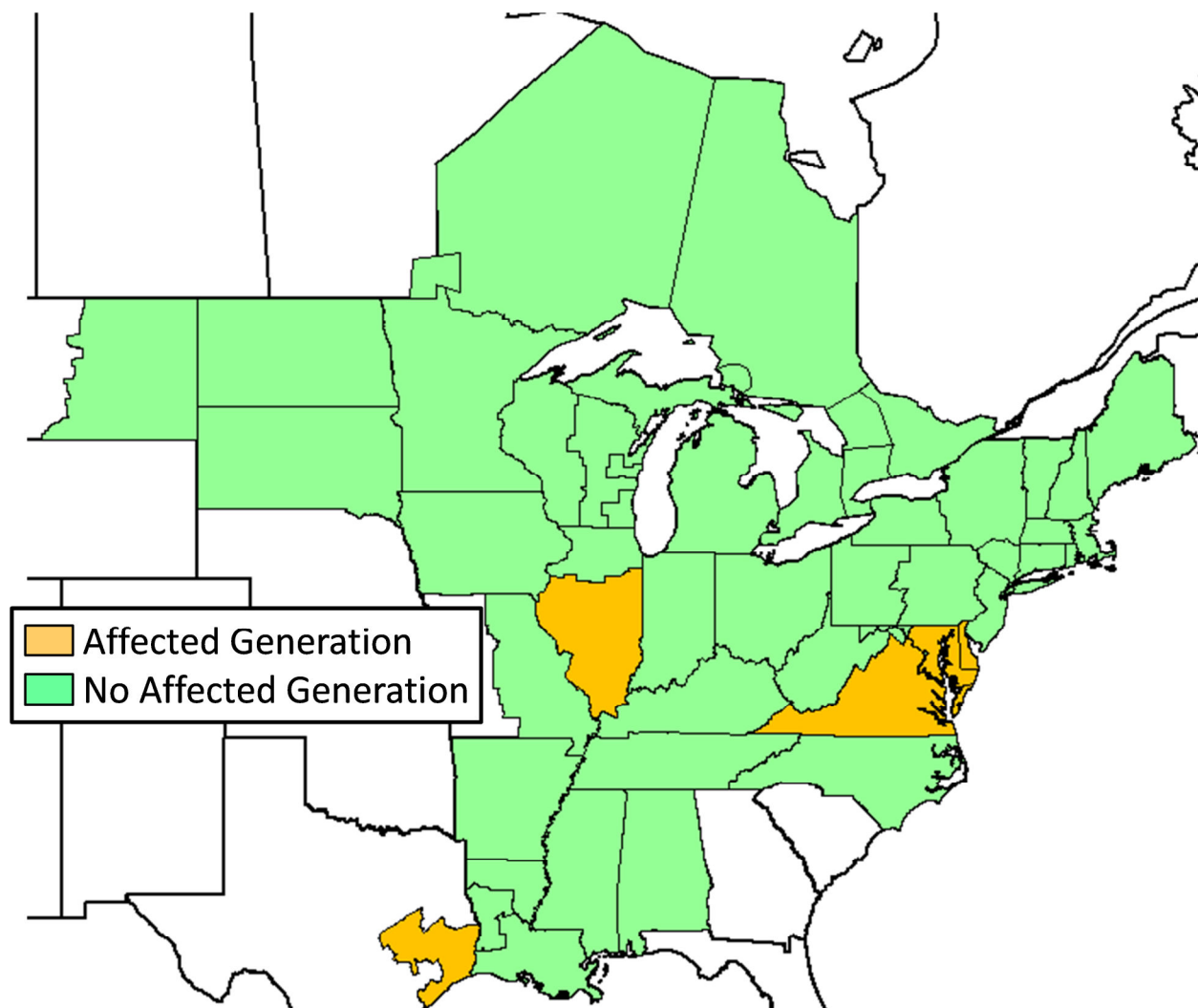


Figure K11 summarizes the unserved demand by GPCM location. The unserved demand and affected generation by location are quantified in Table K7.

**Figure K11. RGDS S13 Summer 2023: Locations with Peak Hour Affected Generation**



**Table K7. RGDS S13 Summer 2023: Unserved Peak Hour Generation Demand and Affected Generation**

<b>Location</b>	<b>Unserved Generation Gas Demand (MDth)</b>	<b>Affected Generation (MWh)</b>
Delaware	8.5	1,175
Illinois Southern	1.0	112
Maryland Eastern	16.7	2,361
Texas East (SERC)	2.7	383
Virginia	8.4	936

Figure K12 shows the constrained pipeline segments, in red, that result in the affected generation shown in Figure K10 during the Summer 2023 peak hour.

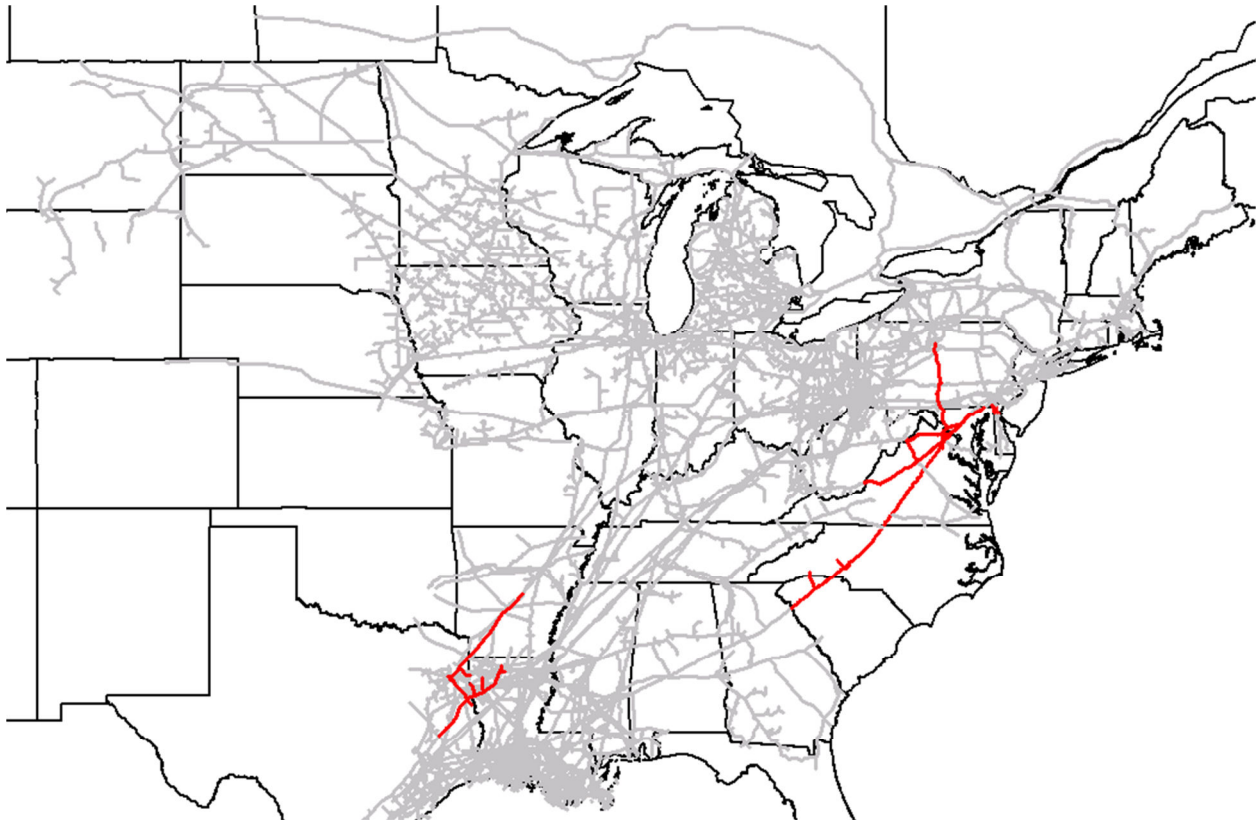
**Figure K12. RGDS S13 Summer 2023: Peak Hour Constraints**

Table K8 summarizes the results of the frequency and duration analysis.

**Table K8. RGDS S13 Summer 2023: Frequency and Duration of Constraints**

<b>Constraint</b>	<b># of Events</b>	<b>Min. Duration (Days)</b>	<b>Max. Duration (Days)</b>	<b>Total # of Days</b>
Columbia Gas VA/MD	2	1	3	4
Dominion Southeast	9	1	7	27
Eastern Shore	9	1	7	27
Texas Eastern Zone ETX	7	1	6	17
Transco Z5	6	1	6	16

#### **1.4.1 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 L75 and Figure L76 relative to the capacity of the segment.

#### **1.4.2 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 L77 and Figure L78 relative to the capacity of the segment.

#### **1.4.3 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 L79 and Figure L80 relative to the capacity of the segments.

#### **1.4.4 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 L81 and Figure L82 relative to the capacity of the segment.

#### **1.4.5 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 L83 and Figure L84 relative to the capacity of the segment.

2 S14: INCREASED GAS STORAGE AVAILABILITY

2.1 RGDS S14 WINTER 2018

Figure K13 summarizes the affected generation during the Winter 2018 peak hour by PPA.

Figure K13. RGDS S14 Winter 2018: Peak Hour Affected Generation

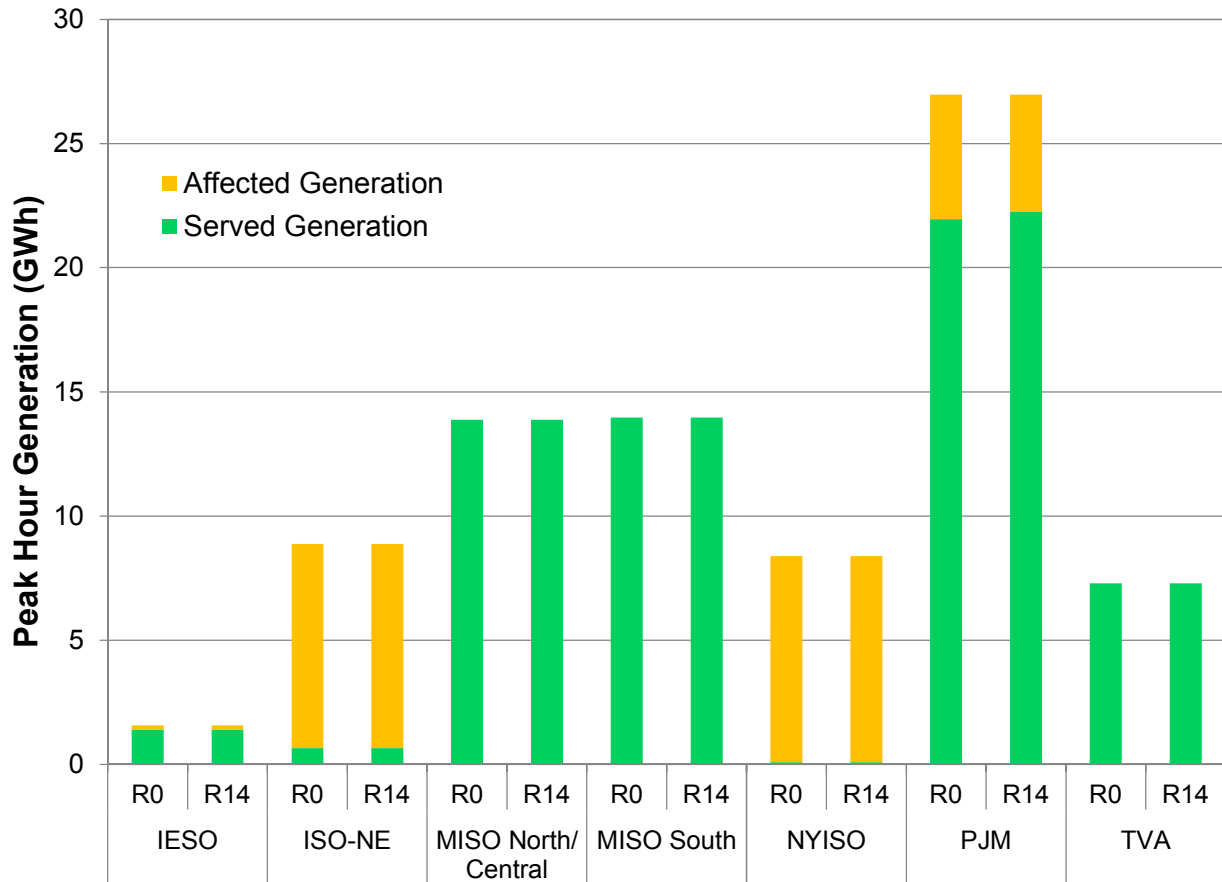
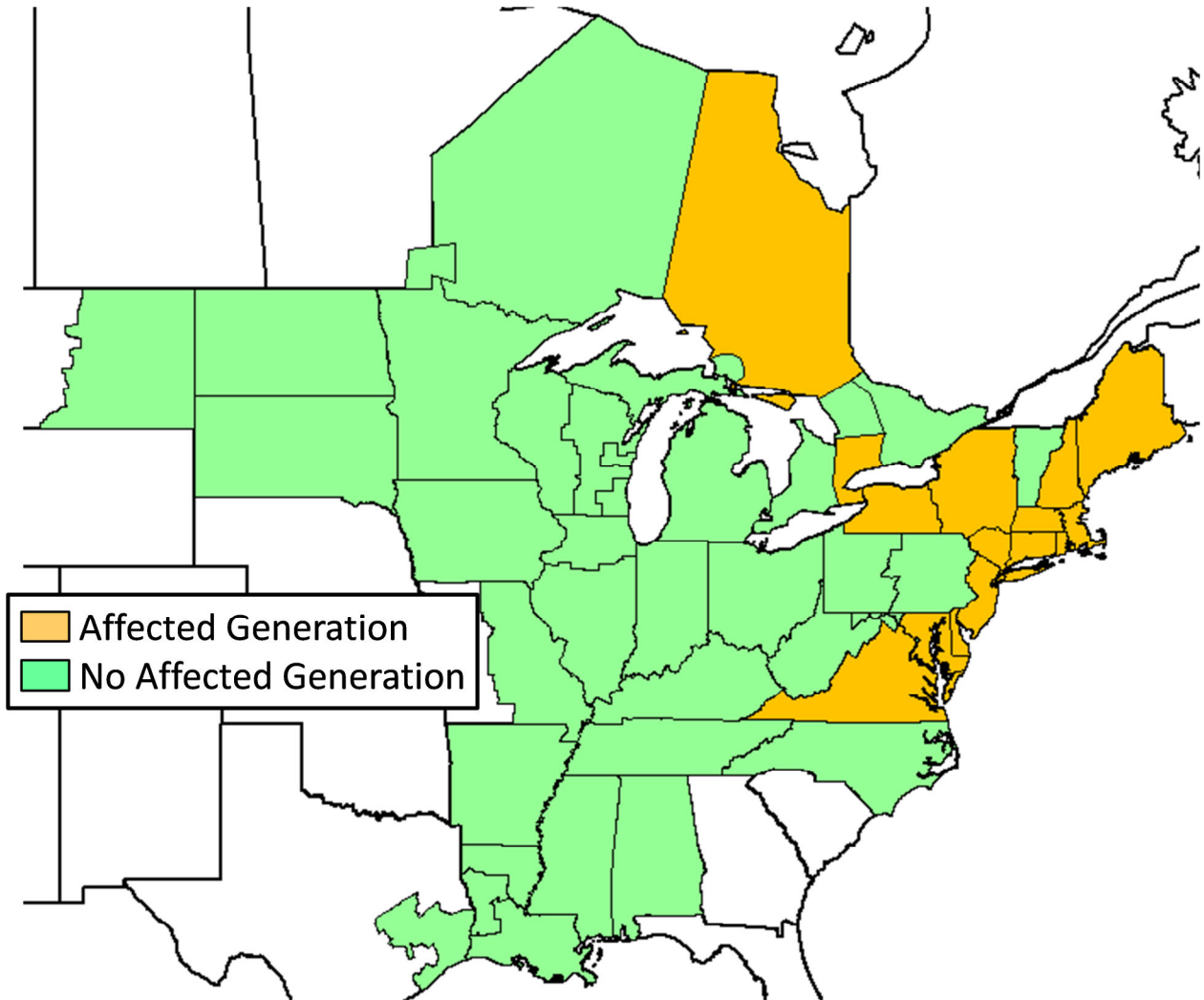


