

Price Validation

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LBMP In Depth Course

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Session Objectives

- **Upon completion of this module, trainees will be able to:**
 - Identify Tariff rules which govern Price Validation function
 - Explain the mission of Price Validation
 - Identify what constitutes an accurate price
 - Identify the prices that are validated
 - Identify types of pricing errors
 - Explain the Price Validation process
 - Locate available Price Validation information

Procedures for Reserving and Correcting Erroneous Prices

- **Market Services Tariff (MST), Section 20, Attachment E:**

“These provisions shall control the reservation and correction of Energy and Ancillary Services prices that are posted on OASIS and used in ISO settlements. The ISO shall review market clearing prices calculated for Energy and Ancillary Services and shall correct any price it determines not to have been calculated in accordance with the ISO tariffs as established in this Attachment E.”

Price Validation Mission

■ Ensure Accurate Market Signals

- Review each day-ahead, real-time commitment, and real-time dispatch interval for price accuracy

■ Ensure Transparency of Market Signals

- Timely identification and market notice of potential pricing issues

■ Ensure Market Certainty

- Release or correct prices in a tariff-defined timeframe

Day Ahead Market Zonal LBMP													
<div> <div>—</div> <div>— Marginal Cost</div> <div>— Marginal Cost of</div> </div> <div> <div>LBMP \$</div> <div>of Losses</div> <div>Congestion</div> </div>													
Zonal Prices													Date: 05/09/2018
Name	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00
PTID	EDT	EDT	EDT	EDT	EDT	EDT	EDT	EDT	EDT	EDT	EDT	EDT	EDT
CAPITL 61757	17.59	13.88	12.08	11.32	12.26	15.18	22.91	25.81	25.79	26.32	26.21	26.69	27.00
	0.87	0.67	0.59	0.55	0.62	0.76	1.07	1.07	1.05	1.06	1.03	1.00	0.99
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.40	-0.40	-0.14	-0.19	0.00	0.00
CENTRL 61754	16.94	13.41	11.69	10.93	11.84	14.72	22.81	25.31	25.54	26.34	26.42	27.18	27.99
	0.22	0.20	0.20	0.16	0.20	0.30	0.55	0.51	0.56	0.63	0.63	0.67	0.70
	0.00	0.00	0.00	0.00	0.00	0.00	-0.42	-0.46	-0.64	-0.59	-0.80	-0.82	-1.28
DUNWOD 61760	18.21	14.36	12.46	11.67	12.60	15.61	23.70	26.61	26.64	27.47	27.31	28.04	28.40
	1.49	1.15	0.97	0.89	0.97	1.20	1.86	2.26	2.31	2.39	2.32	2.36	2.39
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.05	0.01	0.01	0.00
GENESE 61753	16.36	12.97	11.32	10.60	11.49	14.32	21.71	24.47	24.82	25.62	25.77	26.45	26.78
	-0.37	-0.24	-0.17	-0.17	-0.15	-0.10	-0.13	-0.32	-0.22	-0.15	-0.10	-0.13	-0.10
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.45	-0.70	-0.65	-0.88	-0.88	-0.87
H Q 61844	16.19	12.79	11.13	10.44	11.27	13.93	20.15	20.84	20.84	23.33	22.85	24.85	23.95
	-0.54	-0.42	-0.37	-0.33	-0.37	-0.49	-0.72	-0.75	-0.75	-0.80	-0.80	-0.80	-0.83
	0.00	0.00	0.00	0.00	0.00	0.00	0.97	2.75	2.75	0.99	1.34	0.05	1.22

What Makes a Price Accurate?

- **An accurate price is one which is:**

- Correctly calculated per the rules defined in NYISO's tariff
- Based on the appropriate price setting resource
- Posted to OASIS correctly

