

# Delaware River Basin Commission

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## Overview of the recently adopted Power Consumptive Use Policy

Resolution No. 2018-5

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Manager, Water Resource  
Planning Section

June 21, 2018  
Water Management Advisory  
Committee



PSEG Hope-Salem Creek Nuclear Power Plant Complex. Credit: Google Images

# Agenda

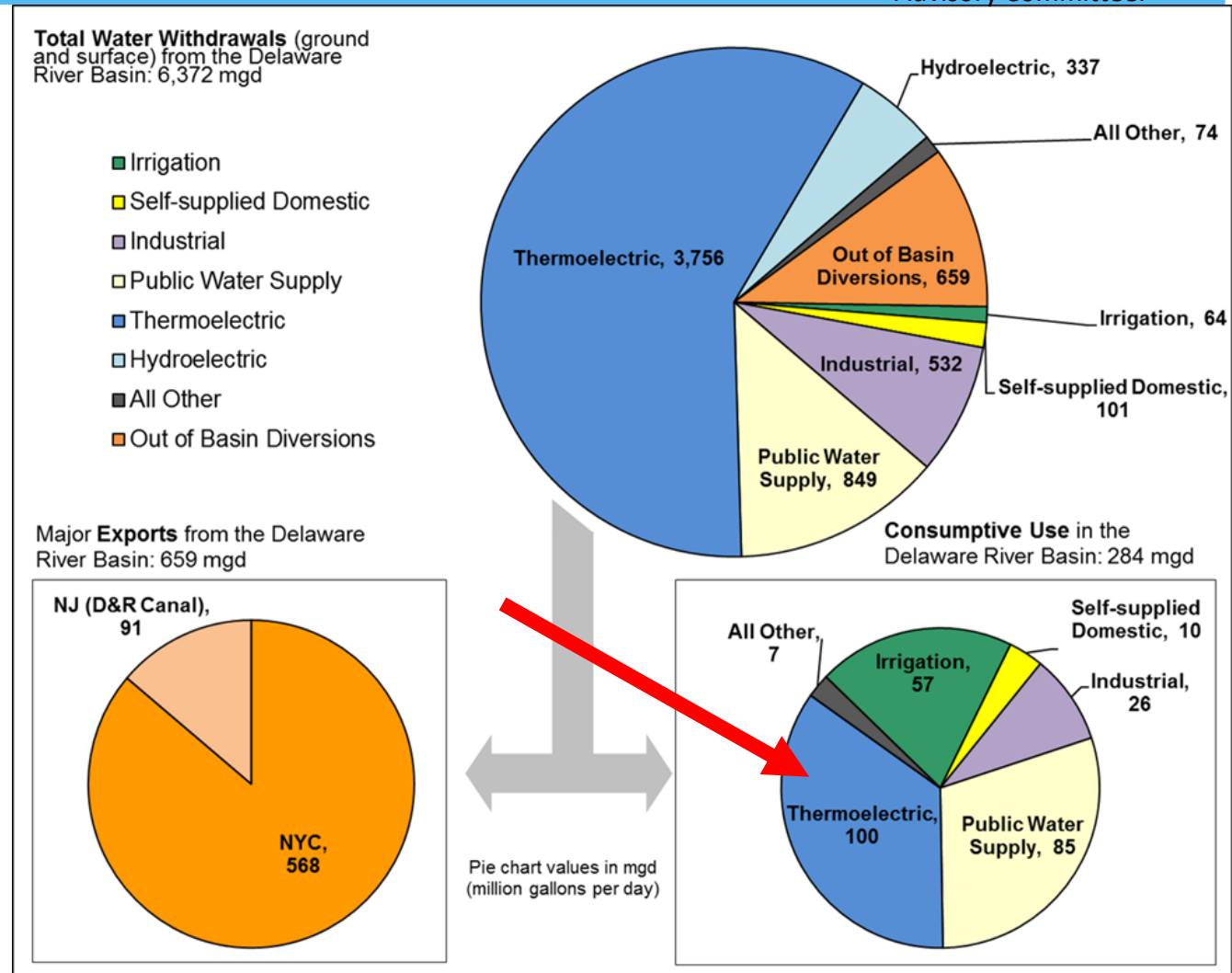
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- \* Brief recap of issues
- \* Policy Adoption Timeline
- \* Review major elements of the resolution and policy
- \* Implementation