Figure K14 summarizes the unserved demand by GPCM location. The unserved demand and affected generation by location are quantified in Table K9.

Figure K14. RGDS S14 Winter 2018: Locations with Peak Hour Affected Generation



**Table K9. RGDS S14 Winter 2018: Unserved Peak Hour Generation Demand and Affected Generation**

<b>Location</b>	<b>Unserved Generation Gas Demand (MDth)</b>	<b>Affected Generation (MWh)</b>
Connecticut	16.0	2,200
Delaware	1.6	199
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	9.8	1,214
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
Rhode Island	6.7	887
Virginia	21.0	2,755

Figure K15 shows the constrained pipeline segments, in red, that result in the affected generation shown in Figure K13 during the Winter 2018 peak hour.



Figure K15. RGDS S14 Winter 2018: Peak Hour Constraints

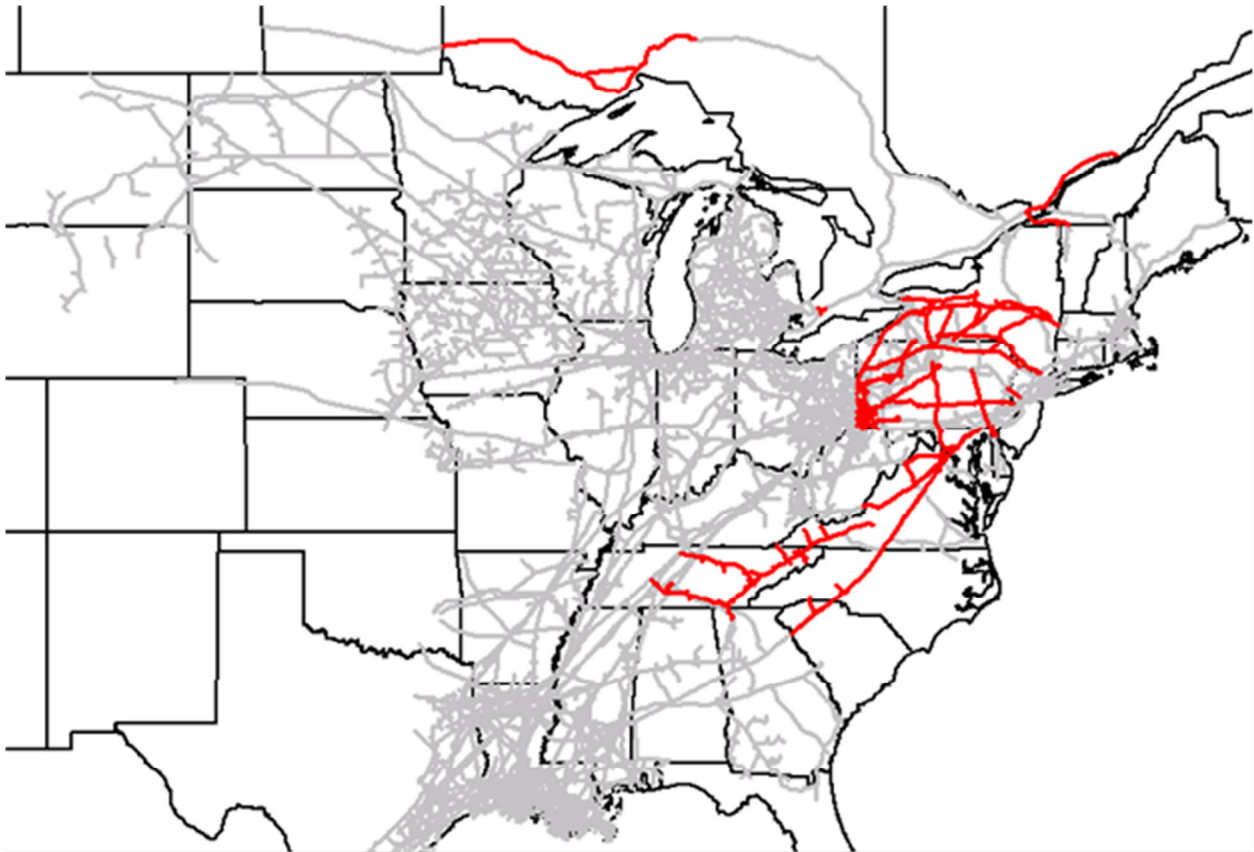


Table K10 summarizes the results of the frequency and duration analysis.

**Table K10. RGDS S14 Winter 2018: Frequency and Duration of Constraints**

<b>Constraint</b>	<b># of Events</b>	<b>Min. Duration (Days)</b>	<b>Max. Duration (Days)</b>	<b>Total # of Days</b>
Columbia Gas VA/MD	12	1	5	23
Columbia Gas W PA/NY	11	1	5	21
Constitution	5	1	12	25
Dominion Eastern NY	6	1	6	15
Dominion Western NY	1	4	4	4
Dominion Southeast	7	1	12	22
East Tennessee Mainline	7	1	2	9
Eastern Shore	11	1	10	51
Empire Mainline	5	1	12	21
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	10	1	15	50
Texas Eastern M3 North	10	2	7	39
TransCanada Ontario West	5	1	5	12
TransCanada Quebec	9	1	14	30
Transco Leidy Atlantic	8	2	23	59
Transco Z5	3	1	7	9
Transco Z6 Leidy to 210	5	1	3	8
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 L85 and Figure L86 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 L87 and Figure L88 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 L89 and Figure L90 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 L91 and Figure L92 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 L93 and Figure L94 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 L95 and Figure L96 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 L97 and Figure L98 relative to the capacity of the segment.

### **2.1.8 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 L99 and Figure L100 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 L101 and Figure L102 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 L103 and Figure L104 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 L105 and Figure L106 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 L107 and Figure L108 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 L109 and Figure L110 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 L111 and Figure L112 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 L113 and Figure L114 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 L115 and Figure L116 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 L117 and Figure L118 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 L119 and Figure L120 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 L121 and Figure L122 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 L123 and Figure L124 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 L125 and Figure L126 relative to the capacity of the segment.

2.2 RGDS S14 SUMMER 2018

Figure K16 summarizes the affected generation during the Summer 2018 peak hour by PPA.

**Figure K16. RGDS S14 Summer 2018: Peak Hour Affected Generation**

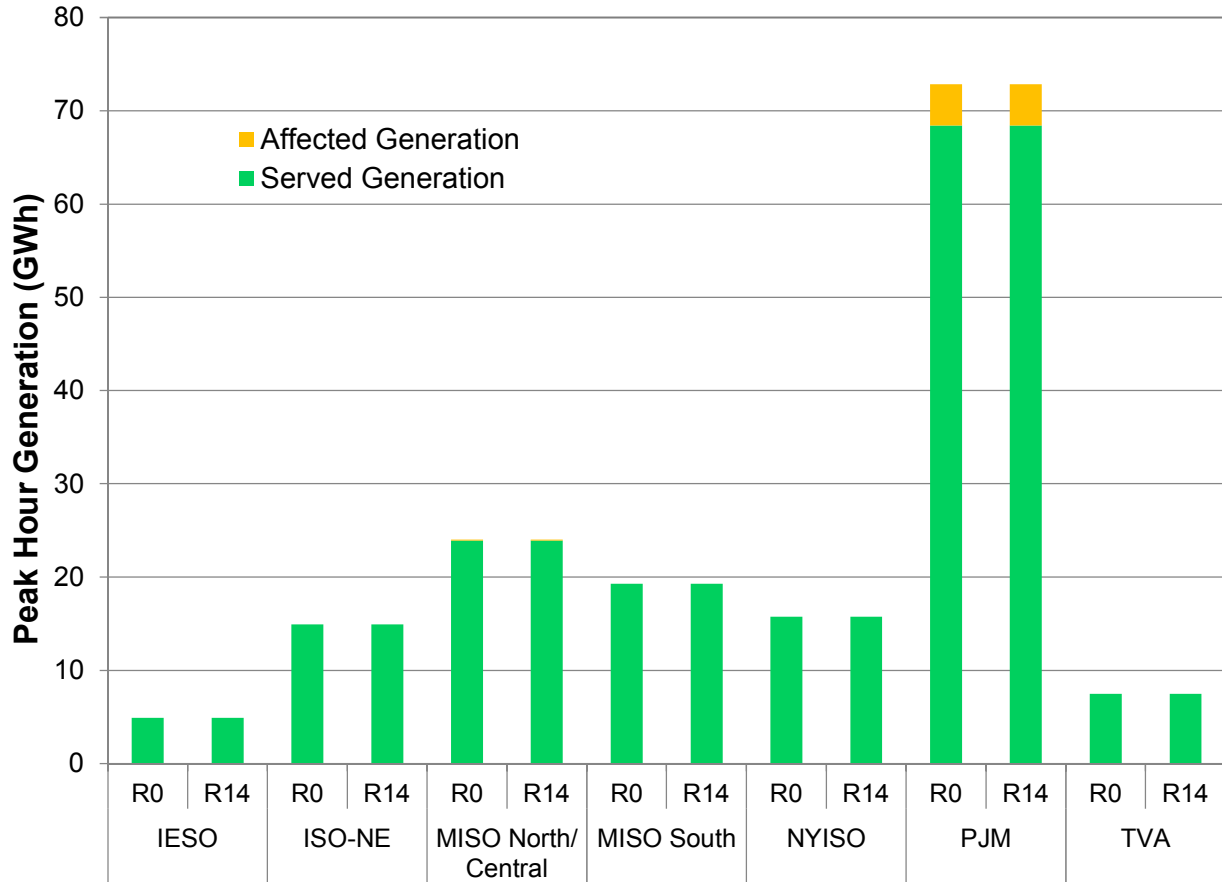


Figure K17 summarizes the unserved demand by GPCM location. The unserved demand and affected generation by location are quantified in Table K11.



Figure K17. RGDS S14 Summer 2018: Locations with Peak Hour Affected Generation

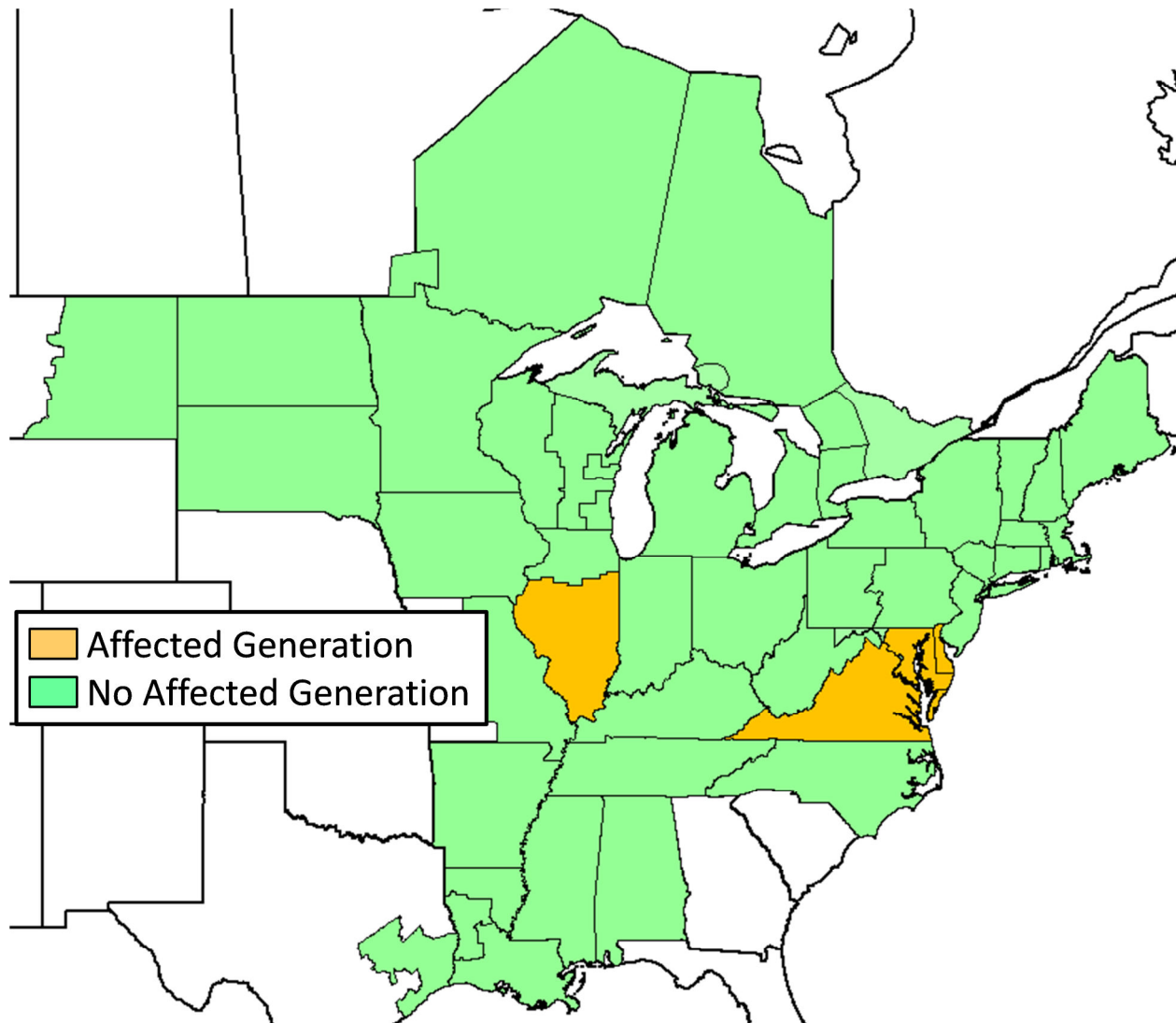


Table K11. RGDS S14 Summer 2018 Unserved Peak Hour Generation Demand and Affected Generation

Location	Unserved Generation Gas Demand (MDth)	Affected Generation (MWh)
Delaware	8.3	1,149
Illinois Southern	0.8	91
Maryland Eastern	16.7	2,361
Virginia	8.4	936

Figure K18 shows the constrained pipeline segments, in red, that result in the affected generation shown in Figure K16 during the Summer 2018 peak hour.

