

NYISO Outage Scheduling Process

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Outage Scheduling eLearning Module

January 2024

eLearning

Presentation Outline

- **Outage Scheduling Defined**
- **Basis for NYISO Outage Scheduling Process**
- **Outage Request Submission Requirements**
- **Outage Request Assessments**
 - NYISO Impact Assessment for Transmission Outage Scheduling
 - NYISO Reliability Assessment for Generation Outage Scheduling
- **Application of Assessment Results**
- **Available Outage Scheduling Reports**
- **Outage Request & Review Summary Timeline**
- **Additional Resources**

Outage Scheduling Defined

Outage Scheduling Defined

- Process by which NYISO is notified of planned and unexpected changes to operational availability of transmission and generating facilities
- Notifications are given in the form of requests for consideration and approval
- Approved requests subsequently become Outage Schedules

Basis for NYISO Outage Scheduling Process

Basis for Outage Scheduling Process

■ Reliability-Based Requirements

- Northeast Power Coordinating Council (NPCC)
 - NPCC A-2 Section 4
- North American Electric Reliability Corporation (NERC)
 - NERC Standard-TOP-003-1
 - NERC Standard-IRO-017-1
- New York State Reliability Council (NYSRC)
 - NYSRC E-R5
- NYISO Tariff
 - OATT Section 9.6

Basis for Outage Scheduling Process

- **Northeast Power Coordinating Council (NPCC)**
 - NPCC A-2 Section 4: Resource Adequacy-Operating Criteria



“Each area shall have procedures in place to schedule outages such that available resources meet area’s forecasted load plus reserves requirement.”

Basis for Outage Scheduling Process

■ North American Electric Reliability Corporation (NERC)

- NERC Standard-TOP-003-1:
Planned Outage Coordination



“Scheduled generator and transmission outages that may affect the reliability of interconnected operations must be planned and coordinated among Balancing Authorities, Transmission Operators, and Reliability Coordinators.”

- NERC Standard-IRO-017-1:
Outage Coordination

“To ensure that outages are properly coordinated in the Operations Planning time horizon and Near-Term Transmission Planning Horizon...Each Reliability Coordinator shall develop, implement, and maintain an outage coordination process for generation and Transmission outages within its Reliability Coordinator Area.”

Basis for Outage Scheduling Process

- **New York State Reliability Council (NYSRC)**
 - NYSRC B-R1: Outage Coordination




“Scheduled outages of facilities that affect the reliability of the NYS Bulk Power System shall be coordinated sufficiently in advance of the outage to permit the affected systems to maintain reliability.”

Basis for Outage Scheduling Process

■ NYISO Tariff

- OATT Section 9.6: Outages and Interruptions



“Developer and Connecting Transmission Owner may each, in accordance with NYISO procedures and Good Utility Practice and in coordination with the other Party, remove from service any of its respective Attachment Facilities or System Upgrade Facilities and System Deliverability Upgrades that may impact the other Party’s facilities as necessary to perform maintenance or testing or to install or replace equipment.”

Outage Request Submission Requirements

Transmission Facilities Outages

	Timeline Requirements	Data Requirements	Submission Methods	Updates
Annual Maintenance	<ul style="list-style-type: none"> Submit by October 1st of current year 	<ul style="list-style-type: none"> Requests for the coming calendar year <ul style="list-style-type: none"> All known facility outages under NYISO Control with a duration of ≥ 3 successive calendar days Requests to Include: <ul style="list-style-type: none"> Equipment details Reason and description of work Date range for outage Local generation impact 	<ul style="list-style-type: none"> Manual Entry into OMS CSV Upload into OMS XML upload into OMS Email or phone call to the NYISO generation scheduler as necessary 	<ul style="list-style-type: none"> As needed in OMS Submit by Min Evaluation Time as follows: <ul style="list-style-type: none"> Minimum notification time for any scheduled outage is 2 calendar days If cancelling request, TO must provide reason
Scheduled Maintenance	<ul style="list-style-type: none"> Use Specific Facility Notification Times See Attachment A of Outage Scheduling Manual for notification timelines of: <ul style="list-style-type: none"> 30 calendar days prior to 1st day of operative TCC month 5 calendar days prior to outage start date 2 calendar days prior to outage start date <p><i>minimum notification time for any scheduled outage is 2 calendar days</i></p>	<ul style="list-style-type: none"> All non-emergency outages which were not submitted as Annual Maintenance Requests to Include: <ul style="list-style-type: none"> Equipment details Reason and description of work Date range for outage Local generation impact 	<ul style="list-style-type: none"> Manual Entry into OMS CSV Upload into OMS XML upload into OMS Email or phone call to the NYISO generation scheduler as necessary 	<ul style="list-style-type: none"> As needed in OMS Submit by Min Evaluation Time as follows: <ul style="list-style-type: none"> Minimum notification time for any scheduled outage is 2 calendar day If cancelling request, TO must provide reason
On Shift Outages	<ul style="list-style-type: none"> Notification by phone call to NYISO Grid Operations to begin pre-scheduled outage and wait for approval prior to beginning switching 	<ul style="list-style-type: none"> Requests to Include: <ul style="list-style-type: none"> Equipment to be taken out of service 	<ul style="list-style-type: none"> Via phone direct to Grid Operations 	N/A
Unscheduled/ Unplanned Outages	<ul style="list-style-type: none"> Immediate Notification by phone call to NYISO Grid Operations BEFORE any switch is made* <p><i>*unless safety does not permit</i></p>	<ul style="list-style-type: none"> Requests to Include: <ul style="list-style-type: none"> Equipment details Reason and description of work Date range for outage Local generation impact 	<ul style="list-style-type: none"> Via phone direct to Grid Operations 	N/A