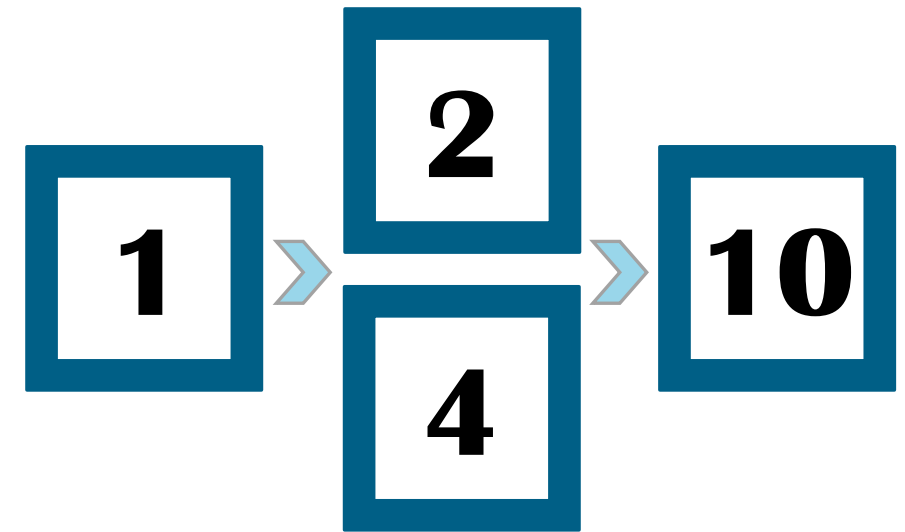


- **Fewer than 0.10 % (one tenth of one percent) of all Real-Time intervals have resulted in a price correction since 2009**

Price Transparency and Certainty

- **Market participants are notified in a timely manner**

- One day to reserve potentially erroneous prices
- Business days after the market day to correct or release reserved prices
 - 2 business days (Day Ahead prices)
 - 4 business days (RT prices)
- Ten calendar days, following the price correction, to report the cause and type of correction applied



Prices Validated

Energy Prices

DAM, RTC and RTD LBMPs at
Zonal and Gen Bus level

Ancillary Services Prices

Regulation and Reserves by Reserve
product type and location

Price Component Inputs



Marginal Energy Price



Loss factors (relative to Ref. Bus)



Shift Factors



Shadow Prices



NYCA Regulation

- Regulation Capacity
- Regulation Movement (RTC & RTD only)