# Power Consumptive Use Policy

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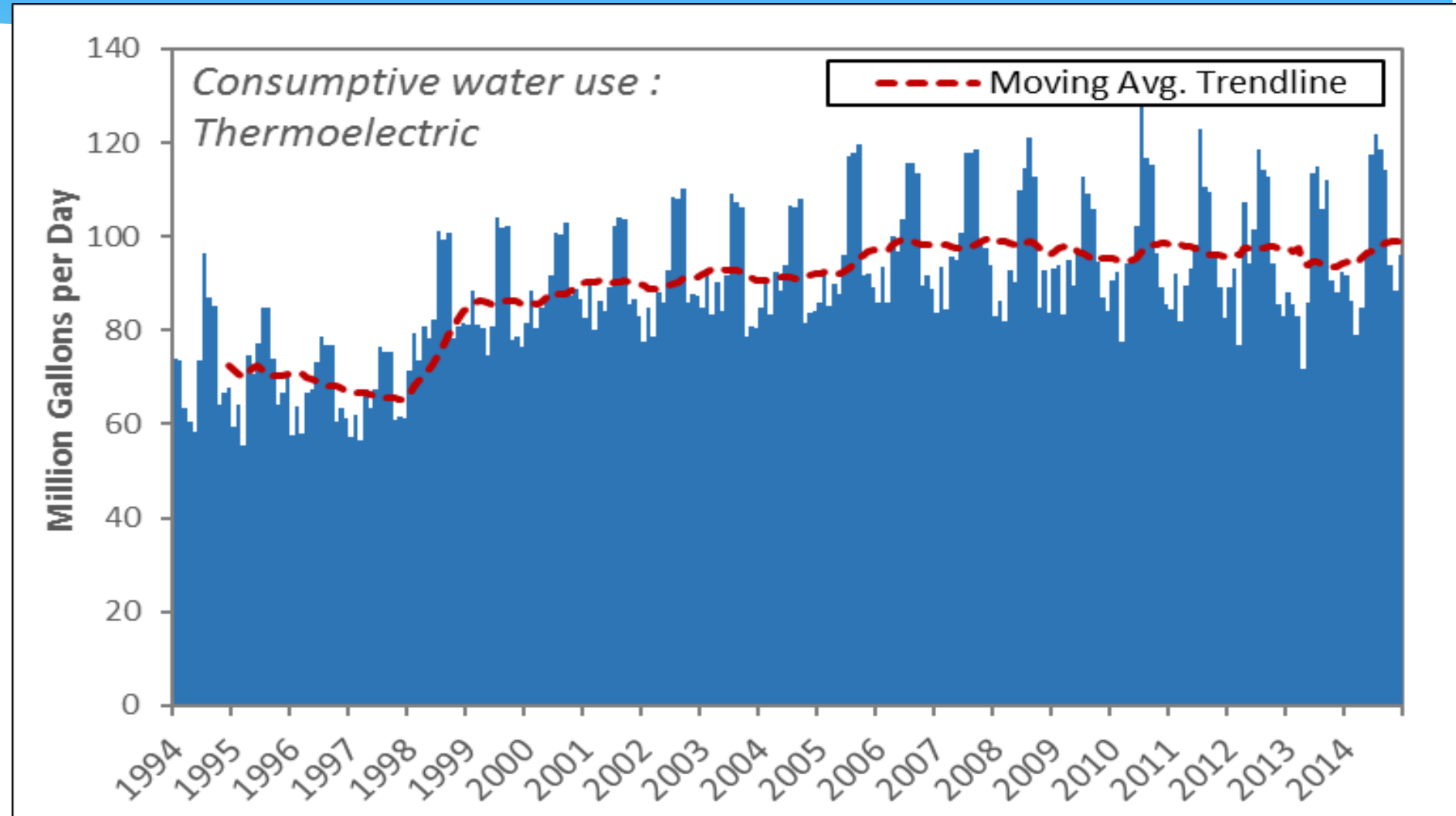
- Power is the DRB's largest consumptive use (~35% of in-basin use, ~100 mgd).
- Section 3.8 Review: *Electric generating or cogenerating facilities designed to consumptively use in excess of 100,000 gallons per day of water during any thirty-day period.*
- Most power generating dockets require the replacement of consumptive use during low flows.



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# Power Consumptive Use Policy

- Consumptive Use from Power is increasing.
- ~20 mgd increase since 2000.



# Power Consumptive Use Policy – Issues

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- Most “power” dockets issued 1984 – 2010 include a specific condition for consumptive use replacement.
  - *condition had changed over time*
  - *needed “tweaking” to clarify a few items*
- Disconnect between wording in some dockets and MCOG operating plan.
- Several new power dockets don’t have the specific condition.
  - *instead required the development of a “Drought Management & Contingency Plan” (DMCP)*
  - *DMCPs are confused with non-power drought responsibilities*
- Some of the new power docket holders have secured make-up storage, some have not.
- Fall 2016 Section 10.4 Water Supply Emergency Declaration highlighted the confusion with those not covered by MCOG releases.

# Power Consumptive Use Policy – Old Condition

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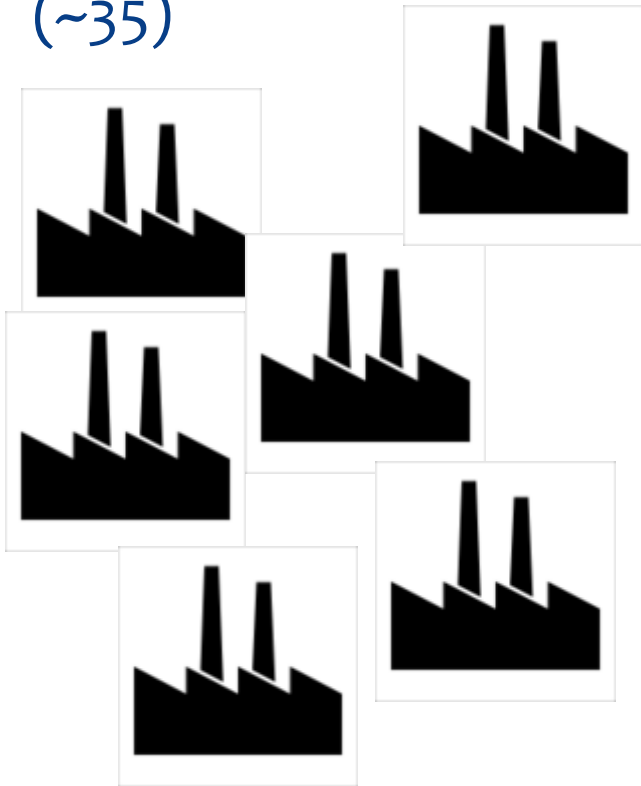
Whenever the Commission’s Drought Management Plan (present or future) indicates that **storage levels** in the Delaware River Basin **have fallen below normal** conditions for **five consecutive days**, and the daily mean “**Equivalent Flow**” (as measured **at the Trenton U.S.G.S. gage**, minus the previous day’s release from Merrill Creek Reservoir, and including appropriate adjustments for directed releases from Blue Marsh Reservoir) **is below 3,000 cfs** and is forecast to remain below 3,000 cfs for the next day, or whenever the salt front (250 isochlor) is above River Mile 92.5, the **applicant shall operate the project at a level corresponding to the equivalent consumptive use that the applicant can replace on a daily basis**, or as otherwise approved by the Executive Director of the DRBC. The applicant shall apply its modified Operating Plan to ensure compliance with all stream flow objectives and use limitations, and shall submit, and obtain approval of any revision to this plan by the Executive Director.