Generation Facilities Outages

	Timeline Requirements	Data Requirements	Submission Methods	Updates
Annual Maintenance	<ul style="list-style-type: none"> Submit by September 1st of current year 	<ul style="list-style-type: none"> Requests for the coming 2 calendar years that include: <ul style="list-style-type: none"> Generation Name and PTID Derated to MW value Reason for the Outage Date Range for the Outage Contact Information 	<ul style="list-style-type: none"> Manual Entry into OMS CSV Upload into OMS XML upload into OMS Email or phone call to the NYISO generation scheduler as necessary Follow TO protocol for TO Notification 	<ul style="list-style-type: none"> As needed in OMS Submit by Min Evaluation Time as follows: <ul style="list-style-type: none"> 30 calendar days notice for outages lasting ≥ 7 days 7 calendar days notice for outages lasting < 7 days If cancelling request, GO must provide reason
Scheduled Maintenance	<ul style="list-style-type: none"> Submit no later than 30 calendar days before 1st day of operative TCC month Requests may be submitted within a minimum of 2 calendar days if the NYISO and the Local TO agree there are no reliability criteria violations 	<ul style="list-style-type: none"> Request to Include: <ul style="list-style-type: none"> Generation Name and PTID Derated to MW value Reason for the Outage Date Range for the Outage Contact Information Indication if request is replacing or modifying existing schedule 	<ul style="list-style-type: none"> Manual Entry into OMS CSV Upload into OMS XML upload into OMS Email or phone call to the NYISO generation scheduler as necessary Follow TO protocol for TO Notification 	<ul style="list-style-type: none"> As needed in OMS Submit according to min evaluation timeline requirements noted If cancelling request, GO must provide reason
On Shift Outages	<ul style="list-style-type: none"> Prior to taking the generator out-of-service, notify to NYISO Grid Operations thru the Local TO and wait for approve to proceed 	<ul style="list-style-type: none"> Requests to Include: <ul style="list-style-type: none"> Derated to MW value Reason for the Outage Date Range for the Outage Contact Information Update MIS Bids; RT: one hour before next RTC evaluation 	<ul style="list-style-type: none"> Follow TO protocol for TO Notification 	N/A
Unscheduled/ Unplanned Outages & Derates (Full or Partial)	<ul style="list-style-type: none"> Immediate Notification to TO Notification to NYISO Scheduling 	<ul style="list-style-type: none"> Notification to Include: <ul style="list-style-type: none"> Generation Name and PTID Derated to MW value Reason for the Outage Estimated duration Contact Information Update MIS Bids; Dam: adjusted before closing time RT: one hour before next RTC evaluation 	<ul style="list-style-type: none"> Follow Local TO protocol for TO Notification. NYISO to be notified thru the Local TO in R-T For NYISO Scheduling: <ul style="list-style-type: none"> Manual Entry into OMS CSV Upload into OMS XML upload into OMS Email as necessary 	N/A

Outage Request Assessments

Impact Assessment for Transmission Outages

■ Outage Interface Impact

- Performed by NYISO annually and as proposed outages are received
- NYISO evaluates the effect of the outage facility power flow distribution and the change on affected interface's thermal, voltage, and stability limits
- NYISO will look for conflicts
- Results used to:
 - Approve Outage Requests
 - OR
 - Defer, Postpone, or Cancel

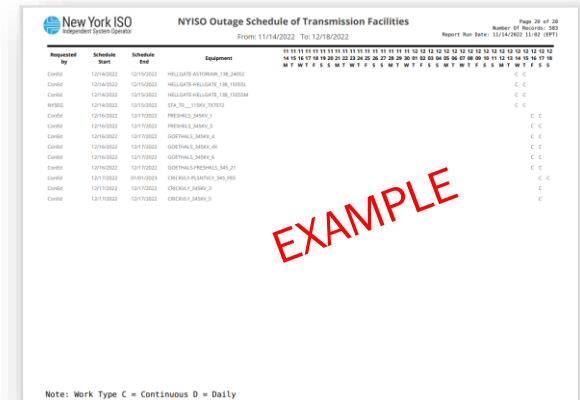


Ref ID	Equipment Name	PFI ID	Status	Schedule Start	Schedule End
22-00344-1	GENERIC_LINE_1		Approved	07/15/2022 01:00	07/15/2022 23:00

Impact Assessment for Transmission Outages

■ NYISO Outage Schedule of Transmission Facilities

- Day-to-day summary report of all approved Outage Schedules for the next 34 calendar days
- Can be found at www.nyiso.com
Markets > Power Grid Data > Outages
- This report lists the following information
 - Equipment name
 - Requested By
 - Scheduled Start and End Date
 - Outage Type (Continuous or Daily)



Requested By	Schedule Start	Schedule End	Equipment	Outage Type
ConEd	10/14/2022	10/15/2022	HELLSGATE-ATKINSWALK_138_20022	C
ConEd	10/14/2022	10/15/2022	HELLSGATE-HELLSGATE_138_10016	C
ConEd	10/14/2022	10/15/2022	HELLSGATE-HELLSGATE_138_10018	C
WECC	10/14/2022	10/15/2022	STA_TL_138L_10019	C
ConEd	10/16/2022	10/17/2022	FRESHKILL_345KV_1	C
ConEd	10/16/2022	10/17/2022	FRESHKILL_345KV_2	C
ConEd	10/16/2022	10/17/2022	GOETHALS_345KV_4	C
ConEd	10/16/2022	10/17/2022	GOETHALS_345KV_5	C
ConEd	10/16/2022	10/17/2022	GOETHALS_345KV_6	C
ConEd	10/16/2022	10/17/2022	GOETHALS_345KV_7	C
ConEd	10/16/2022	10/17/2022	GOETHALS-PRESKILL_345_2	C
ConEd	10/17/2022	10/17/2022	CRONKILL_345KV_3	C
ConEd	10/17/2022	10/17/2022	CRONKILL_345KV_4	C

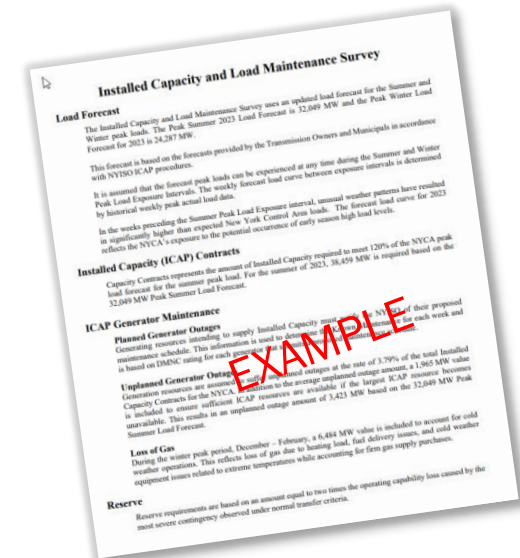
Note: Work Type C = Continuous D = Daily

EXAMPLE

Reliability Assessment for Generator Outages

■ Reliability Assessment

- Performed by NYISO annually and as proposed outage schedules are received
- NYISO will evaluate generator outages against Operating Reserve for deficiencies
- Results used to:
 - Approve Outage Requests
 - OR
 - Defer, Postpone, or Cancel



Reliability Assessment for Generator Outages

■ NYISO Installed Capacity and Load Maintenance Survey

- Details projection of Operating Reserve Adequacy at weekly intervals
- Can be found at www.nyiso.com