Spinning Reserve



Non-Synchronous Reserve

Types of Pricing Errors

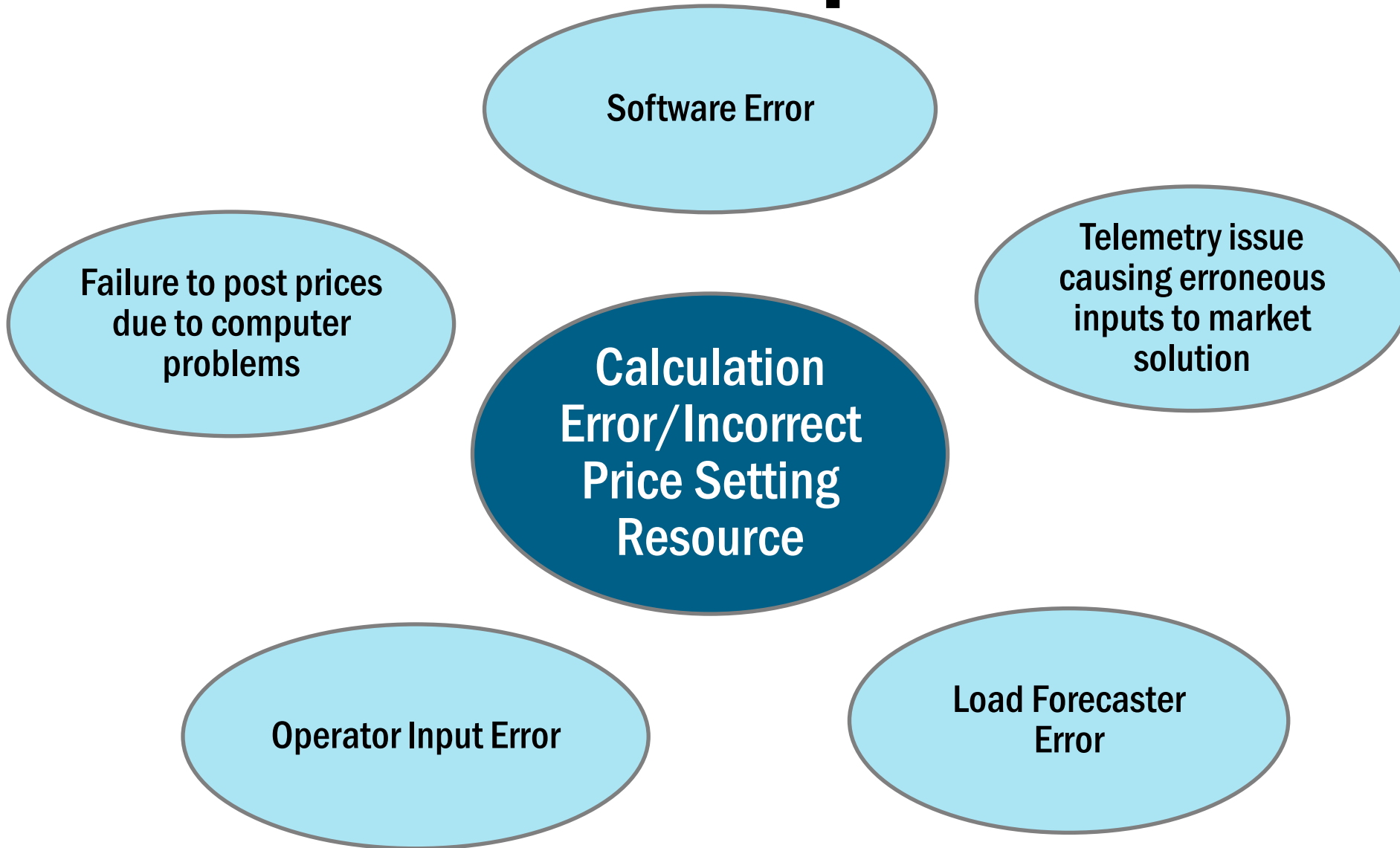
■ Type I - Calculation Errors

- Price is computed in a manner that is inconsistent with the ISO tariffs
- No price is calculated
- Correctly calculated price is not posted to OASIS in a timely fashion

■ Type II - Errors in Selecting the Price Setting Resource

- Price is not based on the appropriate price-setting resource

Price Errors: Some Examples



What drives the price validation mission?

a) Accuracy

b) Transparency

c) Certainty

d) All of the Above

What are key points of the reservation and correction timeline for real-time prices?

a)

2 Day to Reserve

4 Business days after market to Correct/Release

14 Calendar days to Report details of the correction

b)

1 Day to Reserve

4 Business days after market to Correct/Release

10 Calendar days to Report details of the correction

Price Validation Process

- 1. Identify Suspects**
- 2. Evaluate Suspects**
- 3. Dismiss, Reserve, Correct/Release Suspects**
- 4. Correction Modes**

1. Identify Suspects

■ Price Validation rules engine

- Evaluates all intervals through a set of automated business rule comparisons
- Any interval failing a rule test is flagged as suspect

■ Suspect characteristics (some examples)

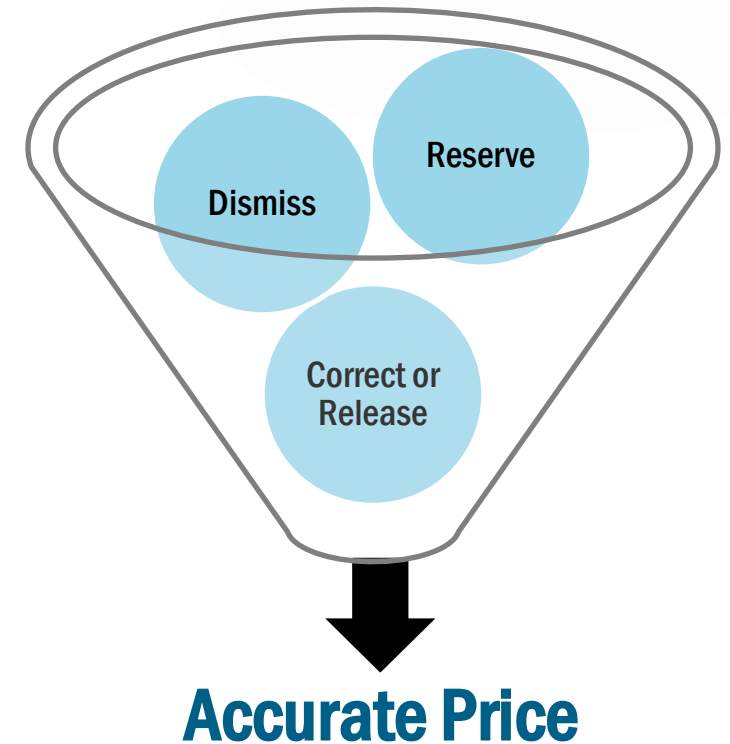
- Units bidding below LBMP but NOT scheduled
- Units bidding above LBMP but scheduled
- Unit status or schedule inconsistent
- High up/down price spike
- Unexpected line limits adjustment