# Power Consumptive Use Policy - Implementation

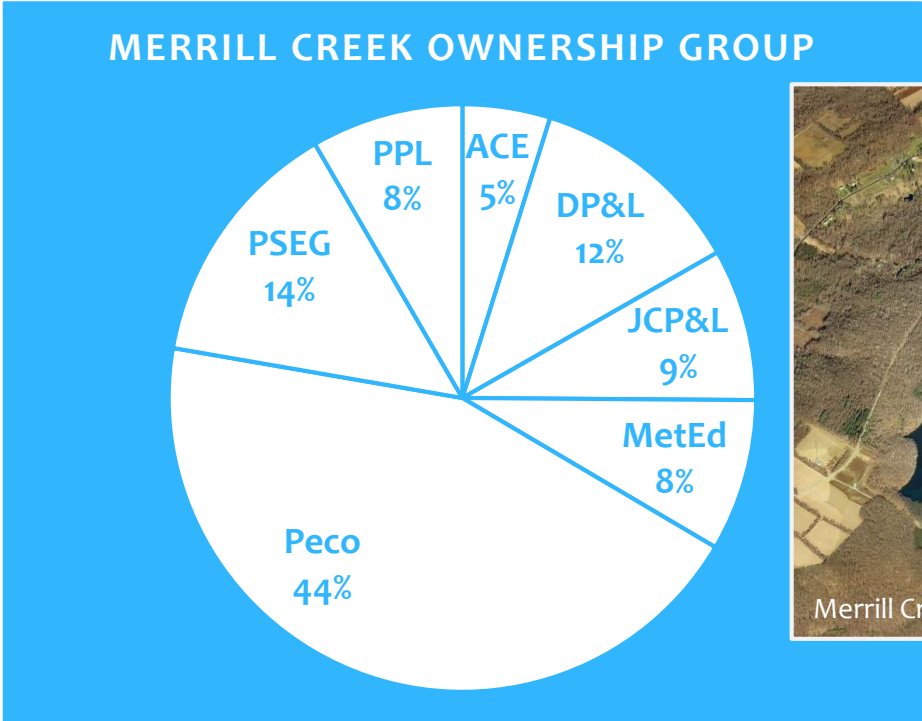
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Individual docket condition for each DRBC approval (~35)



D-1977-110 CP-18 - Merrill Creek Ownership Group Docket. Operating Plan & Designated Units. Reservoir in Warren County, NJ (pump from Delaware River)



Merrill Creek Reservoir. Credit: Bing Maps

# Power Consumptive Use Policy – Merrill Creek

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## Merrill Creek Docket

- D-1977-110 CP (October 24, 1984)
- D-1977-110 CP Amendment 1 (May 23, 1990)
  - Clarified Designated Units
  - Formalized Trenton Equivalent Flow use (BMR in the SCH)
- **15 modifications** by Resolution – mostly adding/subtracting Designated Units
- **D-1977-110 CP-18 (March 10, 2015; Expires 3/10/2024)**

### Designated Units Total

~176 CFS of FECU

~114 MGD

•Condition C.II.s. *Compensation releases, in lieu of curtailment, shall be made for all Designated Units in **EXHIBIT III** of **ATTACHMENT 2** (See DECISION Condition II.m.) whenever the Commission's Drought Management Plan (DMP) causes the flow objective at the Trenton gage to drop below 3,000 cfs and the Equivalent Flow at Trenton drops below 3,000 cfs. In addition, Compensation Releases will be required if and when the Equivalent Flow at Trenton drops below 3,000 cfs for five consecutive days due to reasons beyond the control of the DRBC.*



**EXHIBIT III: Designated Units**

Plan of Operation for the MCR  
 Exhibit III, List of Designated Units [Note 1]  
 Sheet 1 of 3

Designated Unit	1 <sup>st</sup> Year of Operation	Consumptive Use (cfs) [Notes 2,3]	Relative Effect Factor	FECU (cfs) [Notes 3,4]	Method of Calculation [Note 5]	Reservoir Ownership (%)
Served by Atlantic City Electric Co. share of MCR						4.834
Pedricktown (PCLP) Cogen	1995	0.83	0.68	0.57	B	
Served by Delmarva Power & Light Company share of MCR						11.909
Bethlehem	2003	6.62	1.00	6.62	B	
Deepwater #1	1958	1.03	0.51	0.52	A	
Deepwater #6	1954	0.96	0.51	0.49	A	
Edge Moor #3	1954	0.90	0.59	0.53	A	
Edge Moor #4	1966	1.76	0.59	1.04	A	
Edge Moor #5	1973	4.31	0.59	2.54	A	
Hay Road #4	1993	4.86	0.59	2.87	B	
Hay Road #8	2001	3.15	0.59	1.86	B	
Liberty Electric	2001	4.49	1.00	4.49	B	
Served by Jersey Central Power and Light Co. share of MCR						8.370
FPL Energy Marcus Hook LP	2002	5.10	0.72	3.67	B	
Gilbert #3	1949	1.18	1.00	1.18	A	
Gilbert #8	1976	2.26	1.00	2.26	A	
Gilbert #9	1995	0.30	1.00	0.30	A	
Keystone/Logan Cogen	1995	5.27	0.71	3.74	B	
Northampton Cogen	1995	1.90	1.00	1.90	B	