Markets > Reports & Info > General Info
> ICAP Gen Unit Maintenance Survey

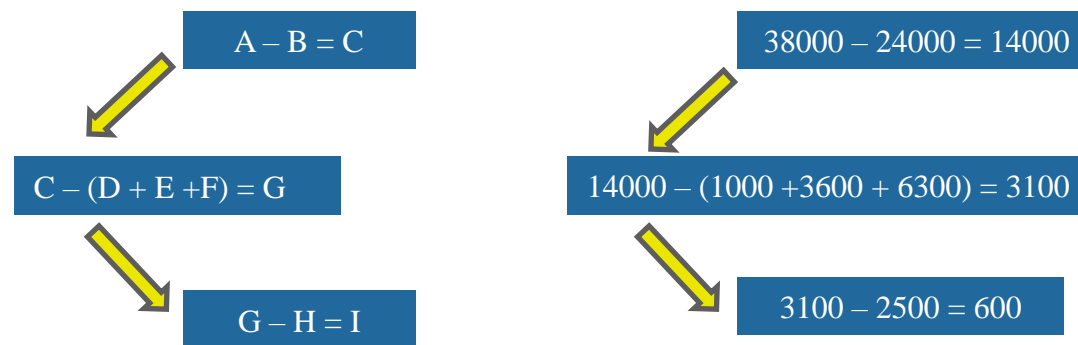
The screenshot displays a complex table with multiple columns for different data series. A prominent red watermark reading 'EXAMPLE' is overlaid diagonally across the table. The visible columns include headers such as 'From Connect', 'MW', 'Reserve MW', 'MW', 'MW', 'Risk MW', 'MW', 'Reserve MW', and 'MW'. The table contains numerous rows of numerical data corresponding to these categories.

Reliability Assessment for Generator Outages - Example

Week Beginning	A Capability Contracts	B Load Forecast MW	C Available Reserve MW	D Known Maintenance MW	E Unplanned Outages MW	F Gen at Risk MW	G Net Reserve MW	H Required Reserve MW	I Net Margin MW
05/01/20XX	38000	24000	14000	1000	3600	6300	3100	2500	600
05/08/20XX	38000	24000	14000	5500	3500	0	7000	2500	4500
05/15/20XX	38000	24000	14000	1300	3500	6300	2900	2500	400
05/22/20XX	38000	24000	14000	6000	3000	0	8000	2500	5000
05/26/20XX	38000	24000	14000	3000	3000	6300	1700	2500	-800

Step 1: $A - B = C$
 Step 2: $C - (D + E + F) = G$
 Step 3: $G - H = I$

I = Represents Surplus or Deficiency



Application of Assessment Results

Reliability Assessment Results

■ Assessment Results for Transmission Outages

- NYISO to provide approved transmission outage schedules for the upcoming calendar year by November 1
- NYISO to Post approved transmission outages to the *Outage Schedule of Transmission Facilities* report
- Updates require re-evaluation through an impact assessment process

Reliability Assessment Results

■ Transmission Outage Reliability Violation

- The NYISO has the authority to defer, postpone, or cancel scheduled transmission outages of facilities under NYISO operational control

This includes:

- *Deferral* to alternate dates of requested outages not yet approved by the NYISO
 - *Postponement* and rescheduling of previously NYISO approved outages for which the associated TO has not yet committed resources
 - *Cancellation* and rescheduling of previously NYISO approved outages for which the associated TO has committed resources
- When the NYISO postpones, cancels or denies a transmission facility outage request, the reasons for denial will be made available and NYISO will provide alternate periods for the Transmission Owner to reschedule

Reliability Assessment Results

- **Assessment Results for Generation in a Surplus**
 - NYISO to provide final approved generator outage schedules for upcoming two calendar years by December 1st
 - NYISO to include approved generator outage request MW value in the 'ICAP Gen Unit Maintenance Survey'
 - Updates require re-evaluation through the reliability assessment process

Reliability Assessment Results

■ Assessment Results for Generation Deficiency

- The NYISO has the authority to defer, postpone, or cancel scheduled of facilities within the NYCA or those generators supplying ICAP to generator outages the NYCA

The below procedure will be followed:

- Request voluntary reschedule submission
- NYISO to rerun Reliability Assessment with voluntary reschedule submissions
- If deficiency still remains, the NYISO will invoke forced rescheduling of ICAP providers based on:
 - » Adherence to Reliability Rules
 - » Minimizing the number of Outage Schedules impacted
 - » Minimizing the shifting of Outage Schedule Start Date/Start Times

Available Reports

Available Outage Scheduling Reports

■ Transmission Facility Reports

- Day-Ahead Scheduled Outage
- Transmission Outage Schedule (CSV)
- Transmission Outage Schedule (PDF)
- Transfer Limitations
- Transfer Limitations Report with Reasons*