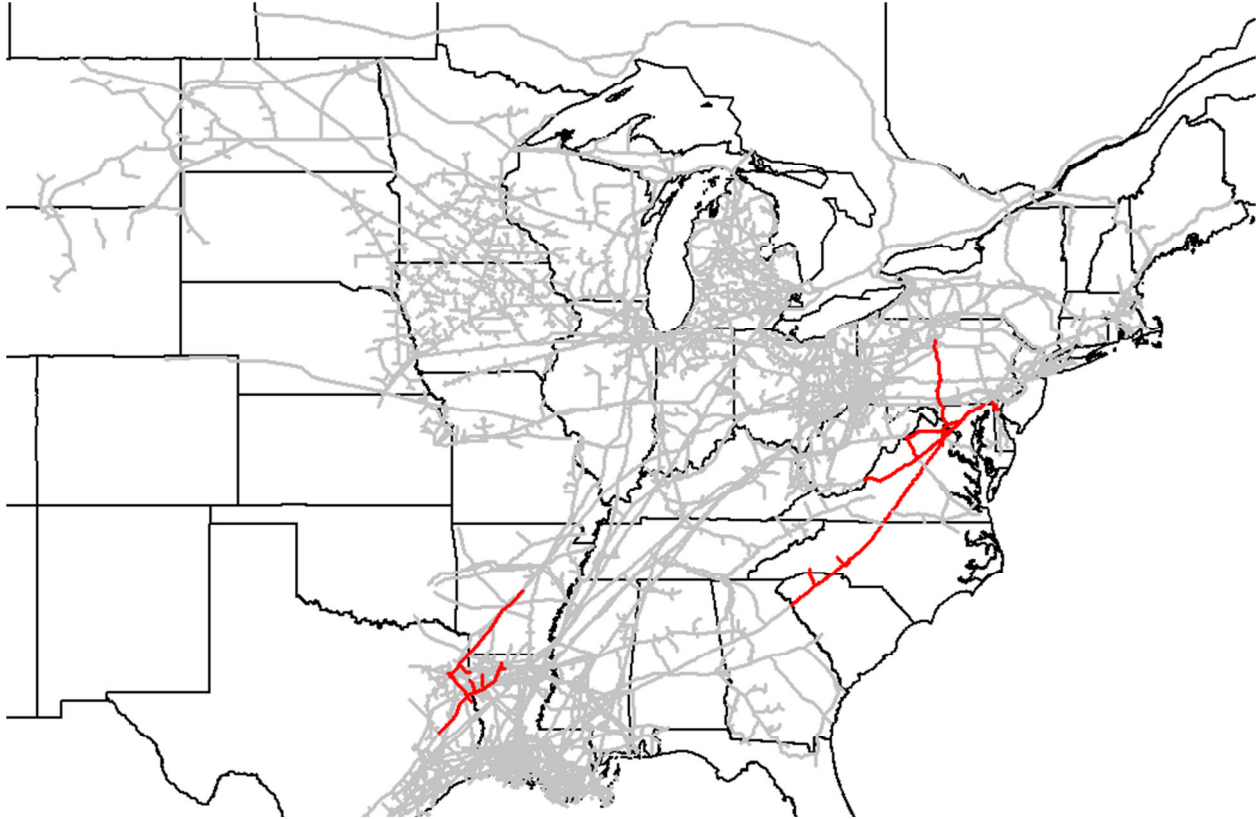
**Figure K18. RGDS S14 Summer 2018: Peak Hour Constraints**

Table K12 summarizes the results of the frequency and duration analysis.

**Table K12. RGDS S14 Summer 2018: Frequency and Duration of Constraints**

<b>Constraint</b>	<b># of Events</b>	<b>Min. Duration (Days)</b>	<b>Max. Duration (Days)</b>	<b>Total # of Days</b>
Columbia Gas VA/MD	1	1	1	1
Dominion Southeast	3	1	2	5
Eastern Shore	7	1	6	19
Texas Eastern Zone ETX	4	1	6	12
Transco Z5	7	2	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 L127 and Figure L128 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 L129 and Figure L130 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 L131 and Figure L132 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 L133 and Figure L134 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 L135 and Figure L136 relative to the capacity of the segment.

2.3 RGDS S14 WINTER 2023

Figure K19 summarizes the affected generation during the Winter 2023 peak hour by PPA.

**Figure K19. RGDS S14 Winter 2023: Peak Hour Affected Generation**

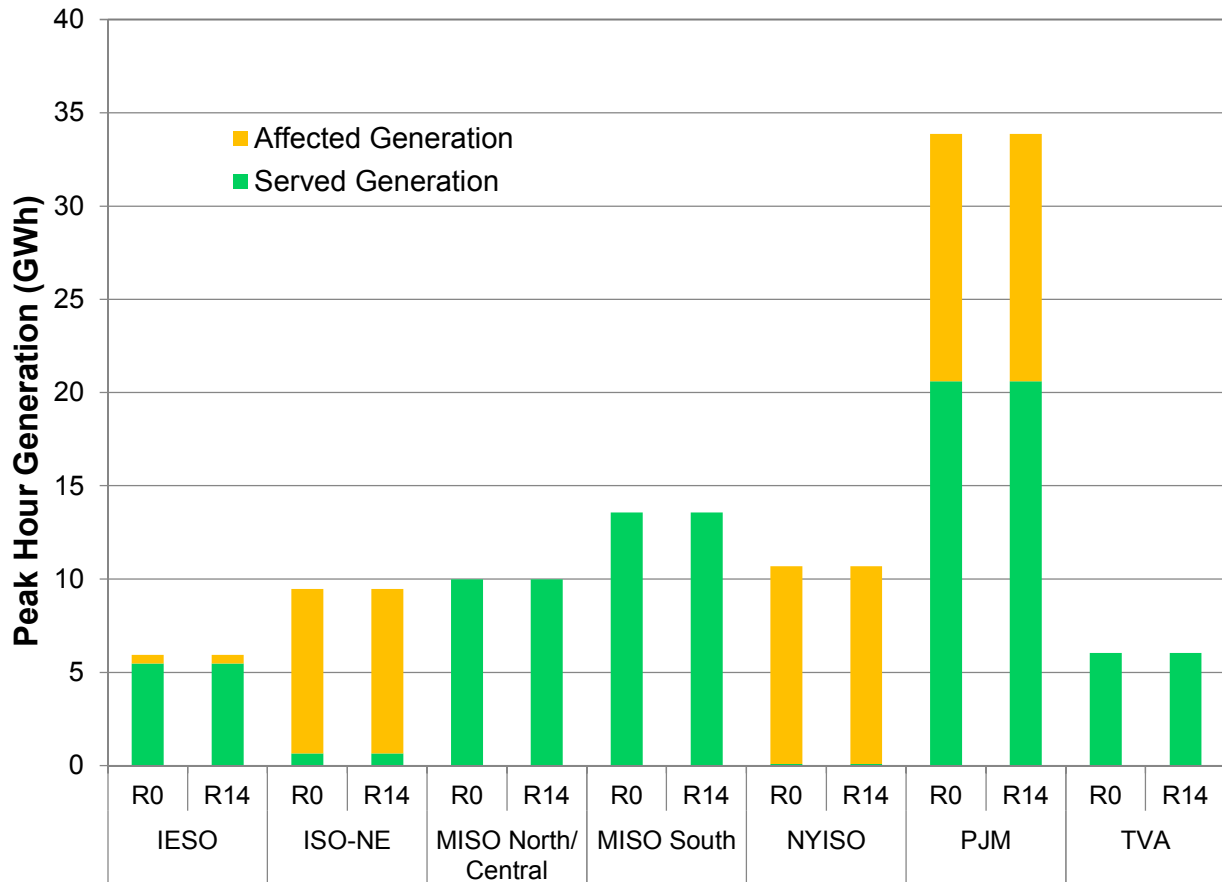
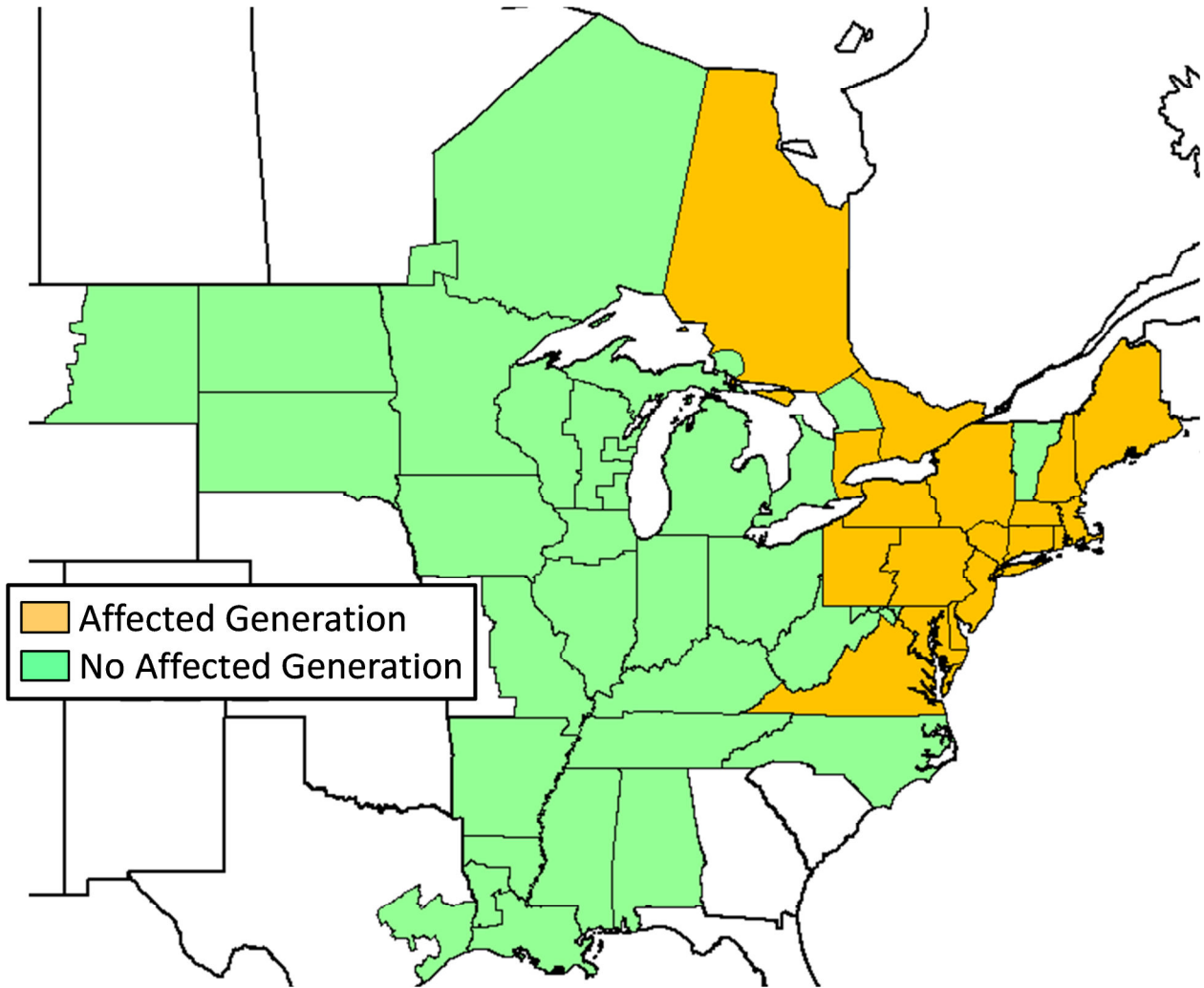


Figure K20 summarizes the unserved demand by GPCM location. The unserved demand and affected generation by location are quantified in Table K13.

Figure K20. RGDS S14 Winter 2023: Locations with Peak Hour Affected Generation



**Table K13. RGDS S14 Winter 2023: Unserved Peak Hour Generation Demand and Affected Generation**

<b>Location</b>	<b>Unserved Generation Gas Demand (MDth)</b>	<b>Affected Generation (MWh)</b>
Connecticut	15.6	2,140
Delaware	1.3	173
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 K21 shows the constrained pipeline segments, in red, that result in the affected generation shown in Figure K19 during the Winter 2023 peak hour.