# Power Consumptive Use Policy – Merrill Creek

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EXHIBIT III: Designated Units (Continued)  
 Plan of Operation for the MCR  
 Exhibit III, List of Designated Units [Note 1]  
 Sheet 2 of 3

Designated Unit	1 <sup>st</sup> Year of Operation	Consumptive Use (cfs) [Notes 2,3]	Relative Effect Factor	FECU (cfs) [Notes 3,4]	Method of Calculation [Note 5]	Reservoir Ownership (%)
Served by Metropolitan Edison Co. share of MCR						8.370
Portland #1	1958	1.48	1.00			
Portland #2	1962	2.36	1.00			
Portland #5	1995	0.72	1.00			
Titus #1	1951	1.28	1.00			
Titus #2	1951	1.28	1.00			
Titus #3	1953	1.28	1.00			
Served by PECO Energy share of MCR						
Eddystone #3	1974	4.97	0.84			
Eddystone #4	1977	4.97	0.84			
Fairless Hills	1997	1.32	1.00			
Grays Ferry - Cogen Units	1998	1.24	1.00			
Limerick #1 [Note 6]	1986	32.57	1.00			
Limerick #2 [Note 6]	1990	32.57	1.00			
Salem #1 (42.59%)	1977	8.09	0.18			
Salem #2 (42.59%)	1981	8.09	0.18			

EXHIBIT III: Designated Units (Continued)  
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 Sheet 3 of 3

Designated Unit	1 <sup>st</sup> Year of Operation	Consumptive Use (cfs) [Notes 2,3]	Relative Effect Factor	FECU (cfs) [Notes 3,4]	Method of Calculation [Note 5]	Reservoir Ownership (%)
Served by PSEG Power, LLC share of MCR						13.906
Hope Creek #1	1986	27.88	0.18	5.02	A	
Mercer #1	1960	4.43	1.00	4.43	A	
Mercer #2	1961	4.43	1.00	4.43	A	
Salem #1 (57.41%)	1977	10.91	0.18	1.96	A	
Salem #2 (57.41%)	1981	10.91	0.18	1.96	A	
Served by Realty Company of Pennsylvania (PPL) share of MCR [Note 7]						8.370
Lower Mount Bethel Energy	2003	4.95	1.00	4.95	B	
Martins Creek #3	1975	15.14	1.00	15.14	A	
Martins Creek #4	1977	15.14	1.00	15.14	A	
PPL Ironwood, LLC	2001	1.67	1.00	1.67	B	

# Power Consumptive Use Policy Goals



- Formalize a policy that has been in-practice for decades.
  - Update “standard condition” in dockets over time.
  - Update the MCOG docket’s operating plan.
  - Define “Critical hydrological condition”
  - Clarify / Guidance
    - Applicability
    - Relative Effect Factor
    - Replacement Sources
    - Exemptions
    - Notifications
  - Replace Drought Management and Contingency Plan (DMCP) with Consumptive Use Replacement Plan (CURP). Establish criteria for CURP.

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# Power Consumptive Use Policy Timeline

1. January 31, 2018 – web posting of draft resolution
2. February 14, 2018 – Public Hearing item
3. February 28, 2018 - End of extended comment period  
(2 oral commenters & 6 written commenters)
4. March 14, 2018 – Commissioner’s postponed action  
(staff meet with docket holders, address comments)
5. May 3, 2018 – web posting of revised draft resolution
6. May 16, 2018 – Second Public Hearing item  
(no comments received)
7. June 13, 2018 – Commissioners approved Resolution No. 2018-5.



**Delaware River Basin Commission**  
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# Goal: Update Consumptive Use Replacement Condition

*For the duration of a critical hydrologic condition as announced by the Commission, on a daily basis the docket holder shall cause to be released from a replacement water source approved by the Commission an amount of water equal to the amount consumptively used by the docketed facility, multiplied by the applicable relative effect factor, if assigned. For the duration of such critical hydrologic condition, the docket holder shall operate its facility only at a level commensurate with the amount of replacement water it is capable of causing to be released.*

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# Goal: Define Critical Hydrologic Condition



Critical hydrologic condition – A critical hydrologic condition is deemed to exist whenever the following conditions are satisfied:

1. the Flow Objective at the USGS Trenton gage is reduced to a level below 3,000 cfs in accordance with the Delaware River Basin Water Code; and
2. the sum of the following flows and releases remains below 3,000 cfs:
  - a) the flow measured at the USGS Trenton gage at approximately 8:00 am; plus
  - b) average daily releases from Blue Marsh Reservoir in excess of the minimum conservation release rate; plus
  - c) an amount of water as determined by the Commission to account for flows withdrawn above and returned below the USGS Trenton gage; less
  - d) the average daily release of Compensation releases from Merrill Creek Reservoir for the previous day.