2. Evaluate Suspects

- **Analysts use a variety of data to determine if the suspect interval is correct, including:**
 - Load & DNI (Desired Net Interchange)
 - PAR flows
 - Constraints and Limits
 - Generator schedules and marginal resources
 - Operator logs, etc.
 - Review and simulate RTD/RTC/DAM save cases

3. Dismiss, Reserve, Correct/ Release Suspects

- Intervals which are determined to be correct will be dismissed from further review before required reservation deadlines
- Intervals which need to be reviewed further are reserved before the required reservation deadlines
- The Market Validation group will correct or release reserved real-time prices within 4 business days after the market day



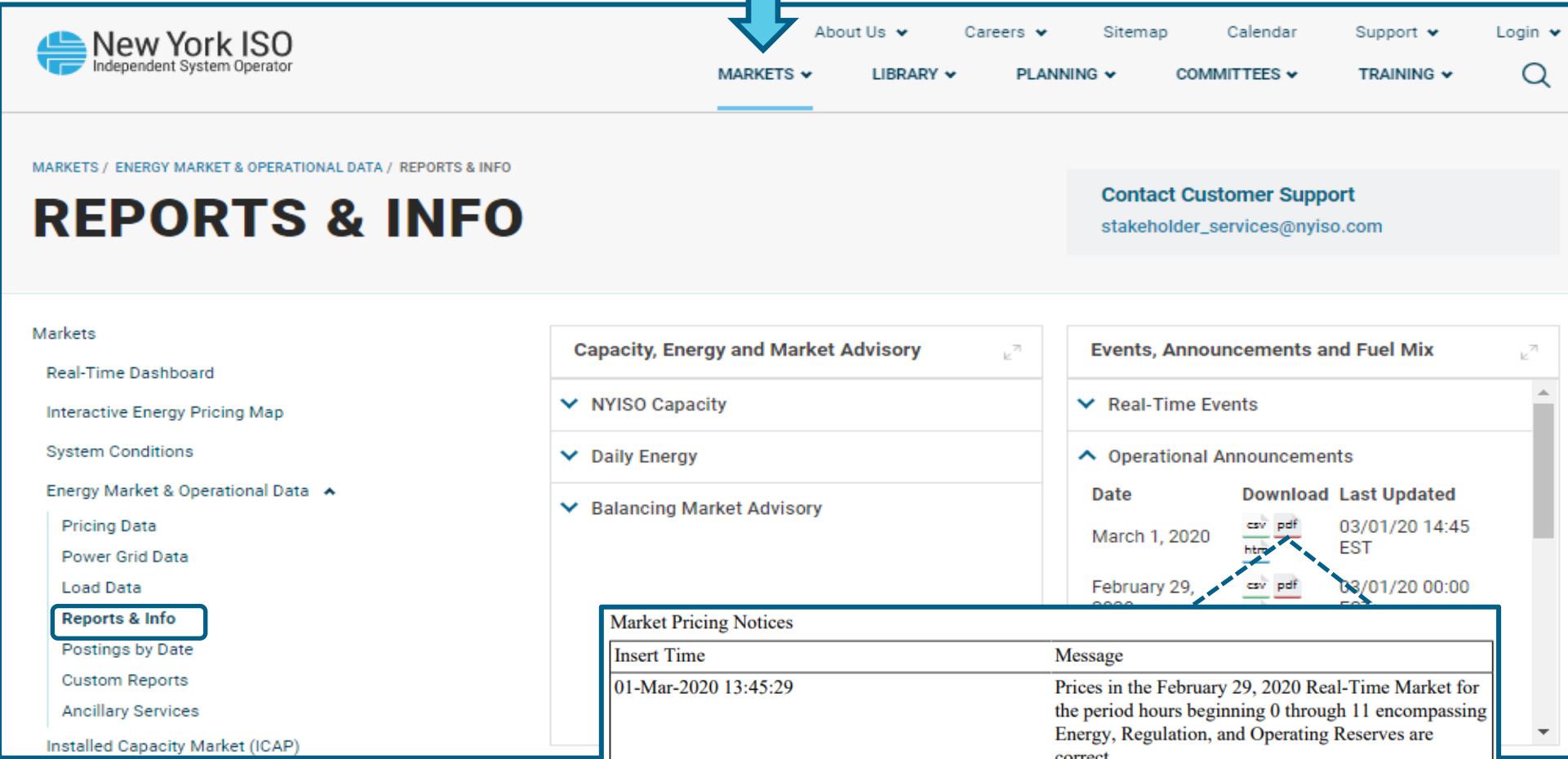
4. Correction Modes

- **Replace with surrounding interval prices**
- **Replace with RTD-level advisory prices**
- **Substitute with similar bus price**
- **Replace with prices from other markets (RTC or DAM)**
- **Recalculation**
- **Re-post**