Figure K21. RGDS S14 Winter 2023: Peak Hour Constraints

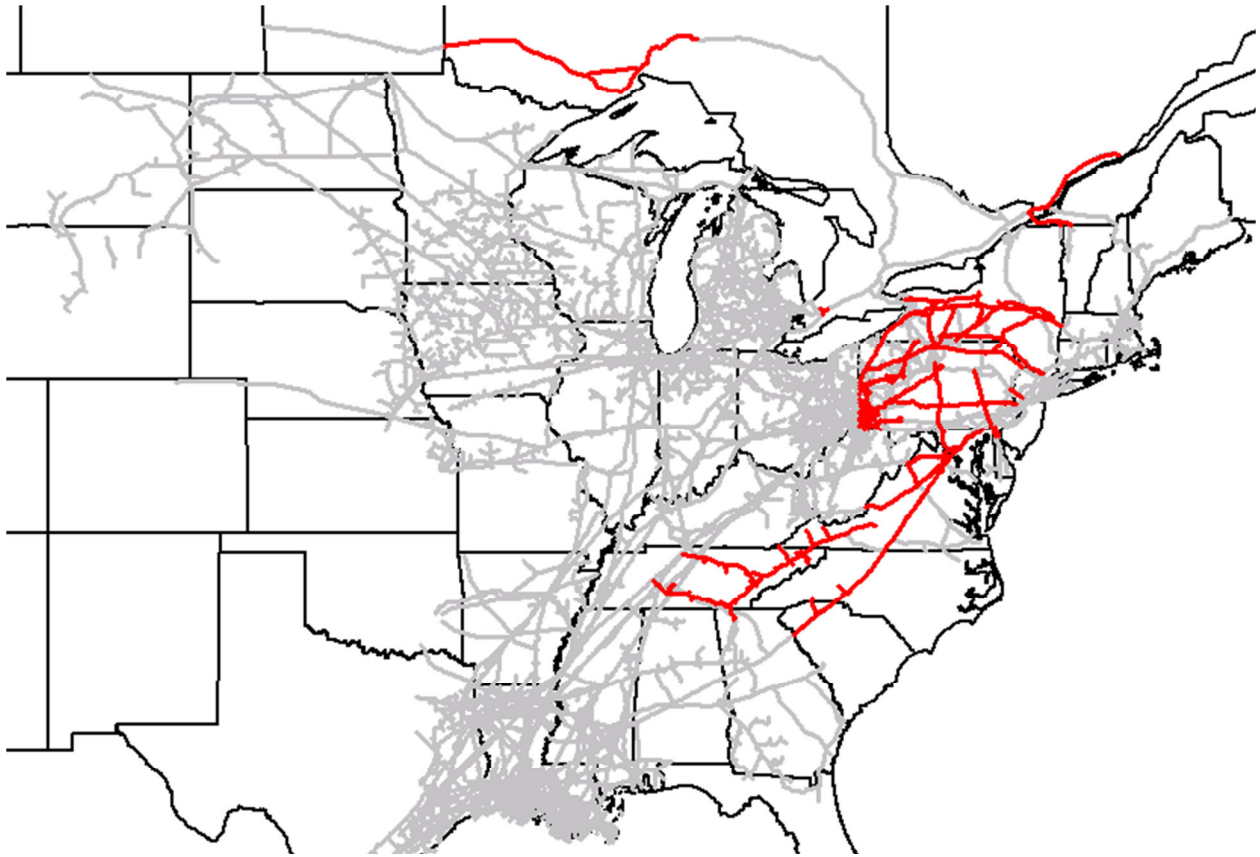


Table K14 summarizes the results of the frequency and duration analysis.

**Table K14. RGDS S14 Winter 2023: Frequency and Duration of Constraints**

<b>Constraint</b>	<b># of Events</b>	<b>Min. Duration (Days)</b>	<b>Max. Duration (Days)</b>	<b>Total # of Days</b>
Columbia Gas VA/MD	6	1	52	80
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	7	1	8	25
Tennessee Z5 NY	3	1	59	89
Texas Eastern M2 PA South	7	1	46	81
Texas Eastern M3 North	6	1	17	47
TransCanada Ontario West	4	1	6	11
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	2	4

### 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 L137 and Figure L138 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 L139 and Figure L140 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 L141 and Figure L142 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 L143 and Figure L144 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 L and Figure L 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 L147 and Figure L148 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 L149 and Figure L150 relative to the capacity of the segment.

### **2.3.8 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 L151 and Figure L152 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 L153 and Figure L154 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 L155 and Figure L156 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 L157 and Figure L158 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 L159 and Figure L160 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 L161 and Figure L162 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 L163 and Figure L164 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 L165 and Figure L166 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 L167 and Figure L168 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 L169 and Figure L170 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 L171 and Figure L172 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 L173 and Figure L174 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 L175 and Figure L176 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 L177 and Figure L178 relative to the capacity of the segment.

2.4 RGDS S14 SUMMER 2023

Figure K22 summarizes the affected generation during the Summer 2023 peak hour by PPA.

**Figure K22. RGDS S14 Summer 2023: Peak Hour Affected Generation**

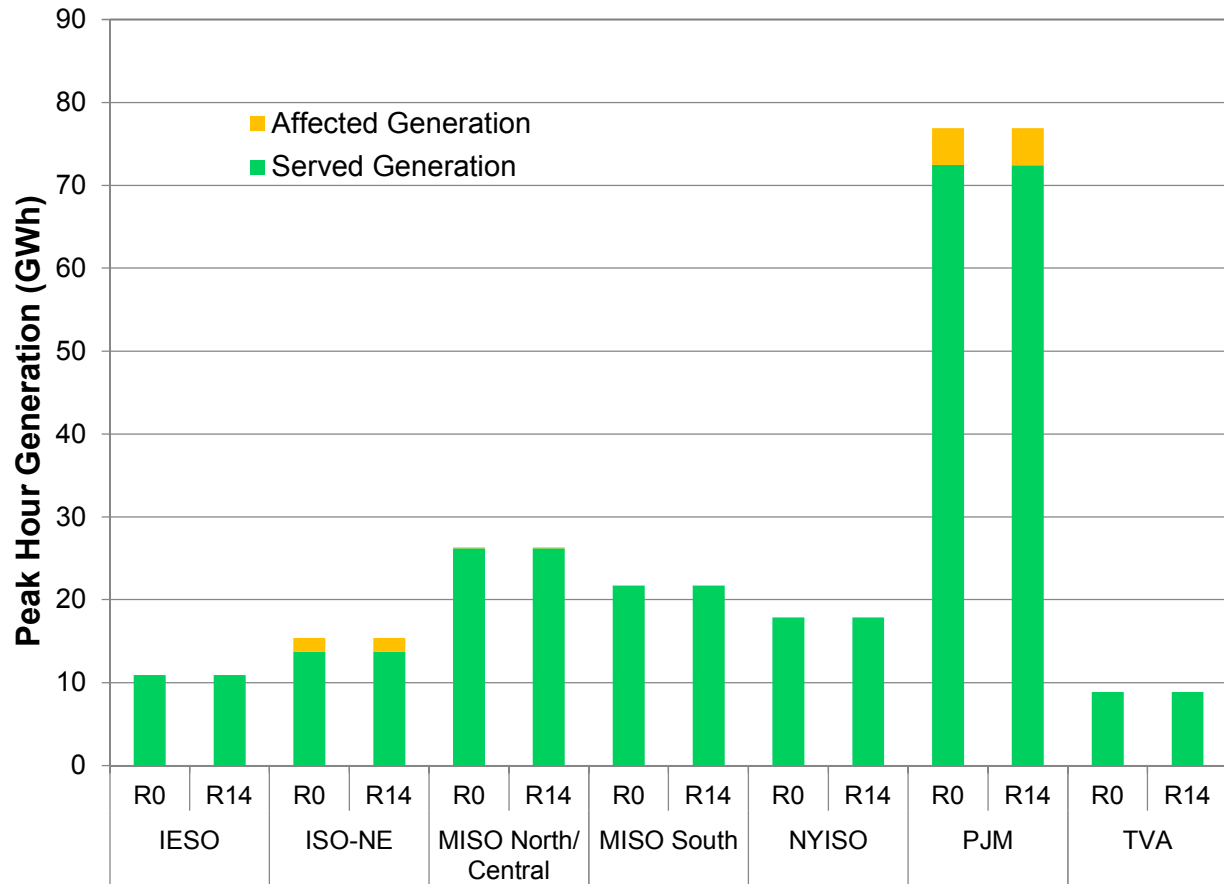


Figure K23 summarizes the unserved demand by GPCM location. The unserved demand and affected generation by location are quantified in Table K15.

Figure K23. RGDS S14 Summer 2023: Locations with Peak Hour Affected Generation

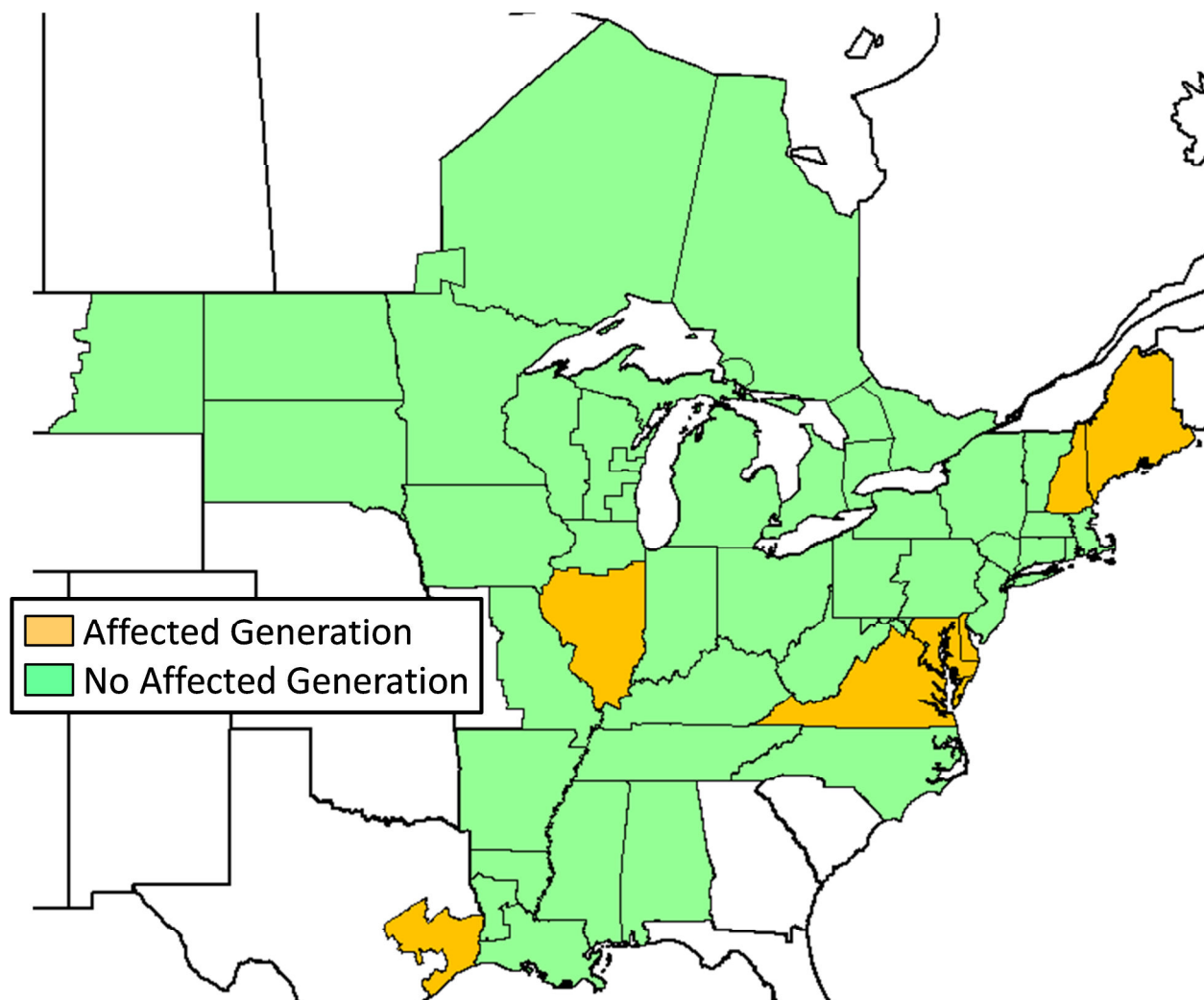


Table K15. RGDS S14 Summer 2023: Unserved Peak Hour Generation Demand and Affected Generation

Location	Unserved Generation Gas Demand (MDth)	Affected Generation (MWh)
Delaware	8.5	1,175
Illinois Southern	1.0	112
Maine	6.0	809
Maryland Eastern	16.7	2,361
New Hampshire	7.6	857
Texas East (SERC)	0.4	58
Virginia	8.7	966

Figure K24 shows the constrained pipeline segments, in red, that result in the affected generation shown in Figure K22 during the Summer 2023 peak hour.