# Goal: Define Critical hydrologic condition

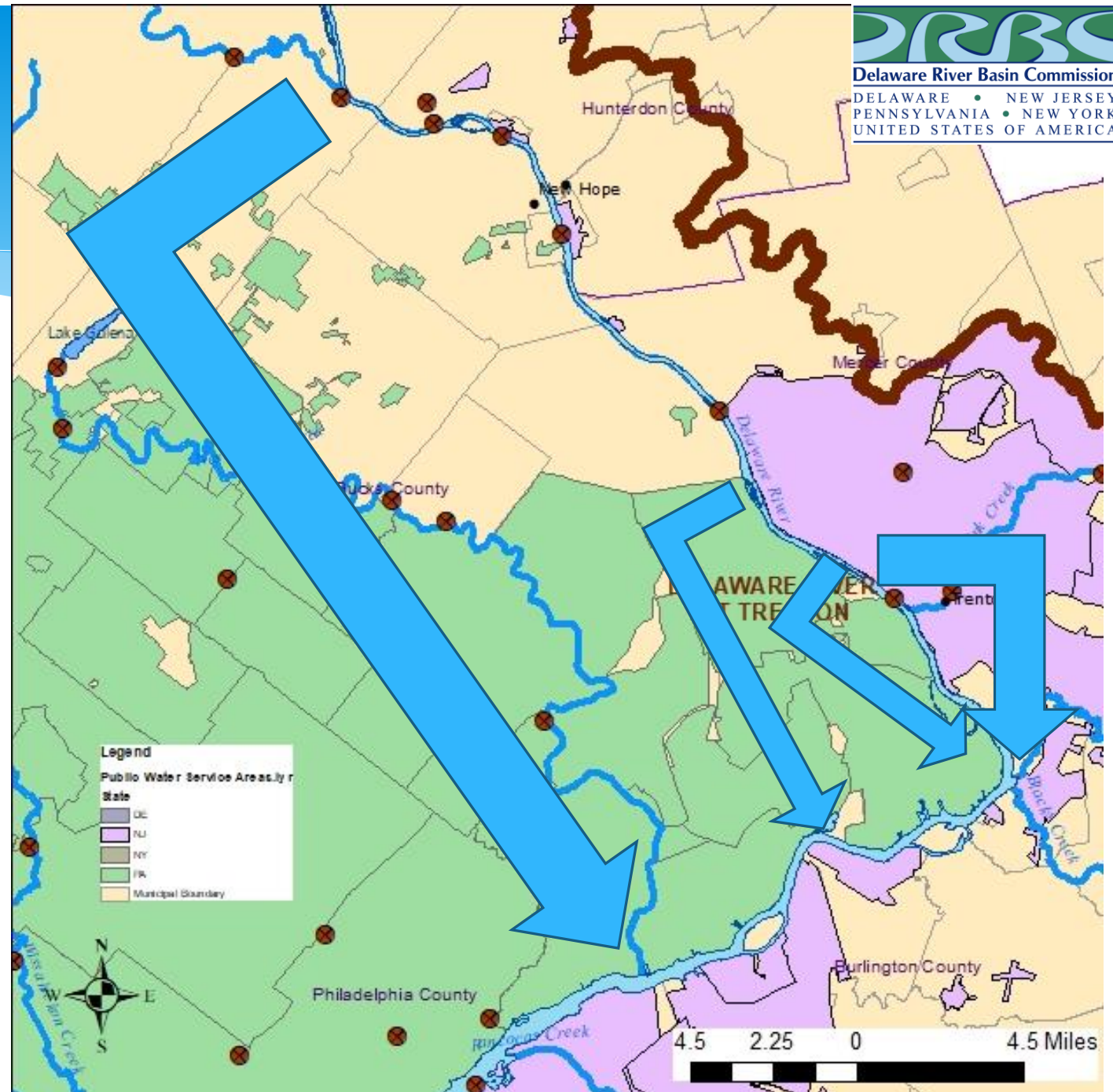
Q: What are the “Estimated by-pass flows around Trenton USGS gage”?

A: These flows are not recorded by the gage but contribute to the Trenton flow objective of repelling salinity in estuary.

Docket	Docket Holder	2015 MGD	2016 MGD	2015 Volume Returned Below Trenton Gage (90%)	2016 Volume Returned Below Trenton Gage (90%)
D-1965-076 CP-8	Forest Park Water Company	24.4	25.0	22.0	22.5
D-1995-053 CP	PA American Water - Yardley	2.5	2.6	2.3	2.3
D-1998-009 CP-2	Trenton Water Works	28.1	26.5	25.3	23.9
D-1974-072 CP	Morrisville Borough	2.7	2.8	2.5	2.5

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~52 MGD  
= ~ 80 CFS



# Goal: Consumptive Use Replacement Plan (CURP)



CURP – describes how a facility will implement its consumptive use replacement

- Description of replacement water source
- Volume of water secured
- Terms of use of replacement source
- Duration of use agreement
- Primary point of contact

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If no water is secured, the CURP is to include:

- a commitment that the facility will cease the consumptive use of water within 24 hours notice
- a letter from the docket holder to the grid operator (e.g. PJM) disclosing it's choice not to secure water

# Goal: Address geographic applicability

The Consumptive Use Replacement Requirement applies to electric generating or cogenerating facilities designed to consumptively use in excess of 100,000 gallons per day of water during any 30-day period; and

- i. obtain their water from surface water above R.M. 38, or
- ii. obtain their water from wastewater effluent that would otherwise be discharged to surface water above R.M. 38.