■ Generation Facility Reports

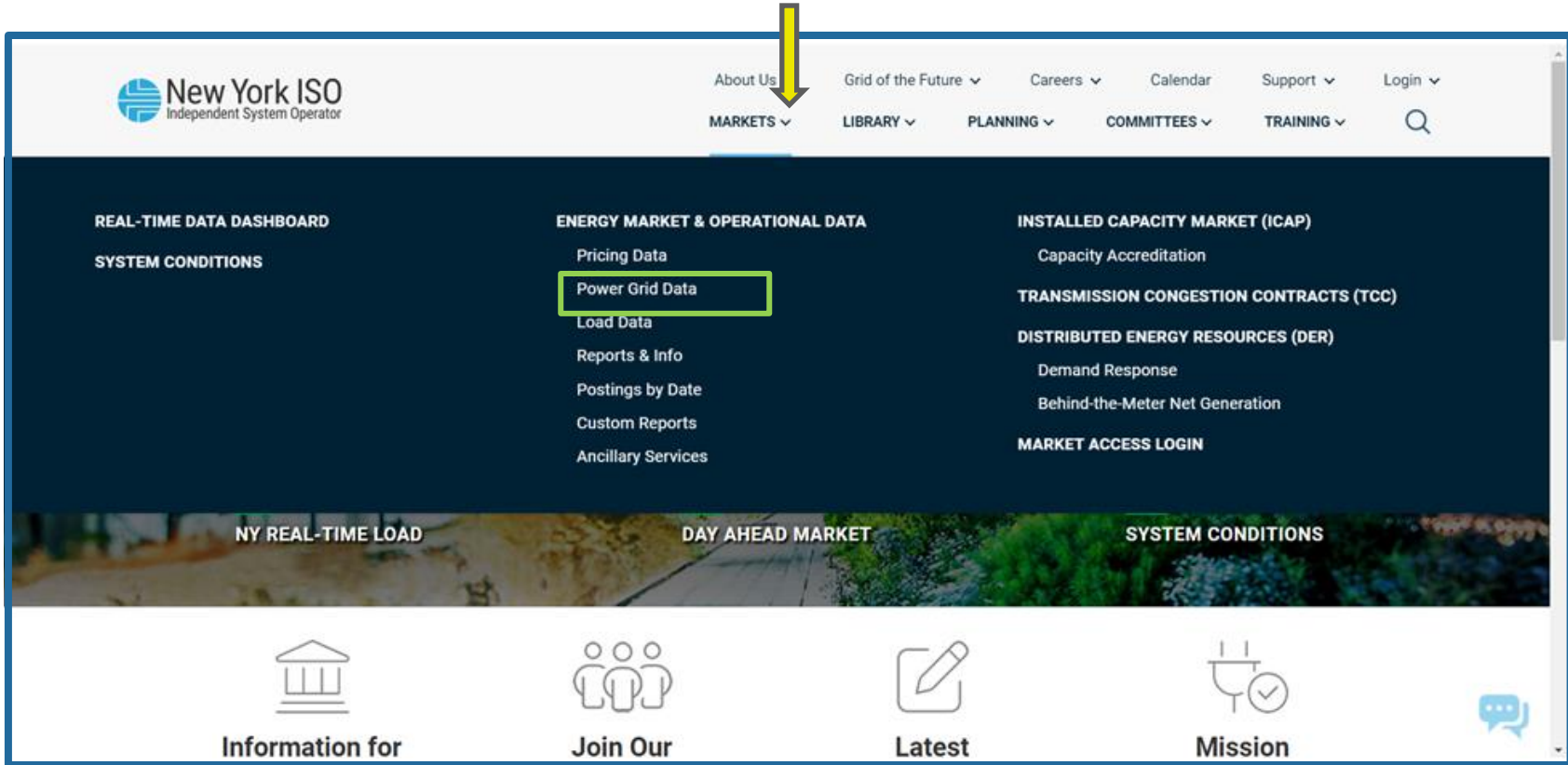
- Generation Maintenance Report



**Restricted access due to Critical Energy Infrastructure Information (CEII).*

Access granted through MyNYISO. To learn more, please contact Stakeholder Services.

Outage Scheduling Reports



The screenshot shows the New York ISO website's navigation menu. A yellow arrow points to the 'MARKETS' dropdown menu. The 'MARKETS' dropdown is open, showing a list of options. 'Power Grid Data' is highlighted with a green box. Other options in the dropdown include 'Pricing Data', 'Load Data', 'Reports & Info', 'Postings by Date', 'Custom Reports', and 'Ancillary Services'. The main navigation bar includes 'About Us', 'Grid of the Future', 'Careers', 'Calendar', 'Support', and 'Login'. Below the navigation bar, there are three columns of menu items: 'REAL-TIME DATA DASHBOARD' and 'SYSTEM CONDITIONS', 'ENERGY MARKET & OPERATIONAL DATA', and 'INSTALLED CAPACITY MARKET (ICAP)', 'TRANSMISSION CONGESTION CONTRACTS (TCC)', 'DISTRIBUTED ENERGY RESOURCES (DER)', and 'MARKET ACCESS LOGIN'. At the bottom of the page, there are four icons with labels: 'Information for', 'Join Our', 'Latest', and 'Mission', along with a chat bubble icon.

New York ISO
Independent System Operator

About Us | Grid of the Future | Careers | Calendar | Support | Login

MARKETS | LIBRARY | PLANNING | COMMITTEES | TRAINING | Search

REAL-TIME DATA DASHBOARD

SYSTEM CONDITIONS

ENERGY MARKET & OPERATIONAL DATA

- Pricing Data
- Power Grid Data**
- Load Data
- Reports & Info
- Postings by Date
- Custom Reports
- Ancillary Services

INSTALLED CAPACITY MARKET (ICAP)

- Capacity Accreditation

TRANSMISSION CONGESTION CONTRACTS (TCC)

DISTRIBUTED ENERGY RESOURCES (DER)

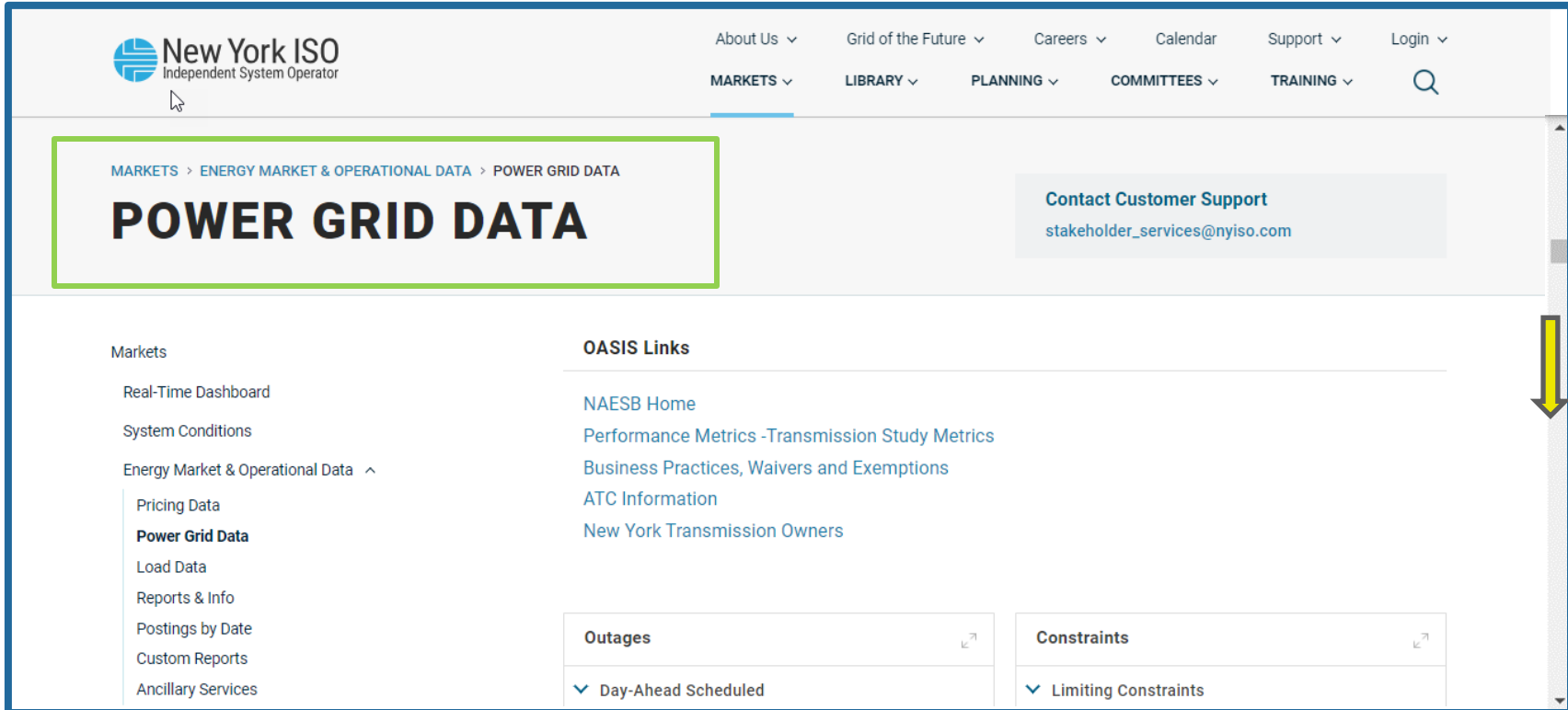
- Demand Response
- Behind-the-Meter Net Generation