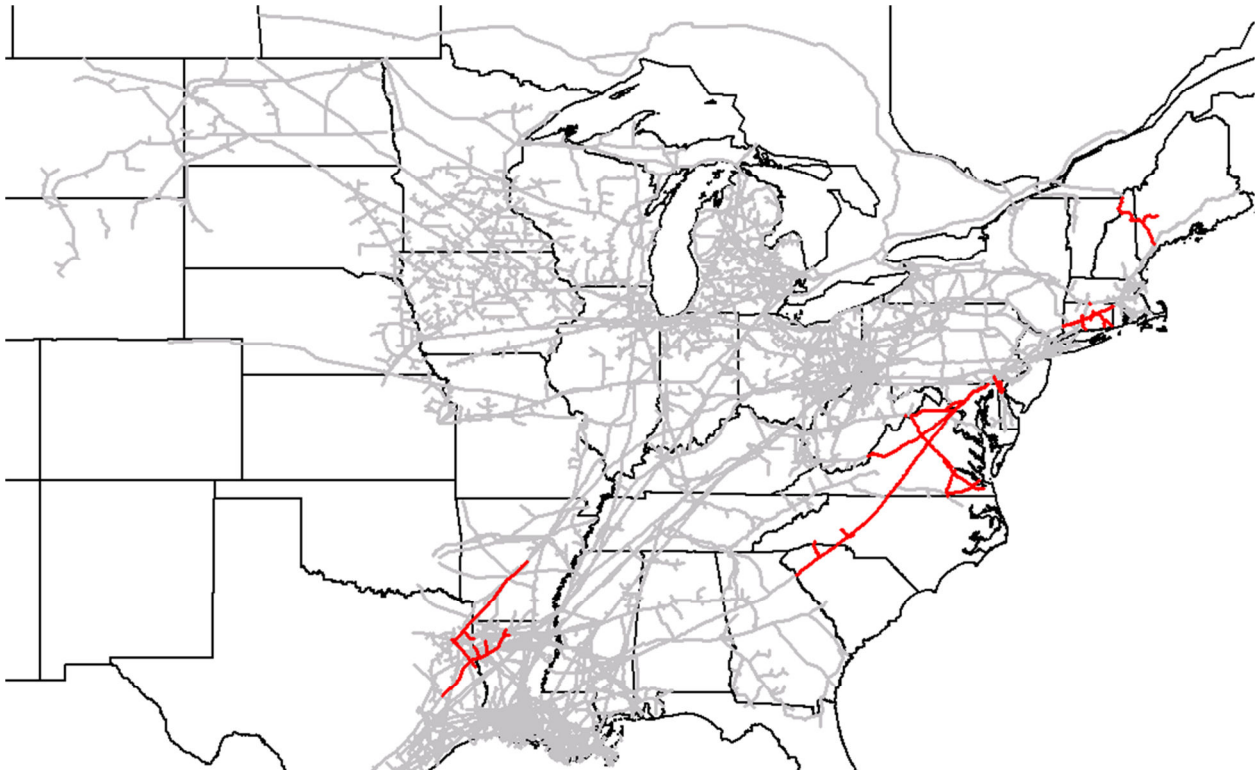
**Figure K24. RGDS S14 Summer 2023: Peak Hour Constraints**

Table K16 summarizes the results of the frequency and duration analysis.

**Table K16. RGDS S14 Summer 2023: Frequency and Duration of Constraints**

<b>Constraint</b>	<b># of Events</b>	<b>Min. Duration (Days)</b>	<b>Max. Duration (Days)</b>	<b>Total # of Days</b>
Algonquin Connecticut	6	1	3	12
Columbia Gas VA/MD	2	1	3	4
Dominion Southeast	9	1	7	27
Eastern Shore	9	1	7	27
NB/NS Supply	5	2	27	70
PNGTS N of Westbrook	10	1	8	41
Texas Eastern Zone ETX	7	1	6	17
Transco Z5	6	1	6	16

### 2.4.1 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 L179 and Figure L180 relative to the capacity of the segment.

#### **2.4.2 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 L181 and Figure L182 relative to the capacity of the segment.

#### **2.4.3 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 L183 and Figure L184 relative to the capacity of the segment.

#### **2.4.4 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 L185 and Figure L186 relative to the capacity of the segments.

#### **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 L187 and Figure L188 relative to the total production capacity.

#### **2.4.6 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 L189 and Figure L190 relative to the capacity of the segment.

#### **2.4.7 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 L191 and Figure L192 relative to the capacity of the segment.

#### **2.4.8 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 L193 and Figure L194 relative to the capacity of the segment.

### 3 S16: INCREASED SENDOUT FROM CANAPORT AND DISTRIGAS LNG TERMINALS

#### 3.1 RGDS S16 WINTER 2018

Figure K25 summarizes the affected generation during the Winter 2018 peak hour by PPA.

**Figure K25. RGDS S16 Winter 2018: Peak Hour Affected Generation**

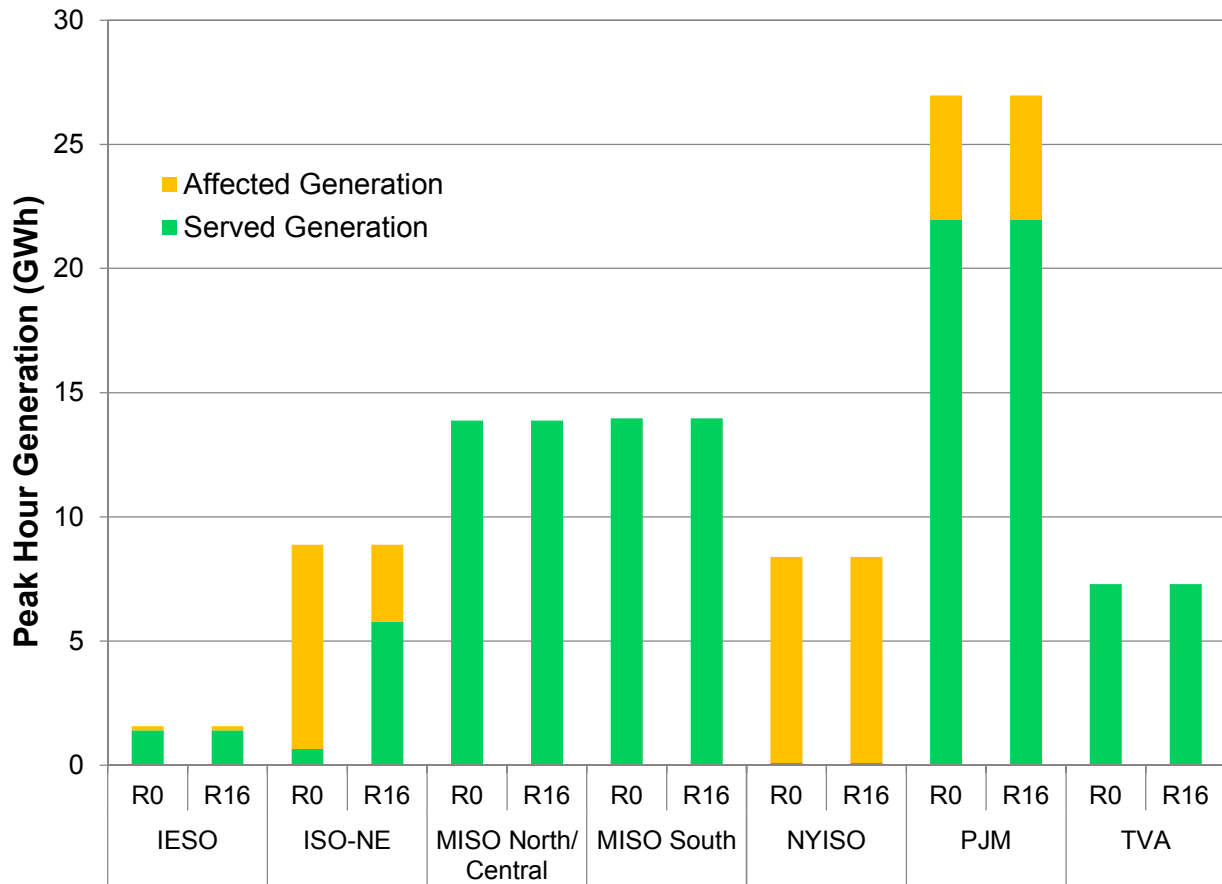
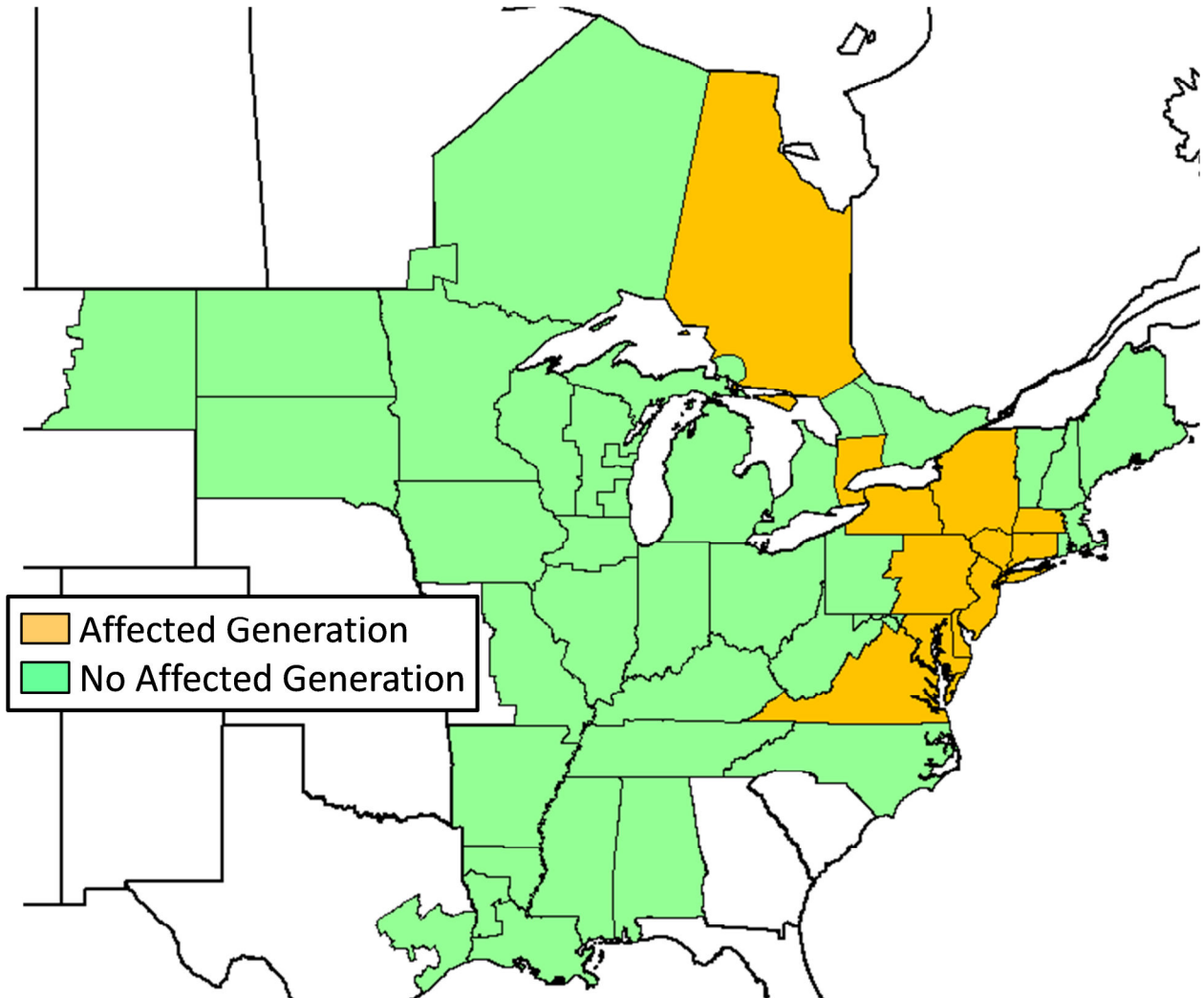


Figure K26 summarizes the unserved demand by GPCM location. The unserved demand and affected generation by location are quantified in Table K17.

Figure K26. RGDS S16 Winter 2018: Locations with Peak Hour Affected Generation



**Table K17. RGDS S16 Winter 2018: Unserved Peak Hour Generation Demand and Affected Generation**

<b>Location</b>	<b>Unserved Generation Gas Demand (MDth)</b>	<b>Affected Generation (MWh)</b>
Connecticut	15.3	2,104
Delaware	1.6	199
Maryland Eastern	5.0	539
Massachusetts Western	7.3	985
New Jersey	11.2	1,385
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	1.0	143
Virginia	21.0	2,755

Figure K27 shows the constrained pipeline segments, in red, that result in the affected generation shown in Figure K25 during the Winter 2018 peak hour.

Figure K27. RGDS S16 Winter 2018: Peak Hour Constraints

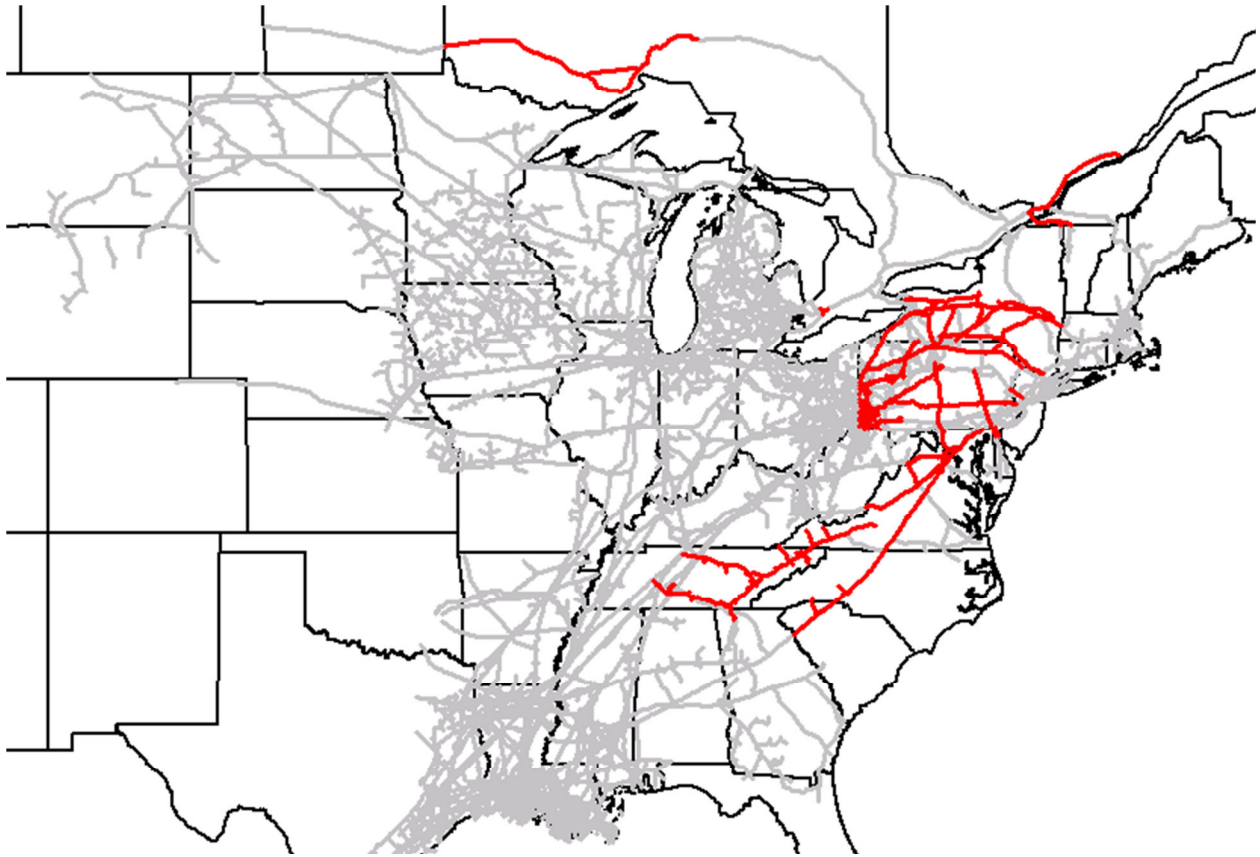


Table K18 summarizes the results of the frequency and duration analysis.