Price Reservation/ Correction Timeline

			<div>TUES 10/18/2022 23:59 DAM Reservation Deadline</div>	<div>WED 10/19/2022 <u>Market Day</u></div>	<div>THURS 10/20/2022 17:00 RT Reservation Deadline (Day 1)</div>	<div>FRI 10/21/2022 DAM Correction Deadline (2 business days after market day)</div>	<div>SAT 10/22/2022</div>
<div>SUN 10/23/2022</div>	<div>MON 10/24/2022 (Day 3)</div>	<div>TUES 10/25/2022 23:59 RT Correction Deadline (4 business days after market day)</div>					

Market Pricing Notices



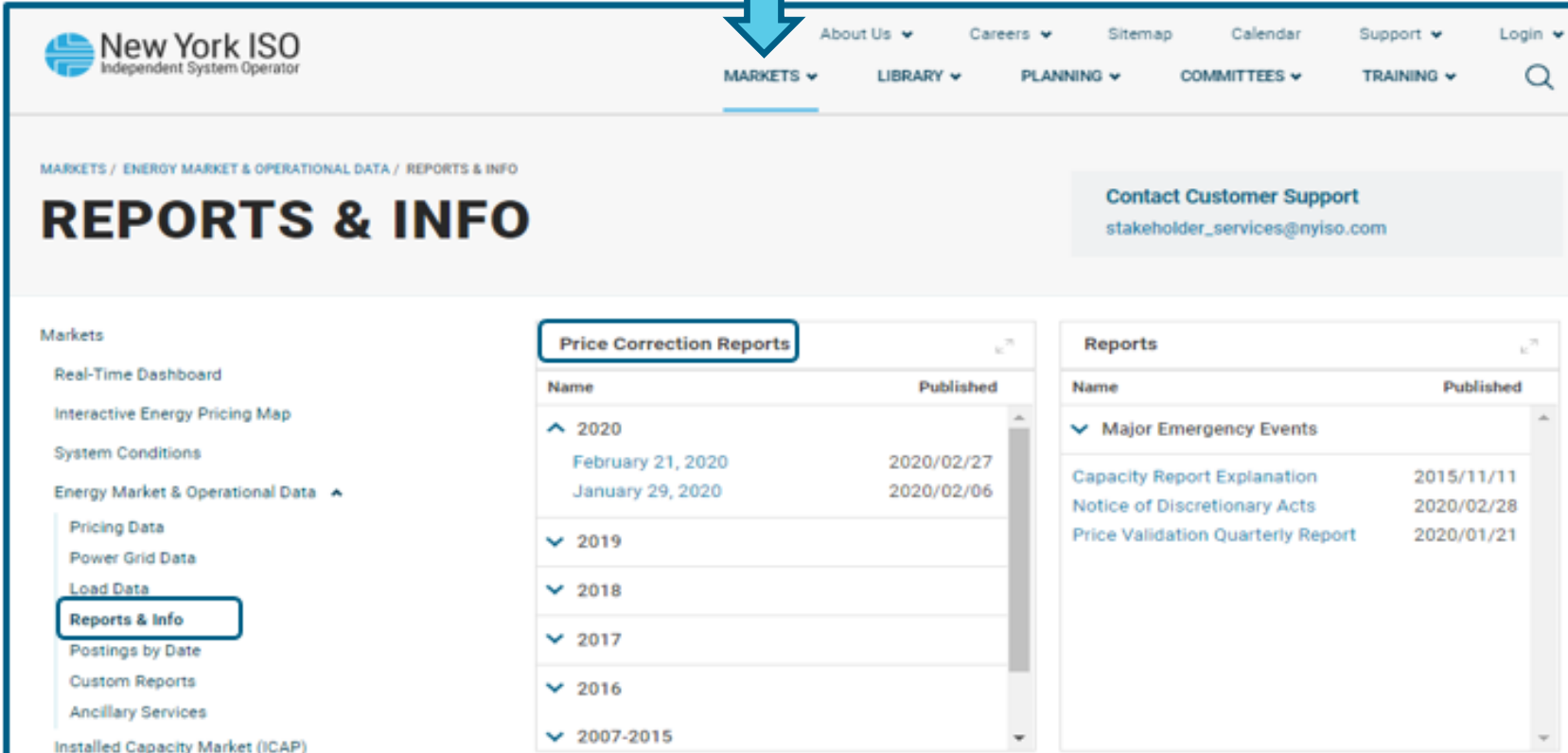
The screenshot shows the New York ISO website. A blue arrow points to the 'MARKETS' dropdown menu in the top navigation bar. The 'MARKETS' menu is expanded, showing a list of links: Real-Time Dashboard, Interactive Energy Pricing Map, System Conditions, Energy Market & Operational Data (which is expanded to show Pricing Data, Power Grid Data, Load Data, Reports & Info, Postings by Date, Custom Reports, and Ancillary Services), and Installed Capacity Market (ICAP). The 'Reports & Info' link is highlighted with a red box. A dashed blue line points from the 'Reports & Info' link to a table titled 'Market Pricing Notices'.