MARKET ACCESS LOGIN

NY REAL-TIME LOAD | **DAY AHEAD MARKET** | **SYSTEM CONDITIONS**

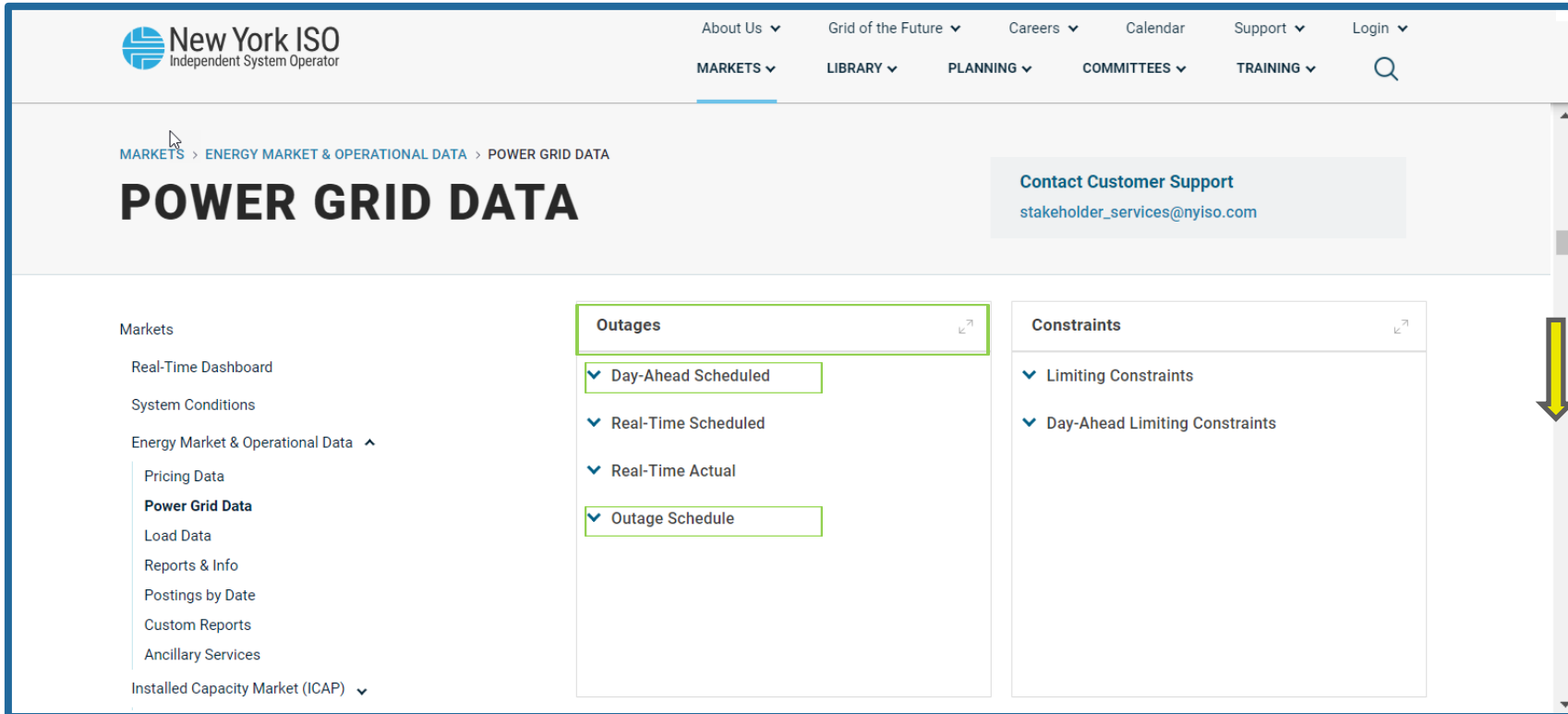
Information for | **Join Our** | **Latest** | **Mission**

Outage Scheduling Reports - Transmission



The screenshot displays the New York ISO website interface. At the top left is the New York ISO logo with the text "Independent System Operator". To the right is a navigation menu with links for "About Us", "Grid of the Future", "Careers", "Calendar", "Support", and "Login". Below this is a secondary menu with "MARKETS", "LIBRARY", "PLANNING", "COMMITTEES", and "TRAINING", along with a search icon. The main content area features a breadcrumb trail: "MARKETS > ENERGY MARKET & OPERATIONAL DATA > POWER GRID DATA". The title "POWER GRID DATA" is prominently displayed and highlighted with a green border. To the right of the title is a "Contact Customer Support" button with the email address "stakeholder_services@nyiso.com". On the left side, there is a sidebar menu under "Markets" with options like "Real-Time Dashboard", "System Conditions", "Energy Market & Operational Data", "Pricing Data", "Power Grid Data", "Load Data", "Reports & Info", "Postings by Date", "Custom Reports", and "Ancillary Services". The "Power Grid Data" option is selected. On the right side, there is an "OASIS Links" section with links to "NAESB Home", "Performance Metrics -Transmission Study Metrics", "Business Practices, Waivers and Exemptions", "ATC Information", and "New York Transmission Owners". Below this are two expandable sections: "Outages" and "Constraints". The "Outages" section is expanded to show "Day-Ahead Scheduled". The "Constraints" section is expanded to show "Limiting Constraints". A yellow arrow on the right side of the page indicates a scroll action.