**Table K18. RGDS S16 Winter 2018: Frequency and Duration of Constraints**

<b>Constraint</b>	<b># of Events</b>	<b>Min. Duration (Days)</b>	<b>Max. Duration (Days)</b>	<b>Total # of Days</b>
Columbia Gas VA/MD	12	1	5	23
Columbia Gas W PA/NY	11	1	5	21
Constitution	5	1	12	25
Dominion Eastern NY	6	1	6	15
Dominion Western NY	1	4	4	4
Dominion Southeast	7	1	12	22
East Tennessee Mainline	7	1	2	9
Eastern Shore	11	1	10	51
Empire Mainline	5	1	12	21
Millennium	12	1	7	29
Tennessee Z4 PA	2	2	2	4
Tennessee Z5 NY	13	1	27	64
Texas Eastern M2 PA South	10	1	15	50
Texas Eastern M3 North	12	1	7	33
TransCanada Ontario West	5	1	5	12
TransCanada Quebec	9	1	14	30
Transco Leidy Atlantic	8	2	23	59
Transco Z5	3	1	7	9
Transco Z6 Leidy to 210	5	1	3	8
Union Gas Dawn	2	1	3	4

### 3.1.1 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 L195 and Figure L196 relative to the capacity of the segment.

### 3.1.2 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 L197 and Figure L198 relative to the capacity of the segment

### **3.1.3 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 L199 and Figure L200 relative to the capacity of the segment.

### **3.1.4 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 L201 and Figure L202 relative to the capacity of the segment.

### **3.1.5 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 L203 and Figure L204 relative to the capacity of the segment.

### **3.1.6 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 L205 and Figure L206 relative to the capacity of the segment.

### **3.1.7 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 L207 and Figure L208 relative to the capacity of the segment.

### **3.1.8 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 L209 and Figure L210 relative to the capacity of the segments.

### **3.1.9 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 L211 and Figure L212 relative to the capacity of the segment.

### **3.1.10 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 L213 and Figure L214 relative to the capacity of the segment.

### **3.1.11 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 L215 and Figure L216 relative to the capacity of the segment.

### **3.1.12 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 L217 and Figure L218 relative to the capacity of the segment.

### **3.1.13 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 L219 and Figure L220 relative to the capacity of the segment.

### **3.1.14 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 L221 and Figure L222 relative to the capacity of the segment.

### **3.1.15 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 L223 and Figure L224 relative to the capacity of the segment.

### **3.1.16 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 L225 and Figure L226 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.

### **3.1.17 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 L227 and Figure L228 relative to the capacity of the segment.

### **3.1.18 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 L229 and Figure L230 relative to the capacity of the segment.

### **3.1.19 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 L231 and Figure L232 relative to the capacity of the segment.

### 3.1.20 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 L233 and Figure L234 relative to the capacity of the segment.

### 3.2 RGDS S16 SUMMER 2018

Figure K28 summarizes the affected generation during the Summer 2018 peak hour by PPA.

**Figure K28. RGDS S16 Summer 2018: Peak Hour Affected Generation**

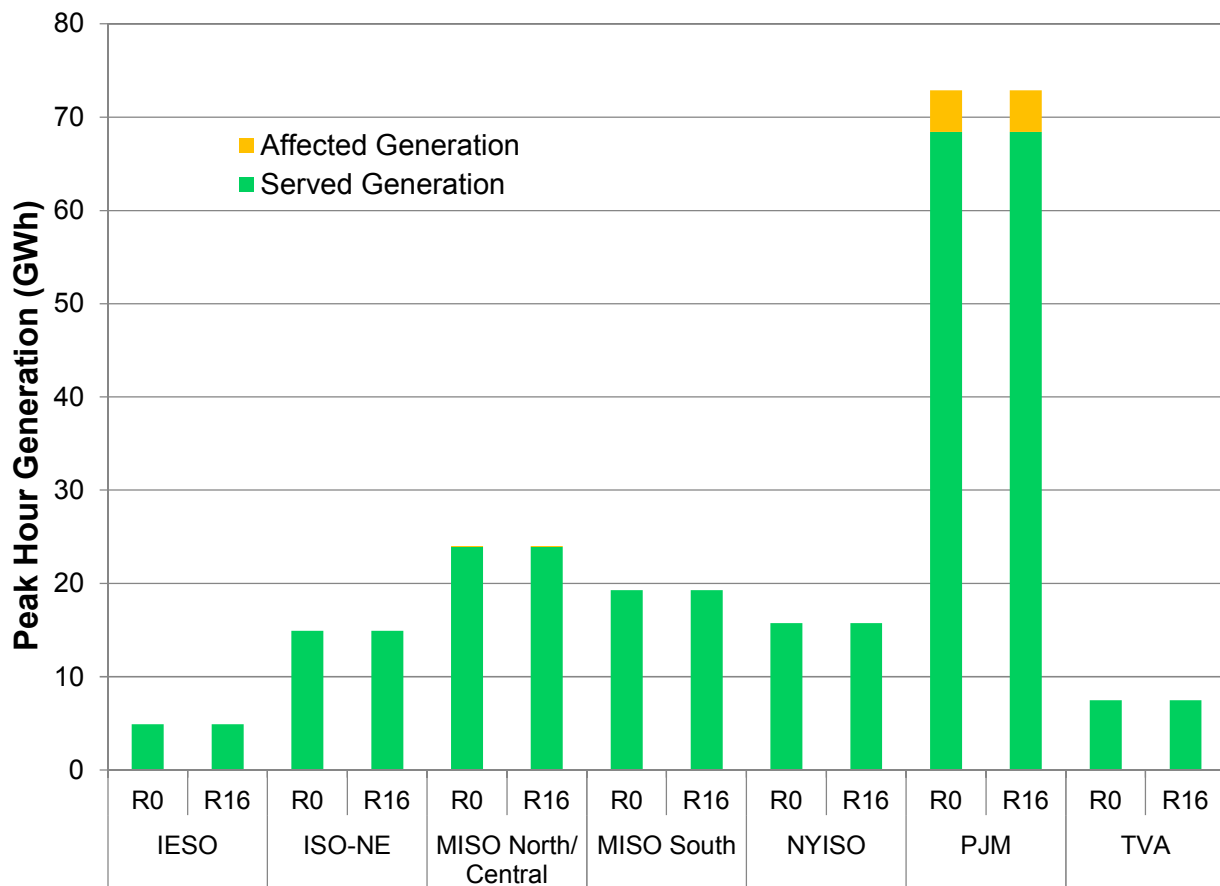


Figure K29 summarizes the unserved demand by GPCM location. The unserved demand and affected generation by location are quantified in Table K19.

Figure K29. RGDS S16 Summer 2018: Locations with Peak Hour Affected Generation

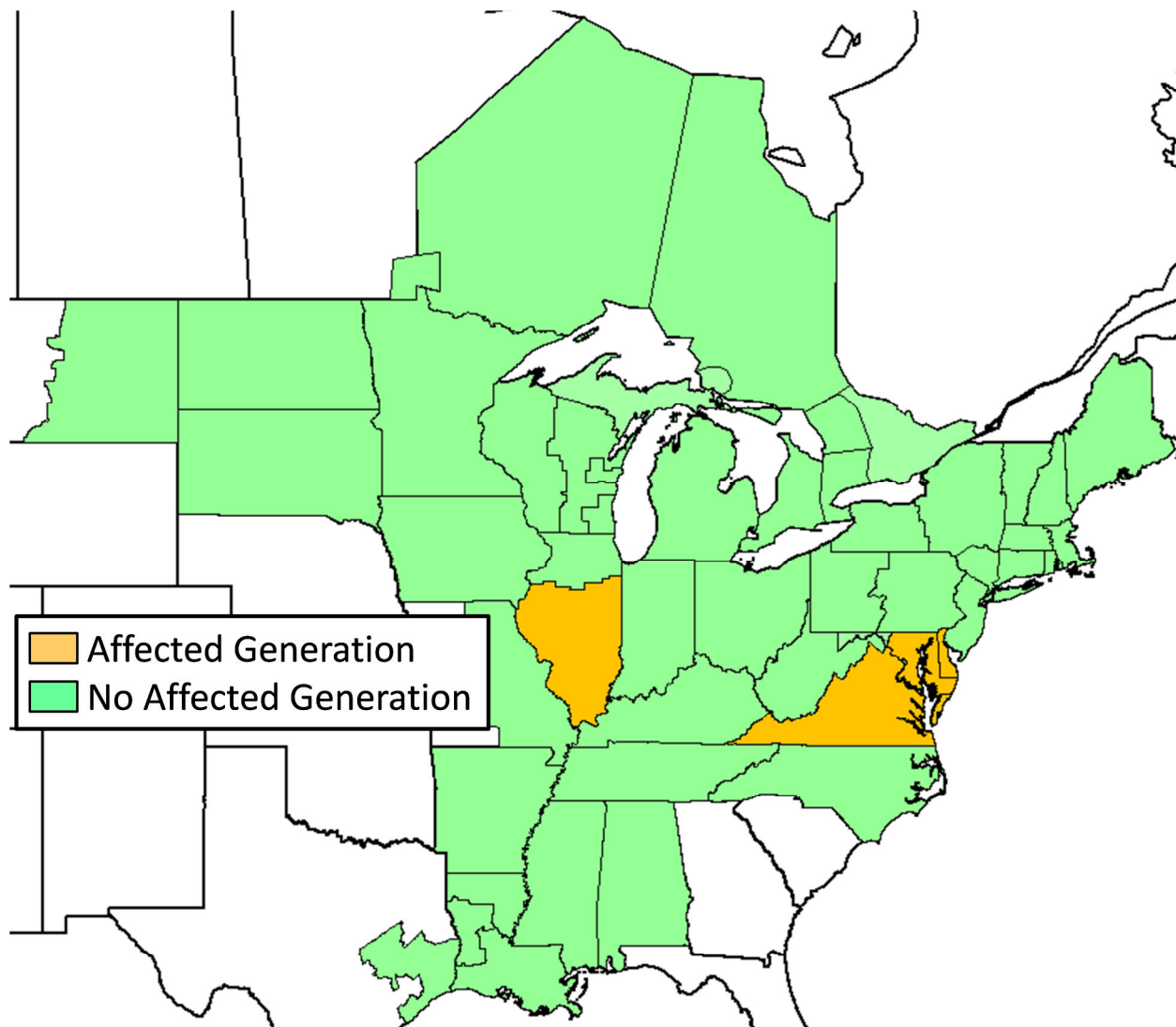


Table K19. RGDS S16 Summer 2018 Unserved Peak Hour Generation Demand and Affected Generation

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 K30 shows the constrained pipeline segments, in red, that result in the affected generation shown in Figure K28 during the Summer 2018 peak hour.

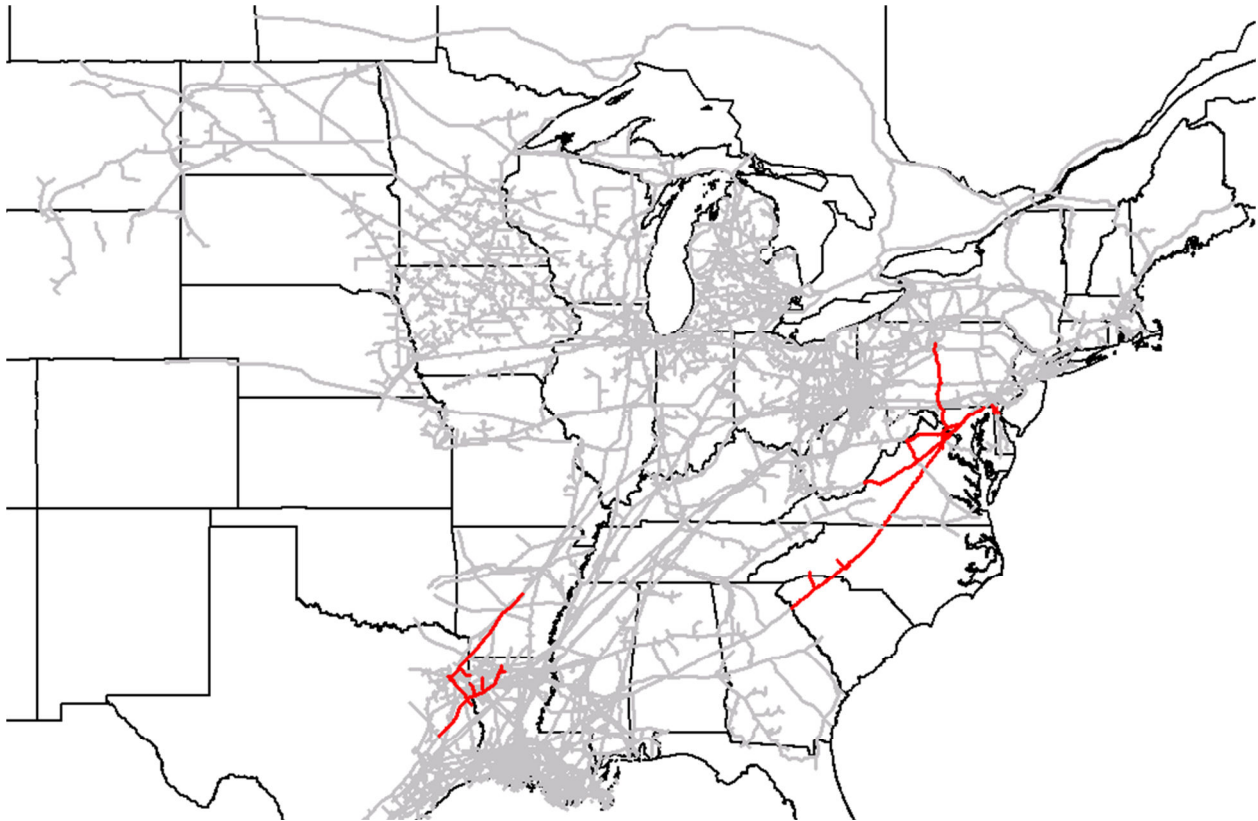
**Figure K30. RGDS S16 Summer 2018: Peak Hour Constraints**

Table K20 summarizes the results of the frequency and duration analysis.