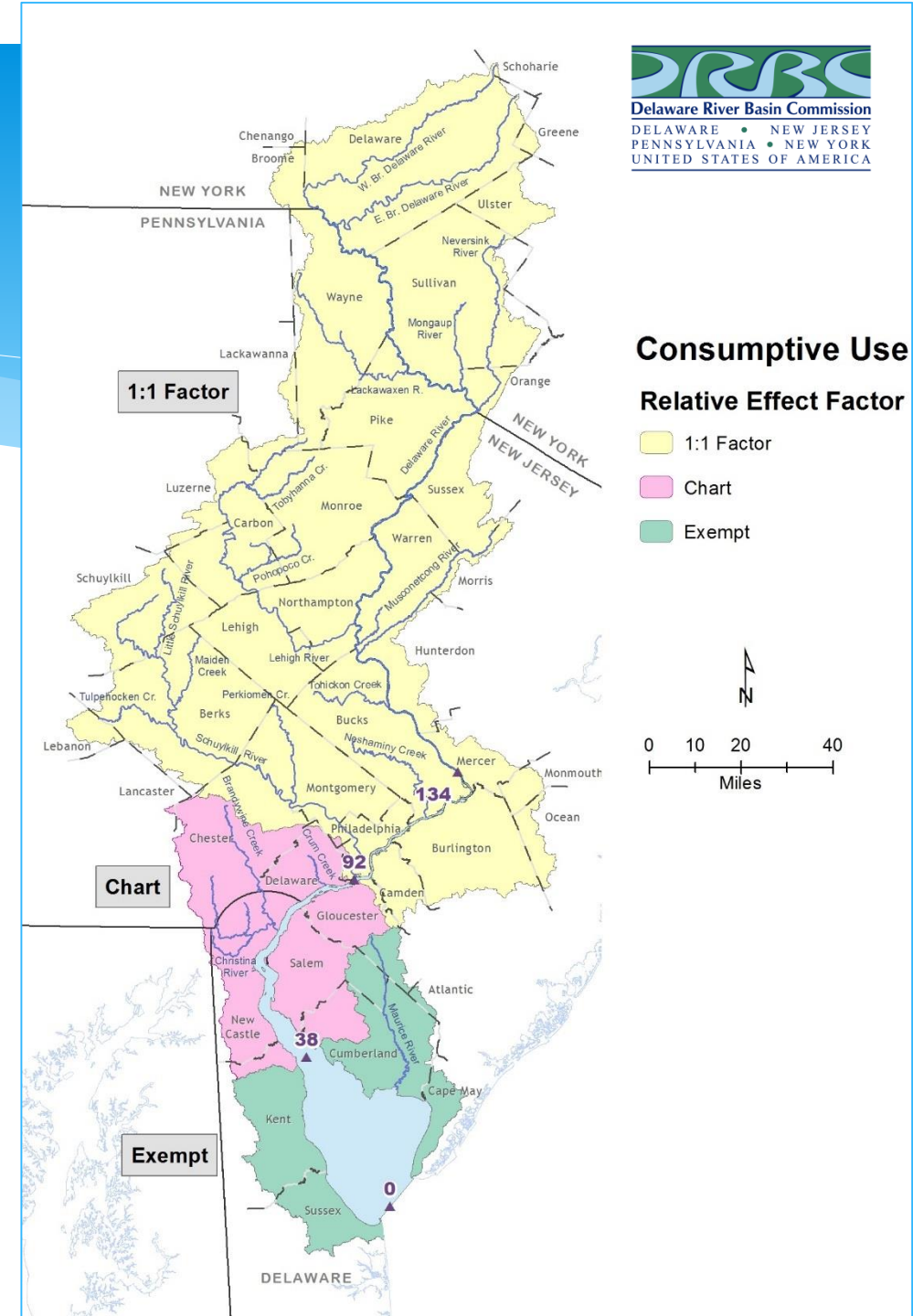




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# Goal – Clarify Relative Effect Factor

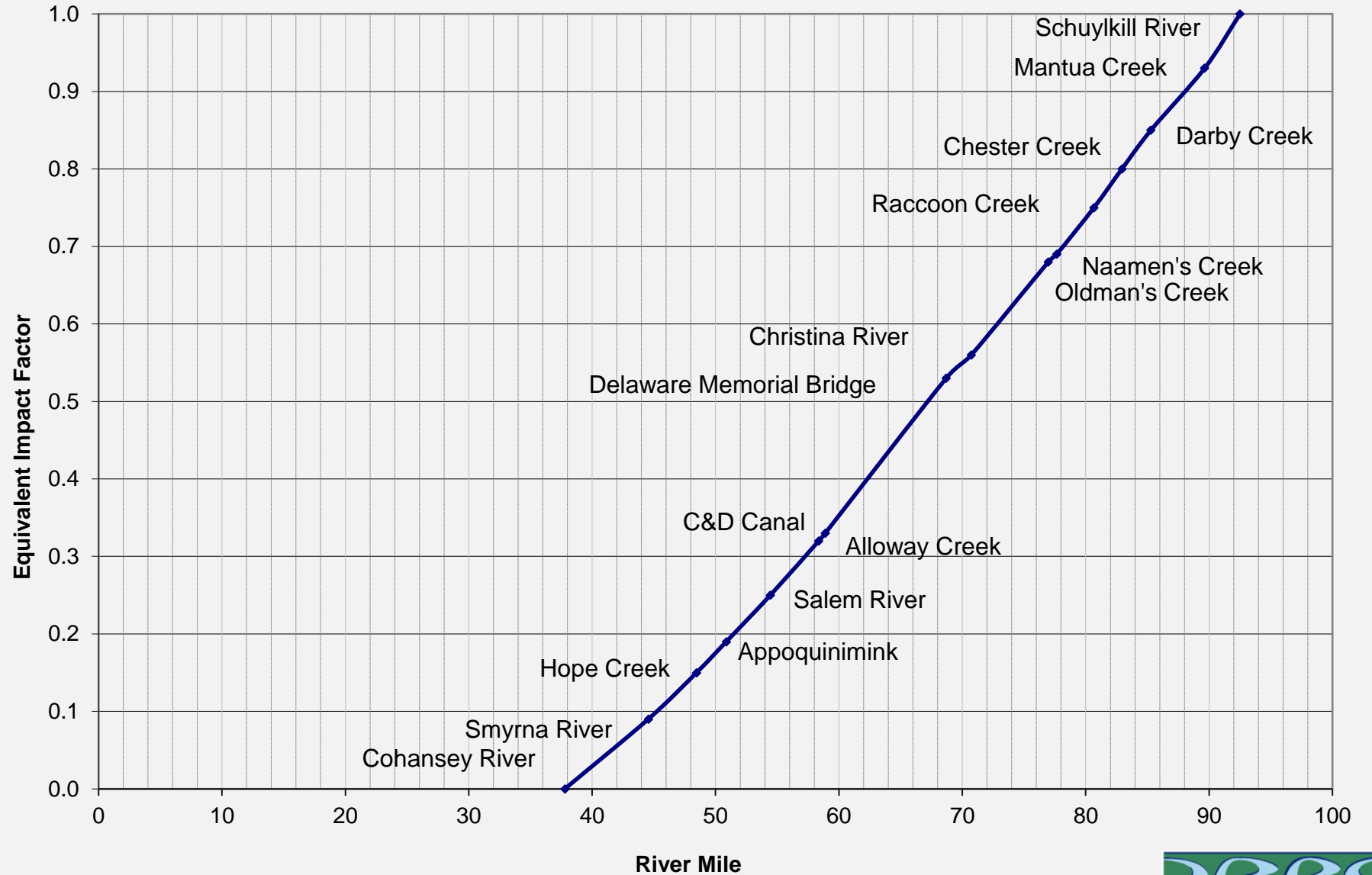
For facilities located in the drainage areas of the Delaware River Basin above river mile 38 and below river mile 92.4, the amount of consumptive use make-up water required will be based on their individual Relative Effect Factor (REF).