Outage Scheduling Reports - Transmission



The screenshot displays the New York ISO website interface. At the top left is the New York ISO logo and name. The top right contains navigation links: About Us, Grid of the Future, Careers, Calendar, Support, and Login. Below these are secondary navigation links: MARKETS, LIBRARY, PLANNING, COMMITTEES, and TRAINING, along with a search icon.

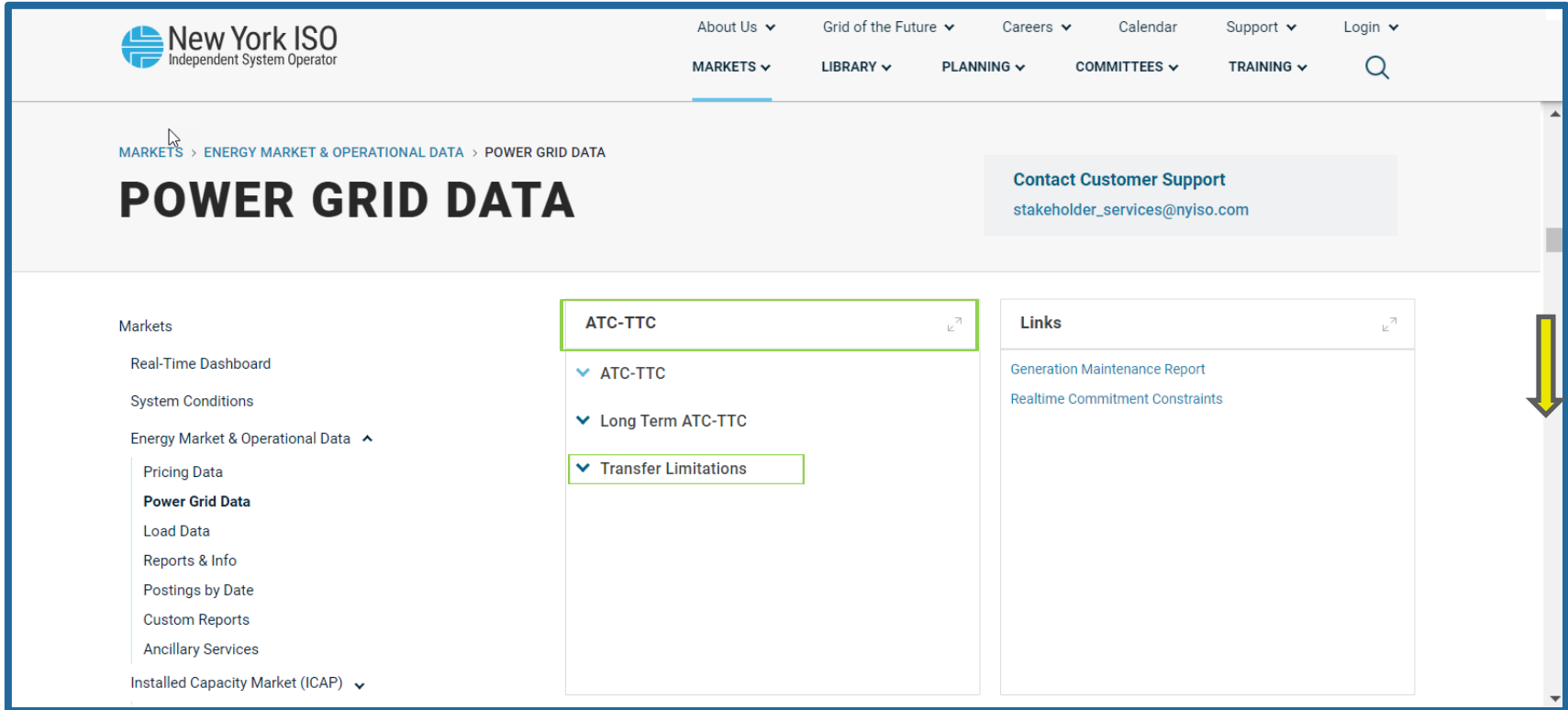
The main content area features a breadcrumb trail: [MARKETS](#) > [ENERGY MARKET & OPERATIONAL DATA](#) > [POWER GRID DATA](#). The title **POWER GRID DATA** is prominently displayed. To the right of the title is a contact box for customer support with the email stakeholder_services@nyiso.com.

On the left side, there is a sidebar menu under the heading "Markets". The menu items are: Real-Time Dashboard, System Conditions, Energy Market & Operational Data (expanded), Pricing Data, **Power Grid Data** (highlighted), Load Data, Reports & Info, Postings by Date, Custom Reports, Ancillary Services, and Installed Capacity Market (ICAP).

The main content area is divided into two columns. The left column is titled "Outages" and contains three expandable sections: "Day-Ahead Scheduled", "Real-Time Scheduled", and "Real-Time Actual". The "Outage Schedule" section is currently expanded and highlighted with a green border. The right column is titled "Constraints" and contains two expandable sections: "Limiting Constraints" and "Day-Ahead Limiting Constraints".