**Table K20. RGDS S16 Summer 2018: Frequency and Duration of Constraints**

<b>Constraint</b>	<b># of Events</b>	<b>Min. Duration (Days)</b>	<b>Max. Duration (Days)</b>	<b>Total # of Days</b>
Columbia Gas VA/MD	1	1	1	1
Dominion Southeast	3	1	2	5
Eastern Shore	7	1	6	19
Texas Eastern Zone ETX	4	1	6	12
Transco Z5	7	2	6	18

### 3.2.1 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 L235 and Figure L236 relative to the capacity of the segment.

### **3.2.2 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 L237 and Figure L238 relative to the capacity of the segment.

### **3.2.3 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 L239 and Figure L240 relative to the capacity of the segments.

### **3.2.4 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 L241 and Figure L242 relative to the capacity of the segment.

### **3.2.5 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 L243 and Figure L244 relative to the capacity of the segment.

### 3.3 RGDS S16 WINTER 2023

Figure K31 summarizes the affected generation during the Winter 2023 peak hour by PPA.

**Figure K31. RGDS S16 Winter 2023: Peak Hour Affected Generation**

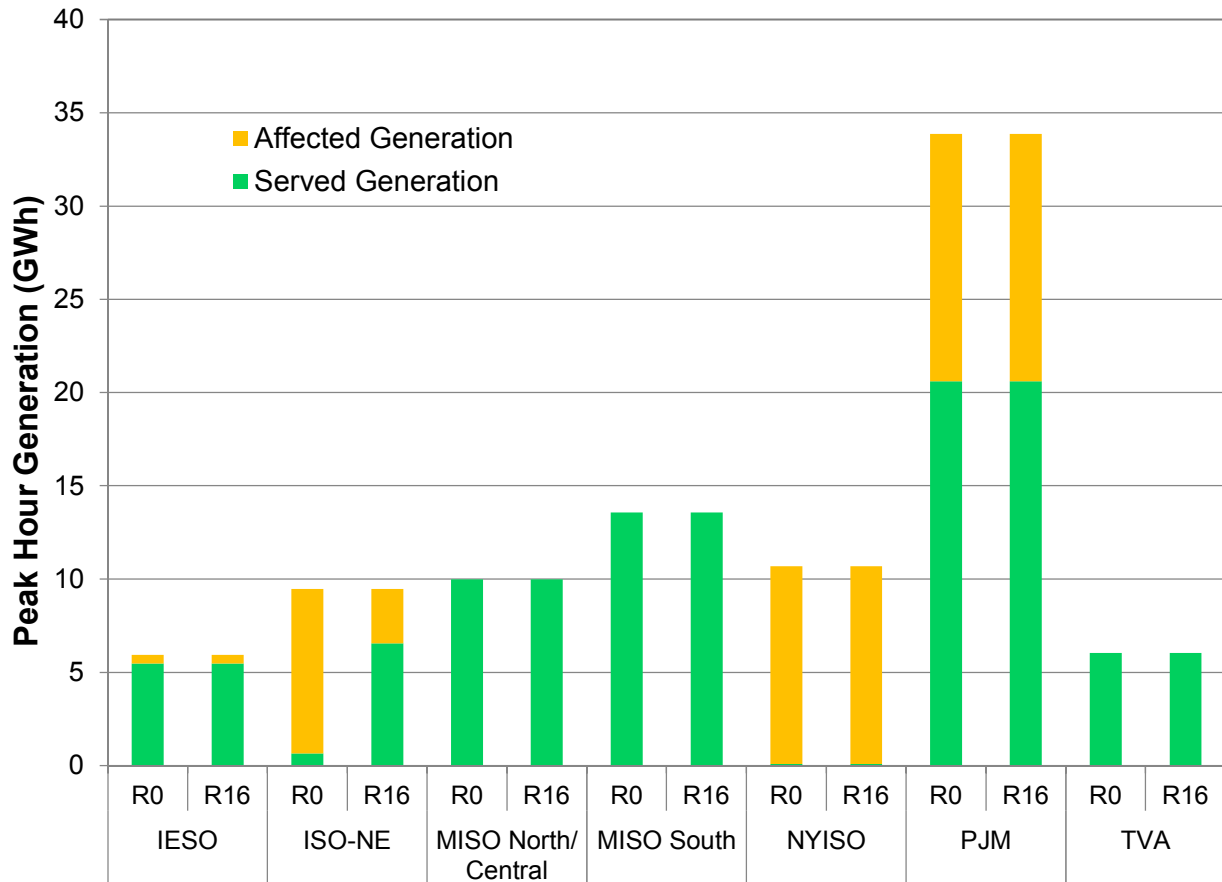
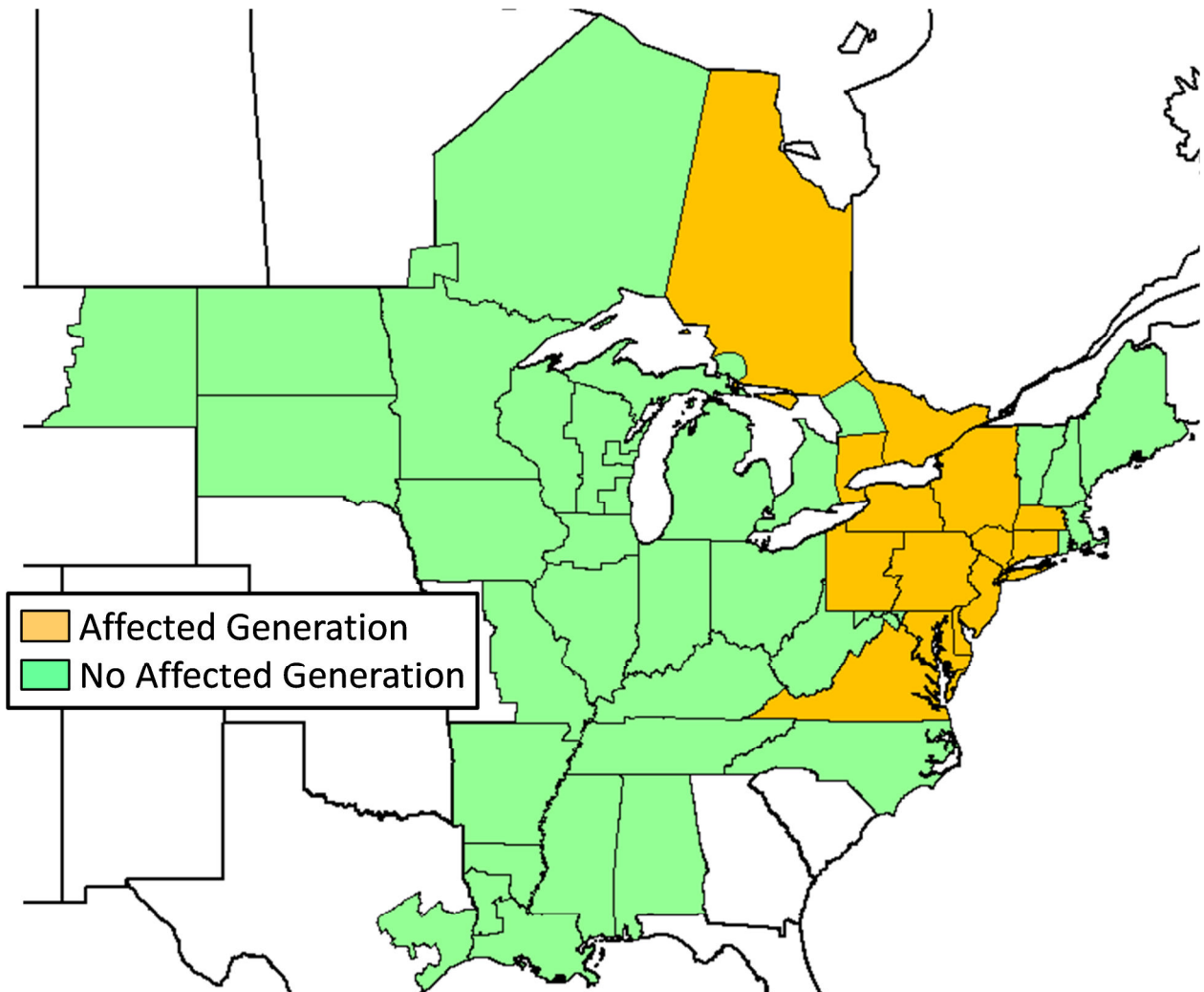


Figure K32 summarizes the unserved demand by GPCM location. The unserved demand and affected generation by location are quantified in Table K21.



Figure K32. RGDS S16 Winter 2023: Locations with Peak Hour Affected Generation



**Table K21. RGDS S16 Winter 2023: Unserved Peak Hour Generation Demand and Affected Generation**

<b>Location</b>	<b>Unserved Generation Gas Demand (MDth)</b>	<b>Affected Generation (MWh)</b>
Connecticut	13.6	1,878
Delaware	1.3	173
Maryland Eastern	5.0	539
Massachusetts Western	7.9	1,038
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
Virginia	35.4	4,237

Figure K33 shows the constrained pipeline segments, in red, that result in the affected generation shown in Figure K31 during the Winter 2023 peak hour.

Figure K33. RGDS S16 Winter 2023: Peak Hour Constraints

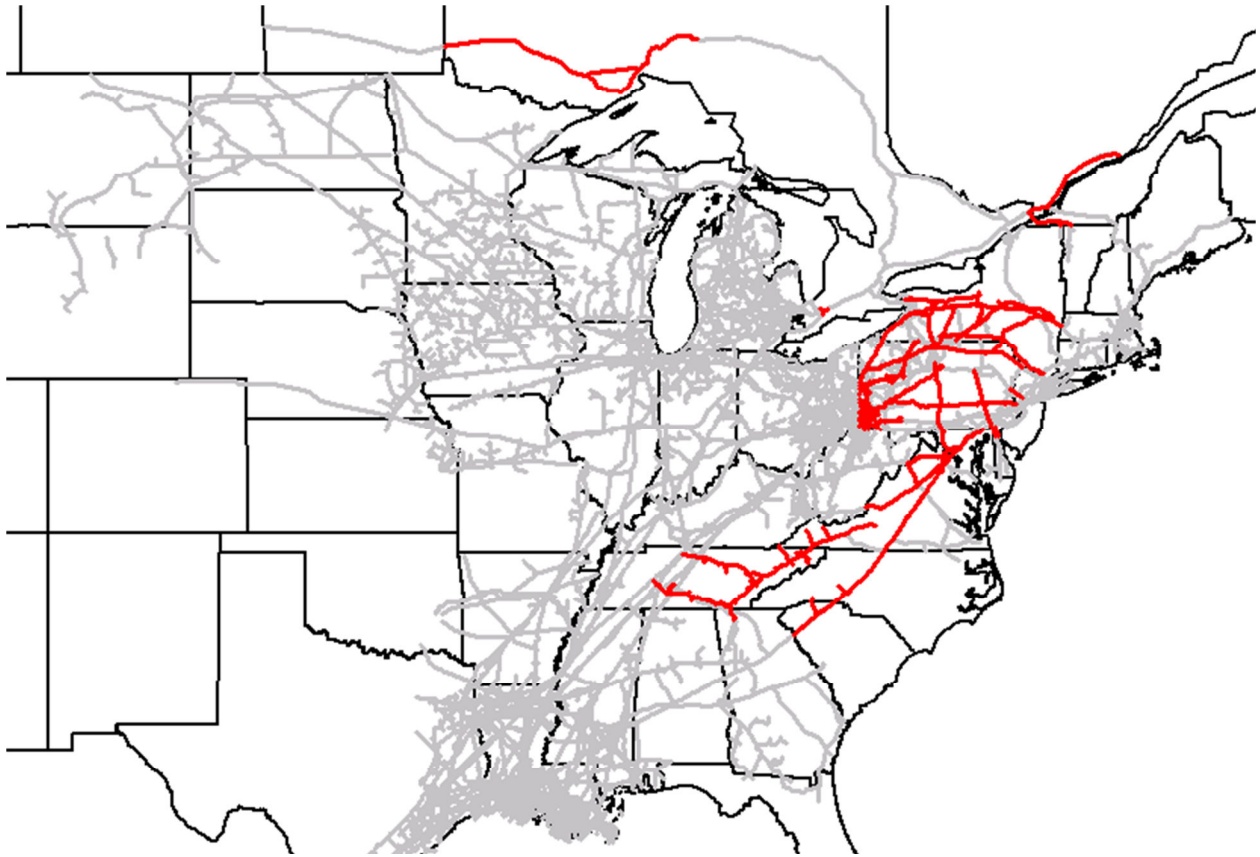


Table K22 summarizes the results of the frequency and duration analysis.

**Table K22. RGDS S16 Winter 2023: Frequency and Duration of Constraints**

<b>Constraint</b>	<b># of Events</b>	<b>Min. Duration (Days)</b>	<b>Max. Duration (Days)</b>	<b>Total # of Days</b>
Columbia Gas VA/MD	6	1	52	80
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	15	52
Tennessee Z4 PA	7	1	8	25
Tennessee Z5 NY	6	1	48	83
Texas Eastern M2 PA South	7	1	46	81
Texas Eastern M3 North	13	1	10	37
TransCanada Ontario West	4	1	6	11
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	2	4

### 3.3.1 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 L245 and Figure L246 relative to the capacity of the segment.

