Office of the Delaware River Master

BALANCING ADJUSTMENT STUDY

DECEMBER 15, 2021

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What is the Balancing Adjustment?

Used to compensate for inadequacies inherent in the design of releases from NYC reservoirs to meet the Montague Flow Objective

Sources of forecast error

- Powerplants
  - Rio
  - Wallenpaupack
- Runoff from rainfall
- Baseflow behavior

The correction is based on cumulative error

Cumulative adjusted directed release

Cumulative directed release with exact forecasting

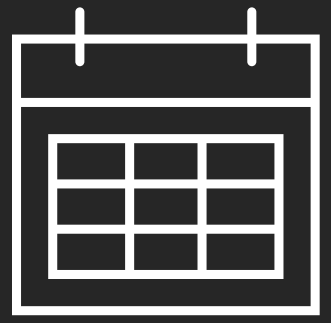
BA = 10% of the difference, limited to 50 cfs per day (positive or negative)

Study and evaluate

Statement of Work – 4 tasks:

1. Data collection and model development
2. Develop alternatives and metrics (workshop)
3. Scenario performance testing
4. Reporting and decision

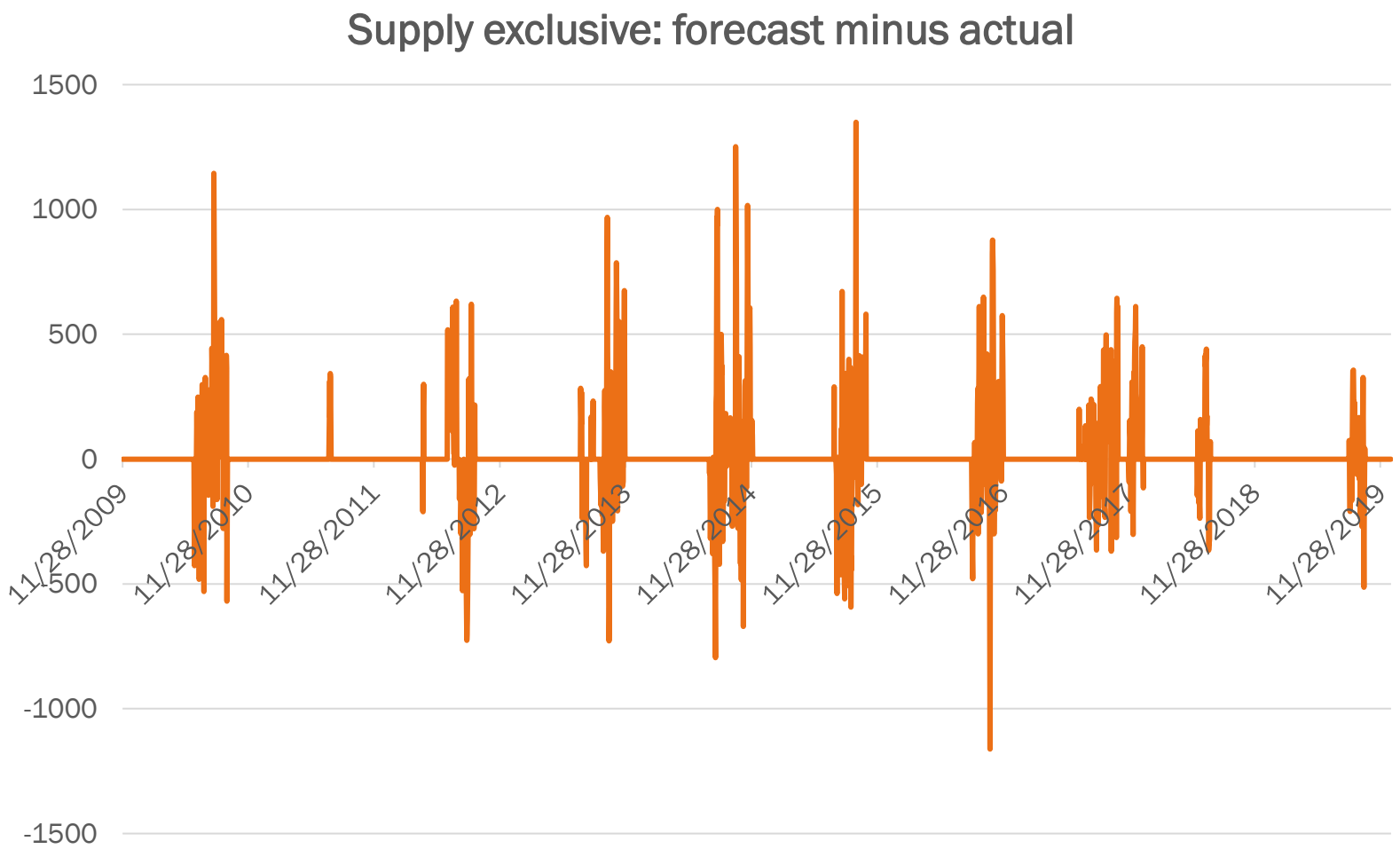
Study and evaluate



Timeline

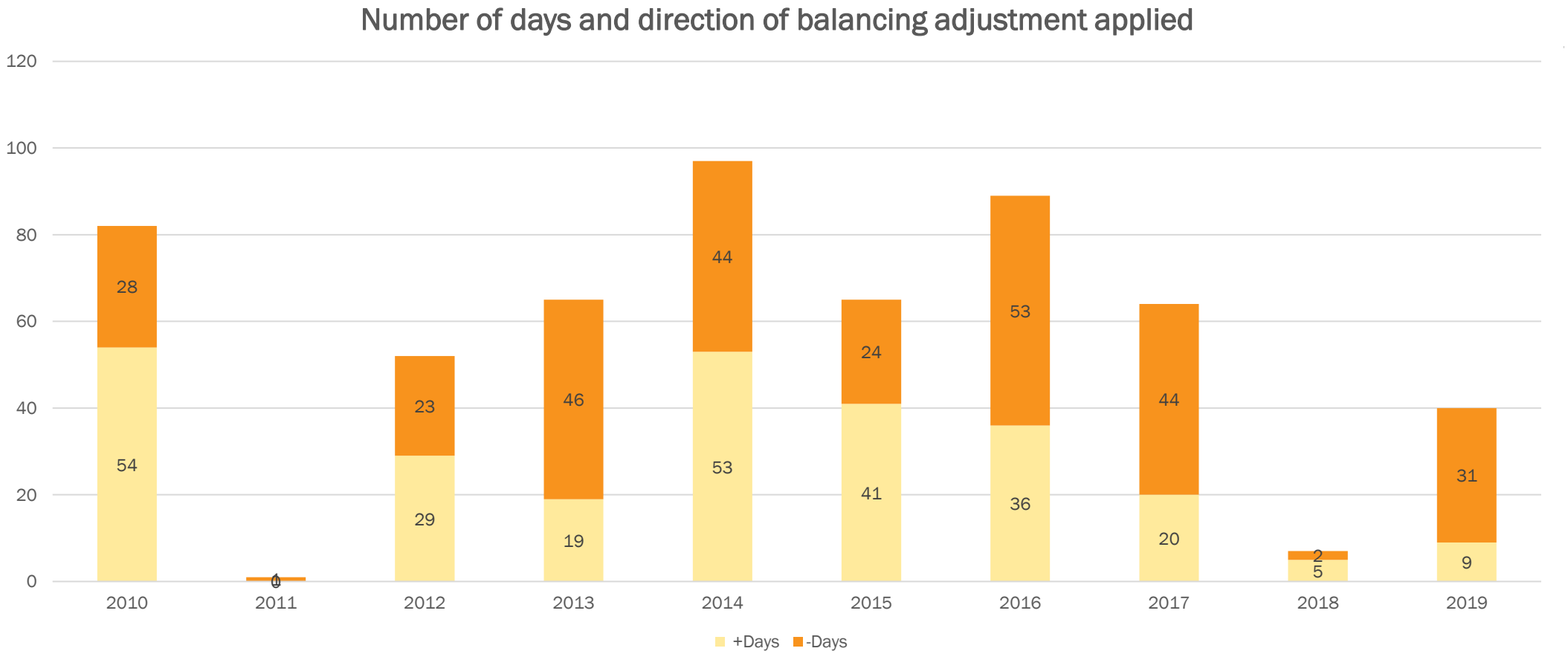
Activity	Completion date
Input data and script development	June 1, 2021
Current process analysis	June 1, 2021
Prep for workshop meeting	June 15, 2021
Alternatives and Metrics Workshop	June 30, 2021
Public Input on Alternatives and Metrics Selection	RFAC Meeting
Script/model adjustments	October 31, 2021
Scenario Testing	December 31, 2021
Results Workshop	January 31, 2022
Draft Report	June 30, 2022
Decision/Changes implemented	September 30, 2022