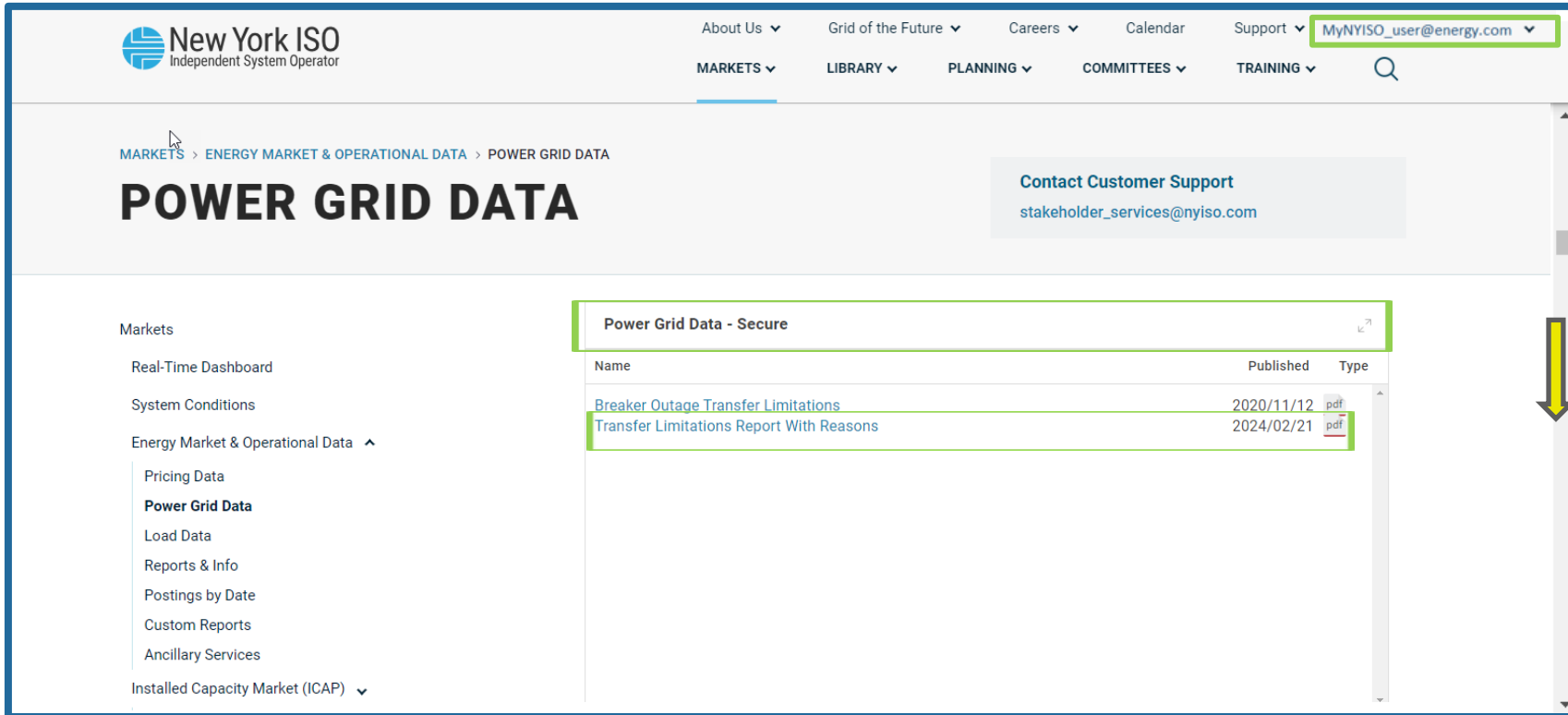
A yellow arrow on the right side of the page points downwards, indicating the scroll direction.

Outage Scheduling Reports - Transmission



The screenshot displays the New York ISO website interface. At the top, the logo and name 'New York ISO Independent System Operator' are on the left. A navigation menu on the right includes 'About Us', 'Grid of the Future', 'Careers', 'Calendar', 'Support', and 'Login'. Below this, a secondary menu features 'MARKETS', 'LIBRARY', 'PLANNING', 'COMMITTEES', and 'TRAINING', along with a search icon. The main content area has a breadcrumb trail: 'MARKETS > ENERGY MARKET & OPERATIONAL DATA > POWER GRID DATA'. The title 'POWER GRID DATA' is prominently displayed. To the right of the title is a 'Contact Customer Support' button with the email 'stakeholder_services@nyiso.com'. On the left, a sidebar menu lists various categories: 'Markets', 'Real-Time Dashboard', 'System Conditions', 'Energy Market & Operational Data' (expanded), 'Pricing Data', 'Power Grid Data' (highlighted), 'Load Data', 'Reports & Info', 'Postings by Date', 'Custom Reports', 'Ancillary Services', and 'Installed Capacity Market (ICAP)'. The main content area is divided into two columns. The left column, titled 'ATC-TTC', contains a dropdown menu with 'ATC-TTC', 'Long Term ATC-TTC', and 'Transfer Limitations' (highlighted). The right column, titled 'Links', contains two links: 'Generation Maintenance Report' and 'Realtime Commitment Constraints'. A yellow arrow on the right side of the page points downwards, indicating the scroll direction.

Outage Scheduling Reports - Transmission



New York ISO
Independent System Operator

About Us ▾ Grid of the Future ▾ Careers ▾ Calendar Support ▾ MyNYISO_user@energy.com ▾

MARKETS ▾ LIBRARY ▾ PLANNING ▾ COMMITTEES ▾ TRAINING ▾

MARKETS > ENERGY MARKET & OPERATIONAL DATA > POWER GRID DATA

POWER GRID DATA

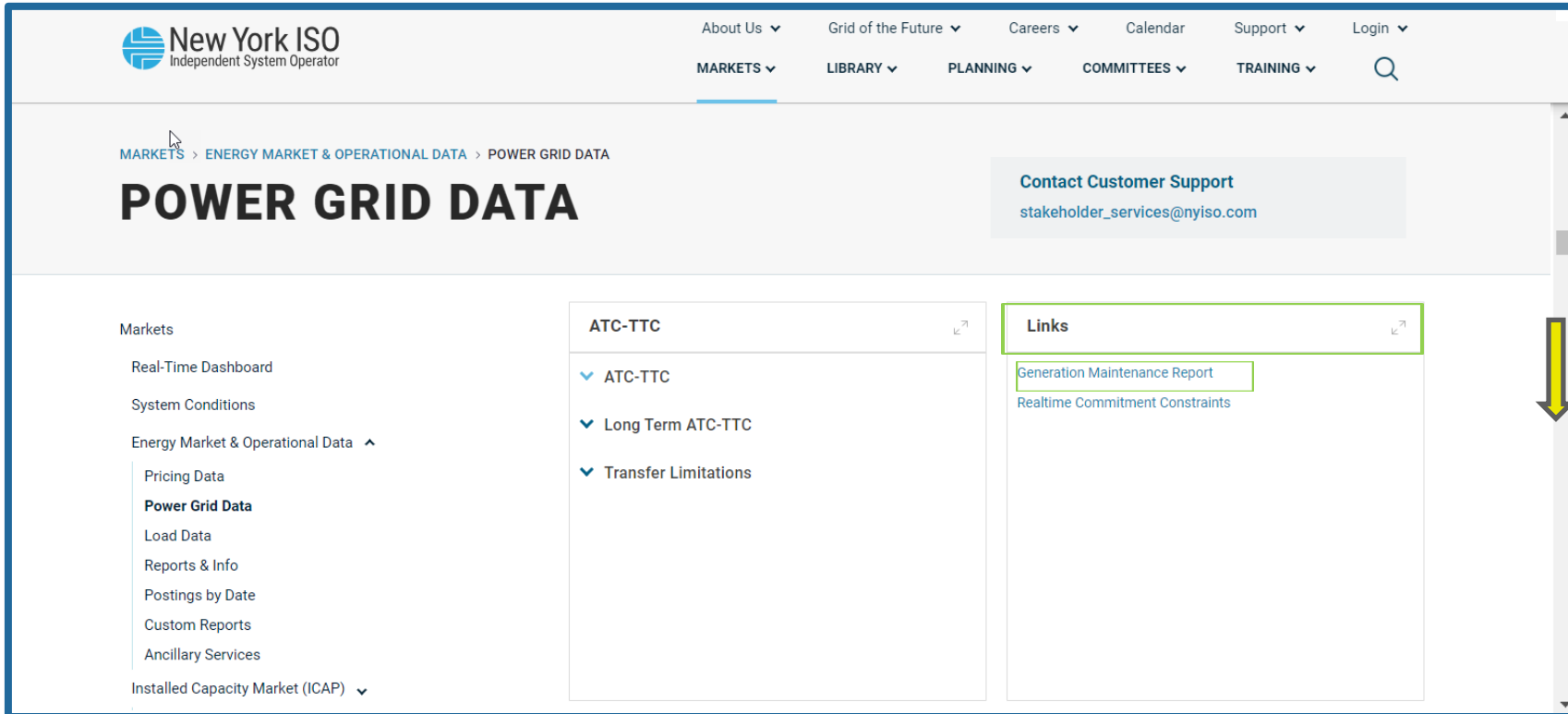
Contact Customer Support
stakeholder_services@nyiso.com