### 3.3.2 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 L247 and Figure L248 relative to the capacity of the segment

### 3.3.3 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 L249 and Figure L250 relative to the capacity of the segment.

### 3.3.4 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 L251 and Figure L252 relative to the capacity of the segment.

### 3.3.5 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 L253 and Figure L254 relative to the capacity of the segment.

### 3.3.6 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 L255 and Figure L256 relative to the capacity of the segment.

### 3.3.7 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 L257 and Figure L258 relative to the capacity of the segment.

### **3.3.8 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 L259 and Figure L260 relative to the capacity of the segments.

### **3.3.9 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 L261 and Figure L262 relative to the capacity of the segment.

### **3.3.10 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 L263 and Figure L264 relative to the capacity of the segment.

### **3.3.11 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 L265 and Figure L266 relative to the capacity of the segment.

### **3.3.12 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 L267 and Figure L268 relative to the capacity of the segment.

### **3.3.13 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 L269 and Figure L270 relative to the capacity of the segment.

### **3.3.14 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 L271 and Figure L272 relative to the capacity of the segment.

### **3.3.15 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 L273 and Figure L274 relative to the capacity of the segment.

### **3.3.16 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 L275 and Figure L276 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.

### **3.3.17 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 L277 and Figure L278 relative to the capacity of the segment.

### **3.3.18 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 L279 and Figure L280 relative to the capacity of the segment.

### **3.3.19 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 L281 and Figure L282 relative to the capacity of the segment.



### 3.3.20 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 L283 and Figure L284 relative to the capacity of the segment.

### 3.4 RGDS S16 SUMMER 2023

Figure K34 summarizes the affected generation during the Summer 2023 peak hour by PPA.

**Figure K34. RGDS S16 Summer 2023: Peak Hour Affected Generation**

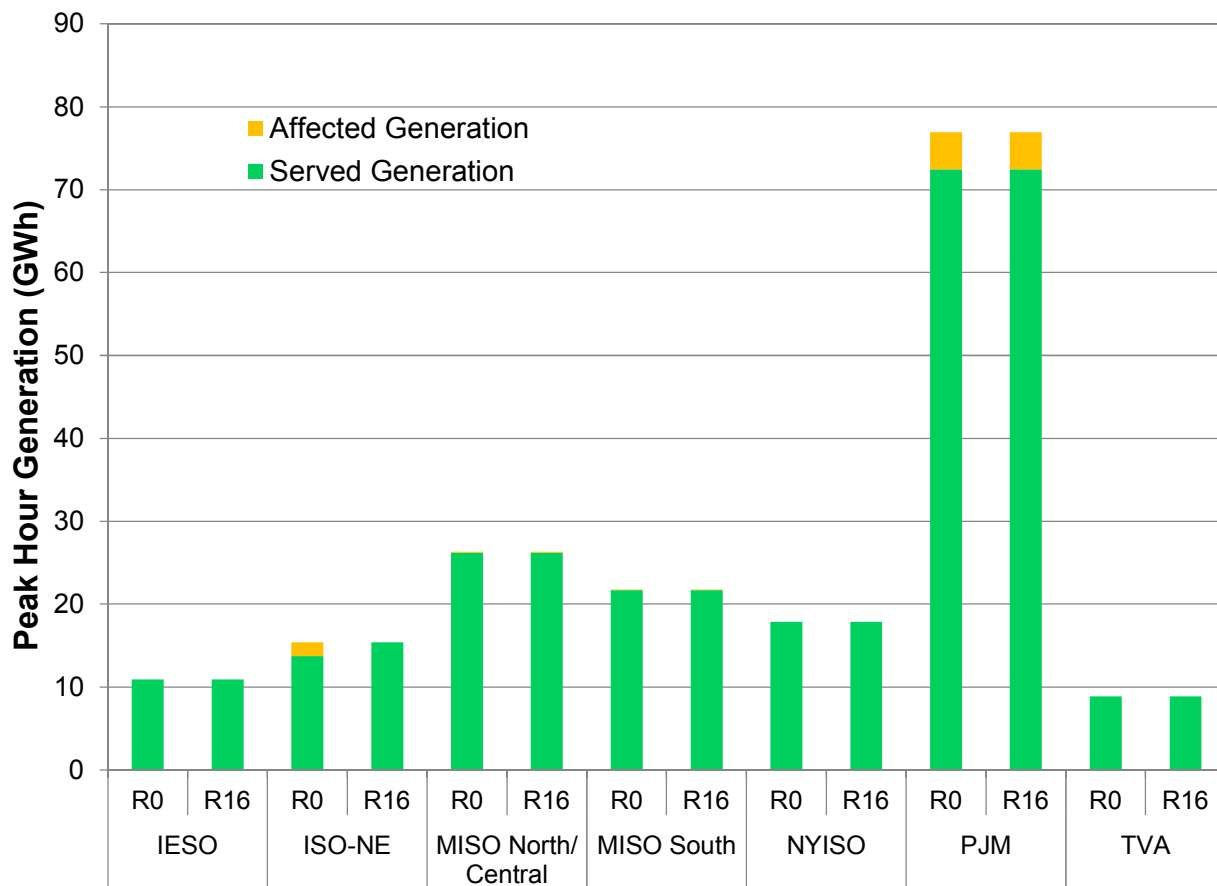
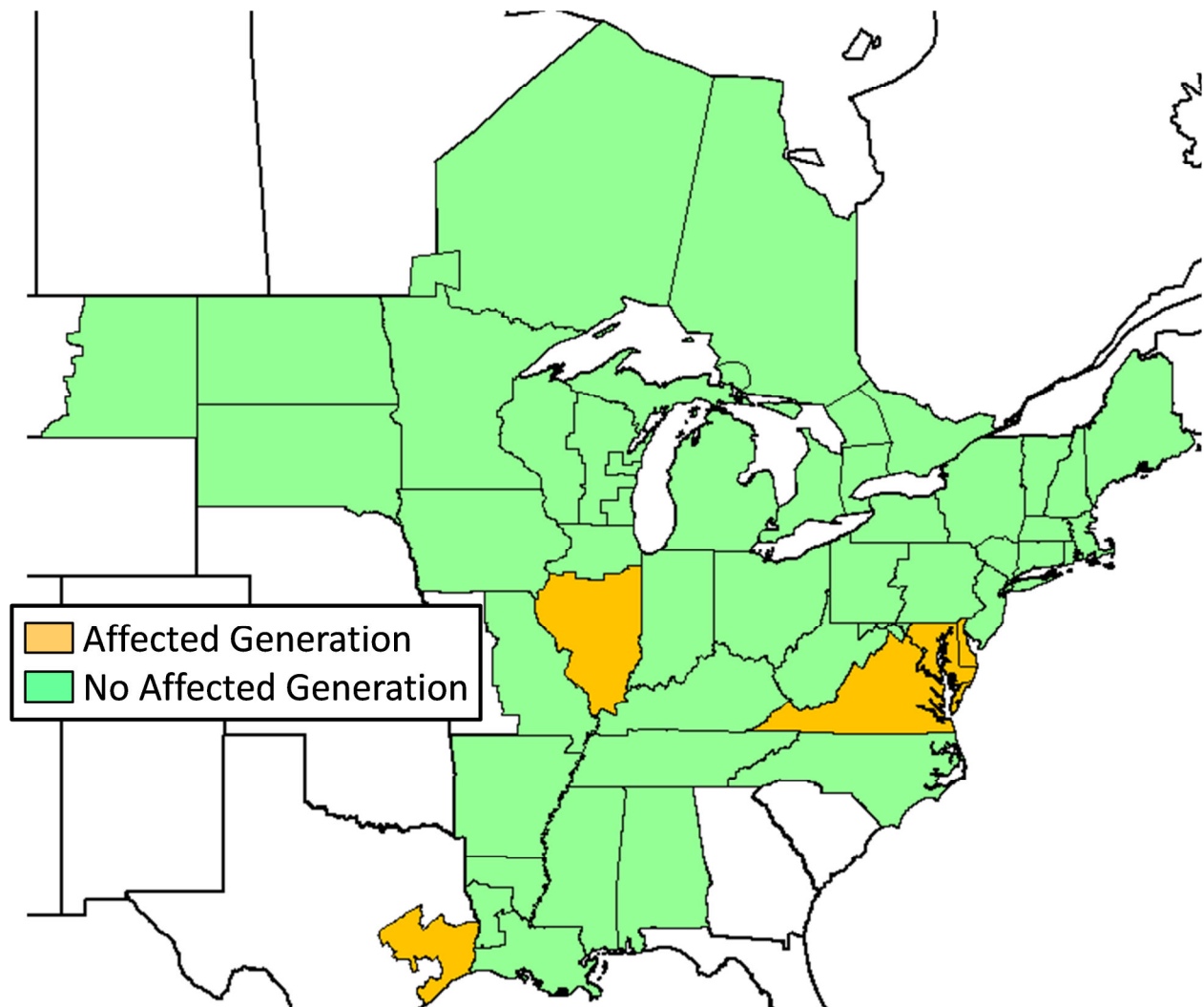


Figure K35 summarizes the unserved demand by GPCM location. The unserved demand and affected generation by location are quantified in Table K23.

**Figure K35. RGDS S16 Summer 2023: Locations with Peak Hour Affected Generation**



**Table K23. RGDS S16 Summer 2023: Unserved Peak Hour Generation Demand and Affected Generation**

<b>Location</b>	<b>Unserved Generation Gas Demand (MDth)</b>	<b>Affected Generation (MWh)</b>
Delaware	8.5	1,175
Illinois Southern	1.0	112
Maryland Eastern	16.7	2,361
Texas East (SERC)	0.6	81
Virginia	8.4	936

Figure K36 shows the constrained pipeline segments, in red, that result in the affected generation shown in Figure K34 during the Summer 2023 peak hour.

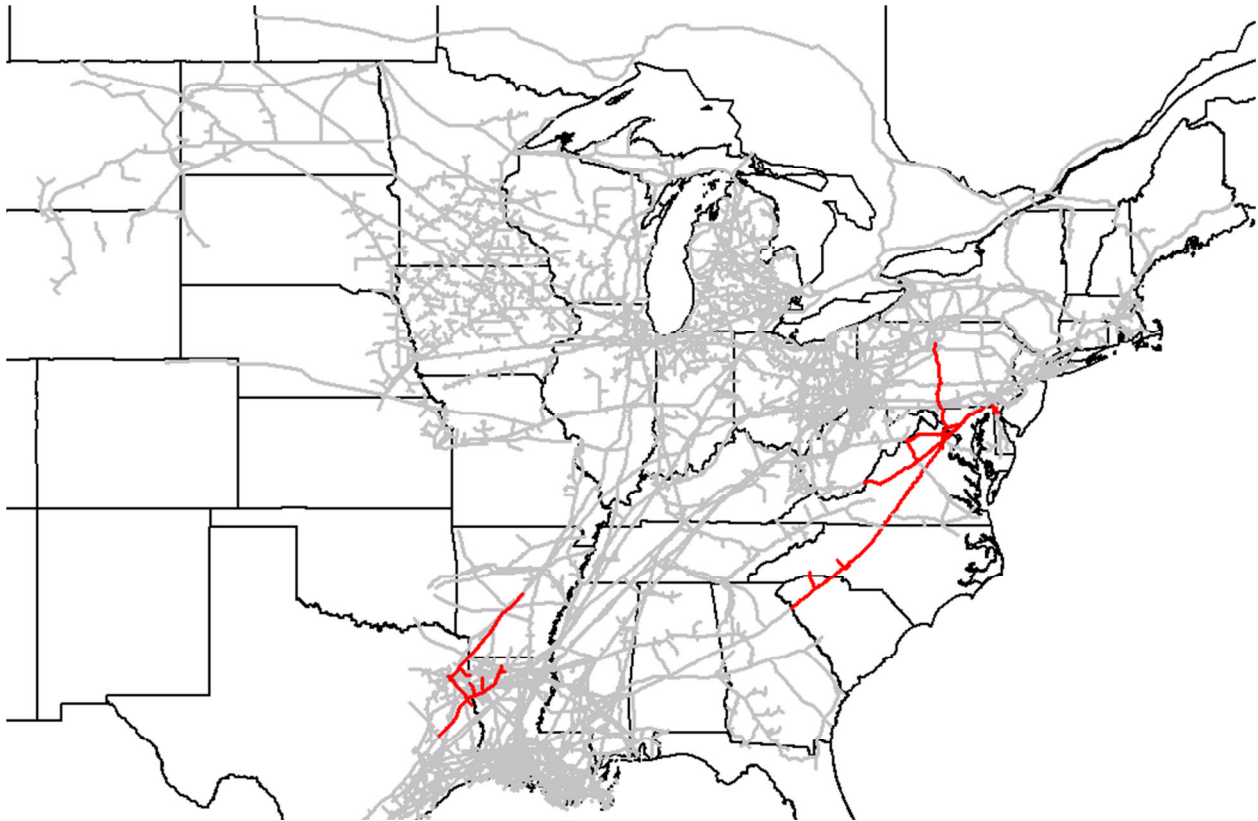
**Figure K36. RGDS S16 Summer 2023: Peak Hour Constraints**

Table K24 summarizes the results of the frequency and duration analysis.

**Table K24. RGDS S16 Summer 2023: Frequency and Duration of Constraints**

<b>Constraint</b>	<b># of Events</b>	<b>Min. Duration (Days)</b>	<b>Max. Duration (Days)</b>	<b>Total # of Days</b>
Columbia Gas VA/MD	2	1	3	4
Dominion Southeast	9	1	7	27
Eastern Shore	9	1	7	27
Texas Eastern Zone ETX	7	1	6	17
Transco Z5	6	1	6	16

### 3.4.1 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 L285 and Figure L286 relative to the capacity of the segment.

### **3.4.2 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 L287 and Figure L288 relative to the capacity of the segment.

### **3.4.3 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 L289 and Figure L290 relative to the capacity of the segments.

### **3.4.4 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 L291 and Figure L292 relative to the capacity of the segment.

### **3.4.5 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 L293 and Figure L294 relative to the capacity of the segment.