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Goal –  
Clarify  
Relative  
Effect  
Factor

Relationship between River Mile and Equivalent Impact Factor



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# Goal – Guidance on Replacement Sources

## Acceptable Replacement Sources:

- \* groundwater that is not under direct influence of surface water
- \* imported water
- \* reservoir storage other than Beltzville and Blue Marsh



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# Goal – Guidance on Replacement Sources

The Commission recommends that each docket holder secure an amount sufficient to supply the docket holder's **projected** consumptive use (multiplied by the Relative Effect Factor) experienced over a period of **120 days**.

Recognizes the differences between baseload generators vs. peaking facilities.

120 days = normal dry season  
(June – September)

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# Goal – Address Exemptions



## Exemptions from the Consumptive Use Replacement Requirement if facility:

- obtains their water from **groundwater** that is not under direct influence of surface water, and/or
- obtains their water from an **importation**, and/or
- is located in the **drainage area of the Basin below R.M. 38.**



# Comments Received on First Draft Resolution/Policy

**2 oral commenters:** Jim Mershon (MCOG), Anthony Bonasera

**6 written commenters:** MCOG, Talen Energy, Eagle Point Power, WRA-DRB, Chambers CoGen, Matt Ford

## Technical

- \* 120 Days Worth of Storage
- \* Temporary Excursion & 5 day requirement
- \* All consumptive use be mitigated – not just power

## Administrative

- \* Extend comment period on resolution/policy
- \* Docket Expirations (proposed 12/31/2018 with renewal application due 10/1/2018)
  - \* Operating without a docket if not renewed by expiration date
  - \* Time to submit a renewal application is too short
  - \* DRBC authority to impose expiration date
  - \* Costs for application unexpected/budget constraints
- \* Application Extension to 3/31/2019
- \* Re-advertise amended policy/resolution after meeting with WRA

## Other

- \* Meeting Requests – WRA facilitation, Chambers CoGen, Talen Energy (pre-app)
- \* Citizen supportive of pure water



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# Comments Received on First Draft Resolution/Policy

## Technical

- \* 120 Days Worth of Storage – removed reference (baseload generators vs. peaking)
- \* Temporary Excursion & 5 day requirement– removed (MCOG current docket doesn't reference it)
- \* All consumptive use be mitigated -- not just power – not recommended at this time

## Administrative

- \* Extend comment period on resolution/policy – extended from Feb 20 – Feb 28, 2018
- \* Docket Expirations (proposed 12/31/2018 with renewal application due 10/1/2018)
  - \* Operating without a docket if not renewed by expiration date– clarified that if renewal application received then “administratively continued”
  - \* Time to submit a renewal application is too short– changed to “prior to expiration”
  - \* DRBC authority to impose expiration date – standard condition which the “Commission reserves the right to amend, alter or rescind actions... for water resource management”
  - \* Costs for application unexpected/budget constraints - extended expiration date
- \* Application Extension to 3/31/2019 – extended application date
- \* Re-advertise amended policy/resolution after meeting with WRA – review concerns with docket holders, re-advertising of policy/resolution

## Other

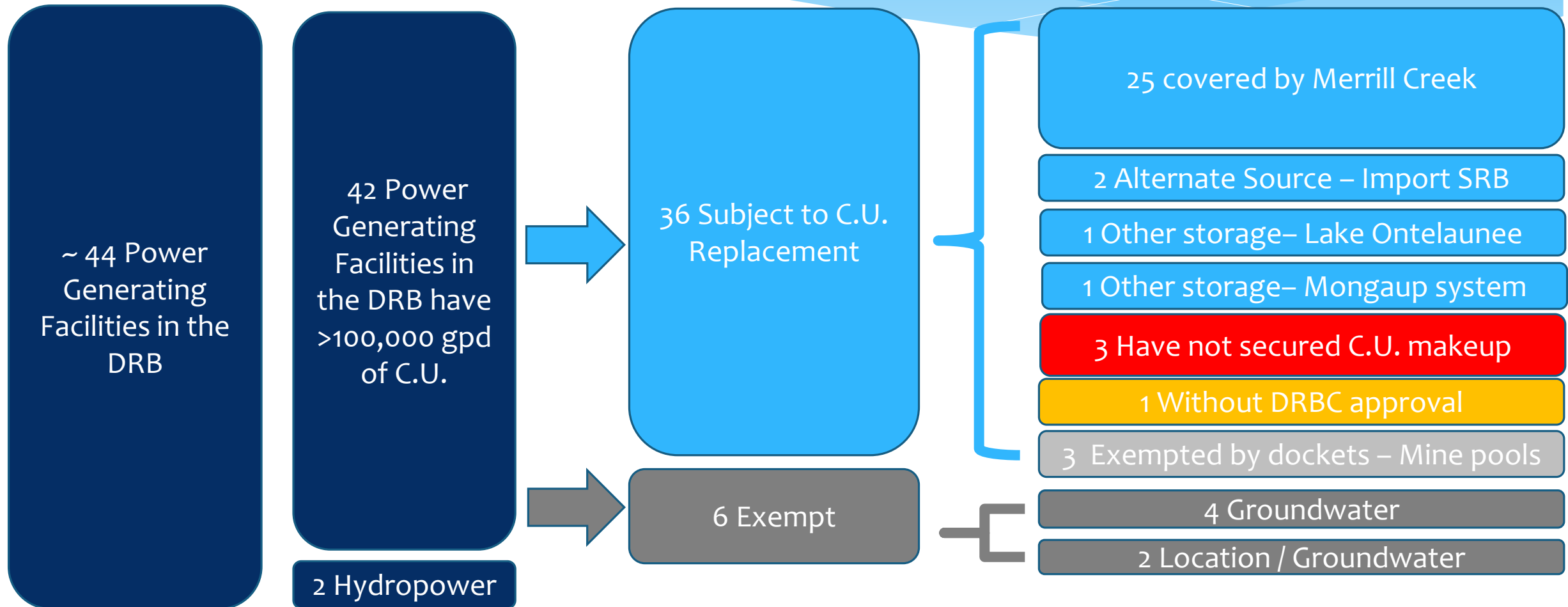
- \* Meeting Requests – WRA facilitation, Chambers CoGen, Talen Energy (pre-app) –met with docket holders
- \* Citizen supportive of pure water – agree, no change necessary