Forecast error

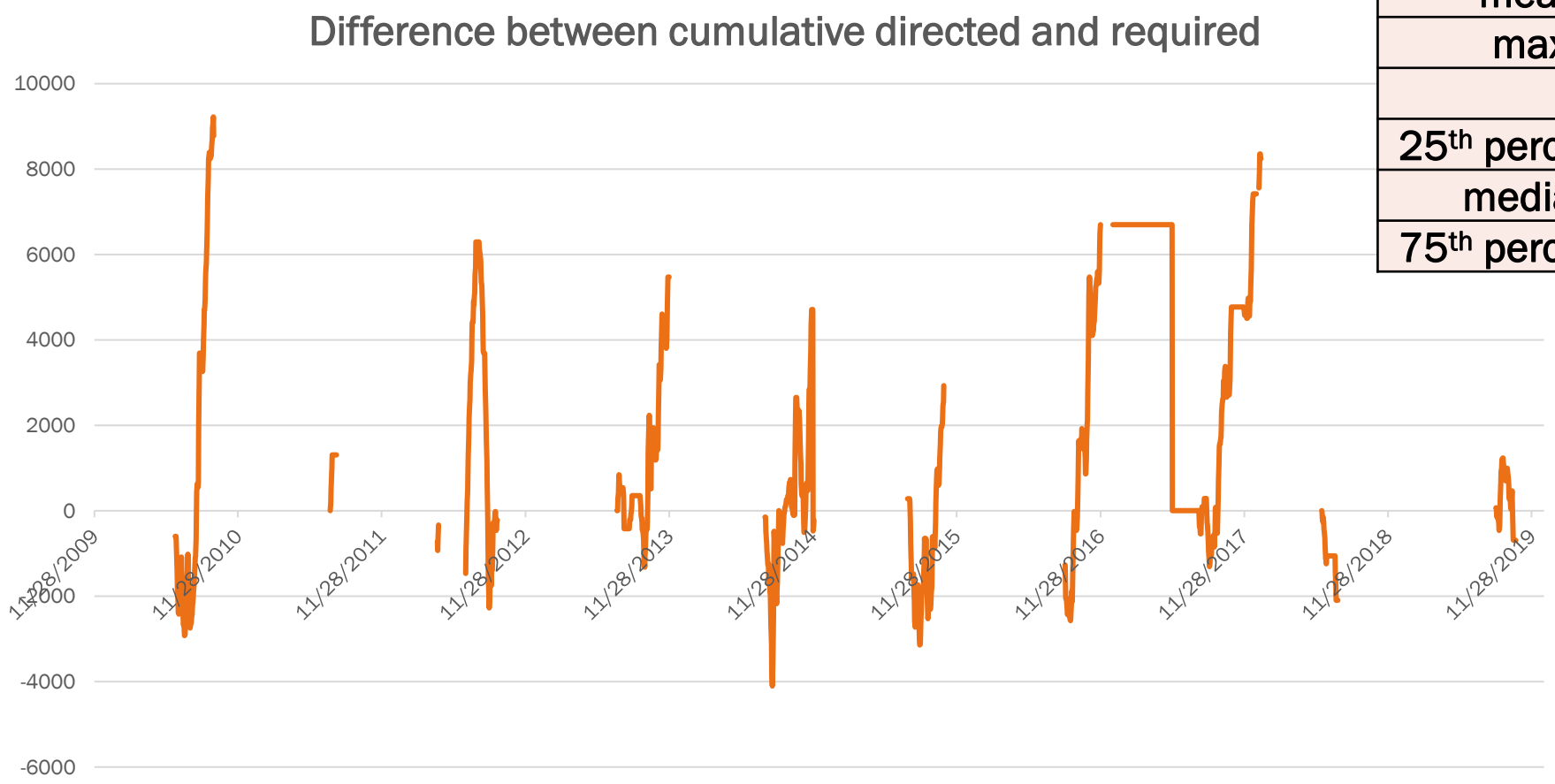


	Error 2010-2019
min	-1162
mean	25
max	1350
25th percentile	-166
median	10
75th percentile	197

Balancing adjustment applied



Cumulative Difference



	Cumulative Error 2010-2019
min	-4103
mean	1821
max	9219
25th percentile	-434
median	538
75th percentile	4767

		Cumulative difference				Balancing Adjustment
Year	*Reset date	Value at reset	max	min		Sum (abs)
2010	2010-09-26	9219	9219	-2921		4100
2011	2011-07-29	1310	1310	0		18
2012	2012-09-10	-139	6290	-2274		2403
2013	2013-11-23	4844	5470	-1321		2985
2014	2014-11-29	-355	4707	-4103		4552
2015	2015-10-24	2451	2932	-3142		3047
2016	2016-11-26	6498	6697	-2571		4150
2017	2017-12-22	7421	7421	-1308		2894
2018	2018-07-19	-2096	0	-2096		234
2019	2019-10-11	-403	1237	-693		1463

Balancing adjustment efficiency

Workshop – suggested alternatives

△Caps	None, 50, 100, 200, 400, variable
△Distribution	10, none
△Reset	January 1, on spill, >5,000
Removal	Error tracking only
Misc.	CR>DR (when to apply); target minus Montague (instead of supply exclusive)

Workshop – additional suggestions

- Review of past ODRM reports to build a history of the Balancing Adjustment. For example, it was not always capped at 50 cfs as it is currently.

- Expedite the transcription and addition of older ODRM data into the Aquarius database to explore effects of balancing adjustment during drought (eg, 1960s, 2001-02)

Discussion and Questions