Market Pricing Notices

Insert Time	Message
01-Mar-2020 13:45:29	Prices in the February 29, 2020 Real-Time Market for the period hours beginning 0 through 11 encompassing Energy, Regulation, and Operating Reserves are correct.
01-Mar-2020 14:06:47	Prices in the February 29, 2020 Real-Time Market for the period hours beginning 12 through 23 encompassing Energy, Regulation, and Operating Reserves are correct. Prices in the March 02, 2020 Day-Ahead Market are correct.

Price Correction Information

- Real-Time (RT) Price Correction Reports
- Price Validation Quarterly Reports



REPORTS & INFO

Contact Customer Support
stakeholder_services@nyiso.com

Markets

- Real-Time Dashboard
- Interactive Energy Pricing Map
- 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)

Price Correction Reports

Name	Published
2020	
February 21, 2020	2020/02/27
January 29, 2020	2020/02/06
2019	
2018	
2017	
2016	
2007-2015	

Reports

Name	Published
Major Emergency Events	
Capacity Report Explanation	2015/11/11
Notice of Discretionary Acts	2020/02/28
Price Validation Quarterly Report	2020/01/21

RT Price Correction Report Cont'd

■ Report data includes:

- Timestamps
- Error Type
- Error Description
- Correction Mode
- Affected Zones/External Proxies
- Affected Ancillary Services
- Additional Comments

Interval: 01/20/2019 19:15:00							
Error Type: Incorrect Price Setting Resource							
Error Description: Operator Input							
Correction Mode: Replace w/Subsequent Interval							
Comments: Issue resulted from an incorrect interface limit input for CENTRAL EAST - VC.							
Zone / Proxy	Energy	10 Min Spin	10 Min Non-Spin	30 Min	Reg Capacity	Reg Movement	
CAPITL	C						
CENTRL	C						
DUNWOD	C						
GENESE	C						
HUD VL	C						
LONGIL	C						
MHK VL	C						
MILLWD	C						
N.Y.C.	C						
NORTH	C						
WEST	C						
HQ_GEN_CEDARS_PROXY	C						
HQ_GEN_IMPORT	C						
HQ_GEN_WHEEL	C						
N.E._GEN_SANDY PD	C						
NPX_GEN_1385_PROXY	C						
NPX_GEN_CSC	C						
O.H._GEN_BRUCE	C						
PJM_GEN_HTP_PROXY	C						
PJM_GEN_KEystone	C						
PJM_GEN_NEPTUNE_PROXY	C						
PJM GEN VFT PROXY	C						

Which prices are validated? And what price components are considered as part of that validation process?

Prices	Price Components

What are the elements of an accurate price?

a) Correctly calculated

b) Based on correct price
setting resource

c) Posted correctly to OASIS

d) All of the Above

Price Validation Summary

- **Identify Tariff rules which govern Price Validation function**
- **Explain the mission of Price Validation**
- **Identify what constitutes an accurate price**
- **Identify the prices that are validated**
- **Identify types of pricing errors**
- **Explain the Price Validation process**
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Additional Resources

- **Tariffs – OATT & MST**
- **Day Ahead Scheduling Manual**
- **Transmission and Dispatching Operations Manual**
- **Market Participant User's Guide**
- **Technical Bulletins**