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# Power Consumptive Use Policy – Impacts





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# Power Consumptive Use Policy - Implementation



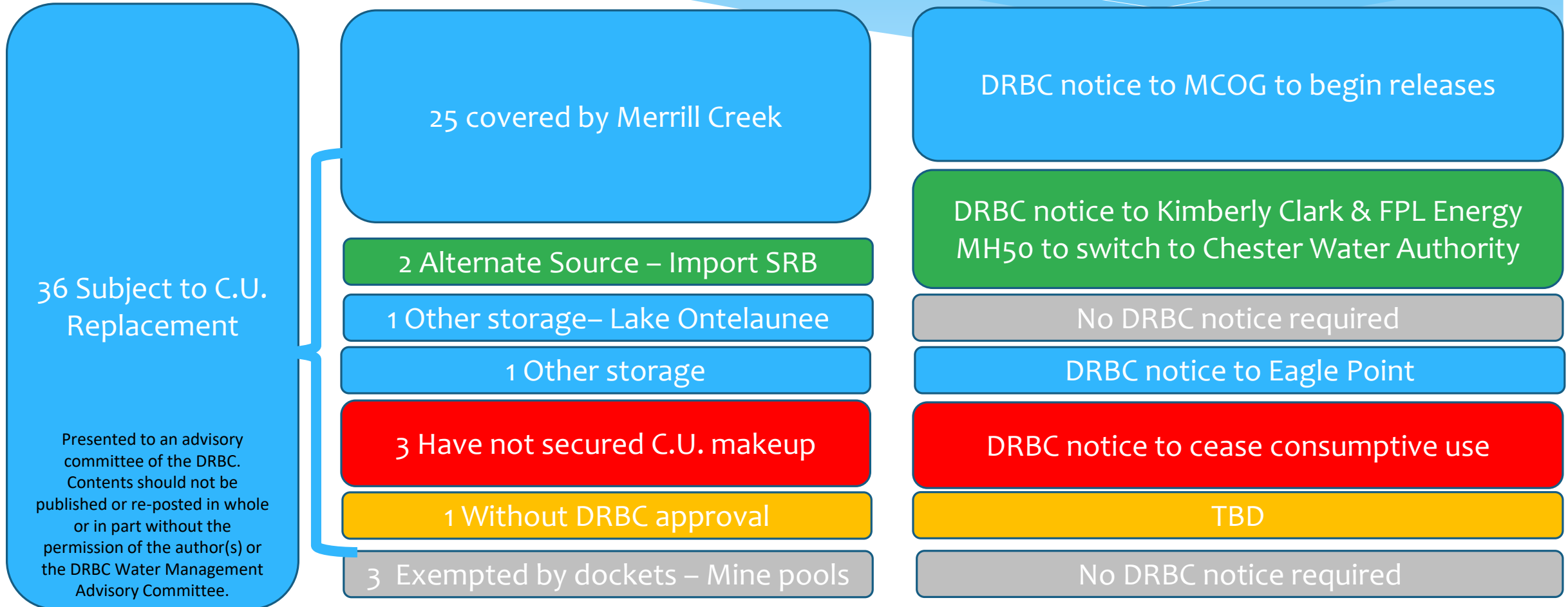
## Resolution implements the “condition” in several ways:

- A. Future modifications to the MCOG Docket and Operations Plan
- B. Individual dockets will be updated upon renewal.
- C. Dockets **without expiration dates** requested to submit renewal applications prior to newly established expiration date of March 31, 2019
  - \* In MCOG: Martins Creek, LLC (Units 3 & 4) – Talen Energy D-1970-025 CP
  - \* Not in MCOG: Wheelabrator Gloucester Company D-1987-038
  - \* Not in MCOG: Chambers Cogeneration L.P. – Carneys Point D-1991-019
- D. Commission directs Wheelabrator Falls Inc. (Bucks County, PA) to submit their project for Section 3.8 Review (uses >100,000 gpd of consumptive use / 30 days)

# Power Consumptive Use Policy - Notifications



- DRBC will provide notices to docket holders and update DRBC website.



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# Questions / Discussion



Martin's Creek Power Plant. Credit: DRBC



Exelon Limerick Power Plant. Credit: Google Images