Markets

- Real-Time Dashboard
- System Conditions
- Energy Market & Operational Data ▾
 - Pricing Data
 - Power Grid Data**
 - Load Data
 - Reports & Info
 - Postings by Date
 - Custom Reports
 - Ancillary Services
- Installed Capacity Market (ICAP) ▾

Name	Published	Type
Breaker Outage Transfer Limitations	2020/11/12	pdf
Transfer Limitations Report With Reasons	2024/02/21	pdf

Outage Scheduling Reports - Generation



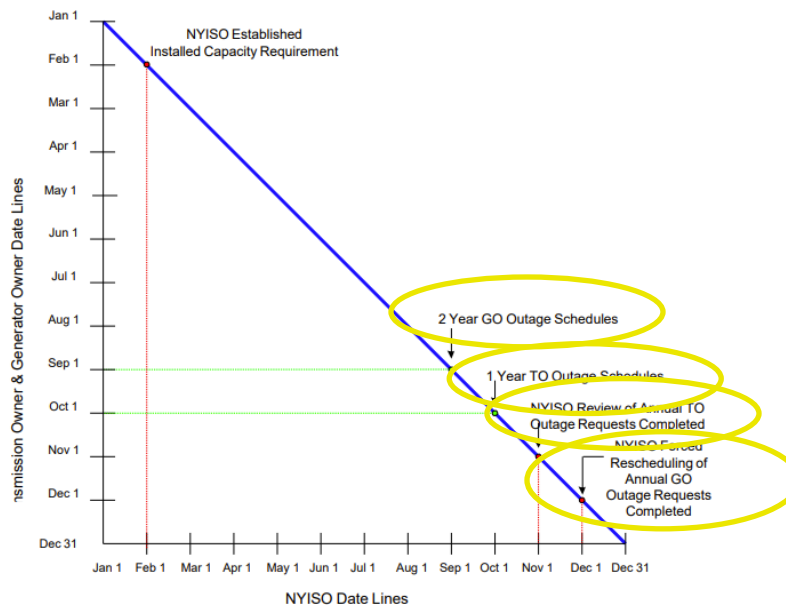
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Outage Request & Review Summary Timeline

Outage Request & Review Summary Timeline

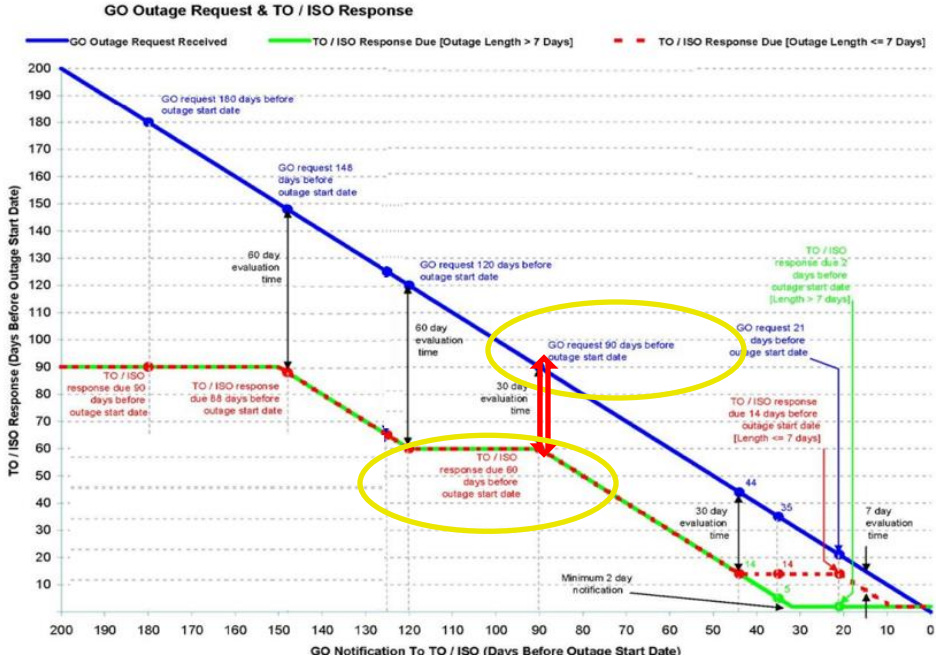
■ Submission Timeline Requirements

Figure 1: Annual Outage Schedules Time Line



Outage Request & Review Summary Timeline

- Response Timeline Requirements



Additional Resources

NYISO Supporting Documentation

- NYISO Tariff – OATT Section 9.6
- NYISO Tariff – MST Sections 5.18 & 5.12
- Market Participant User’s Guide – Section 7.4
- Installed Capacity Manual – Sections 4.3, 4.8 & Attachment K
- Outage Scheduler User’s Guide
- Outage Scheduler Training – GO
- Outage Scheduler Training – TO
- Outage Scheduler Training - GOCP



NYISO Outage Scheduling Contact Information

- **NYISO Generation Scheduling Desk**
 - Email: genplan@nyiso.com
 - Phone: (518) 356-6050

- **NYISO Transmission Scheduling Desk**
 - Email: operplan@nyiso.com
 - Phone: (518) 356-6051

Questions?

For any future assistance, please contact NYISO Stakeholder Services at stakeholder_services@nyiso.com or by phone at (518) 356-6060