

# Water Acquisition for Industrial Boilers and Processes

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## Overview

- Water use for energy and industrial boilers – the challenge
- Legal background - water rights in the west and east
- State and river basin examples

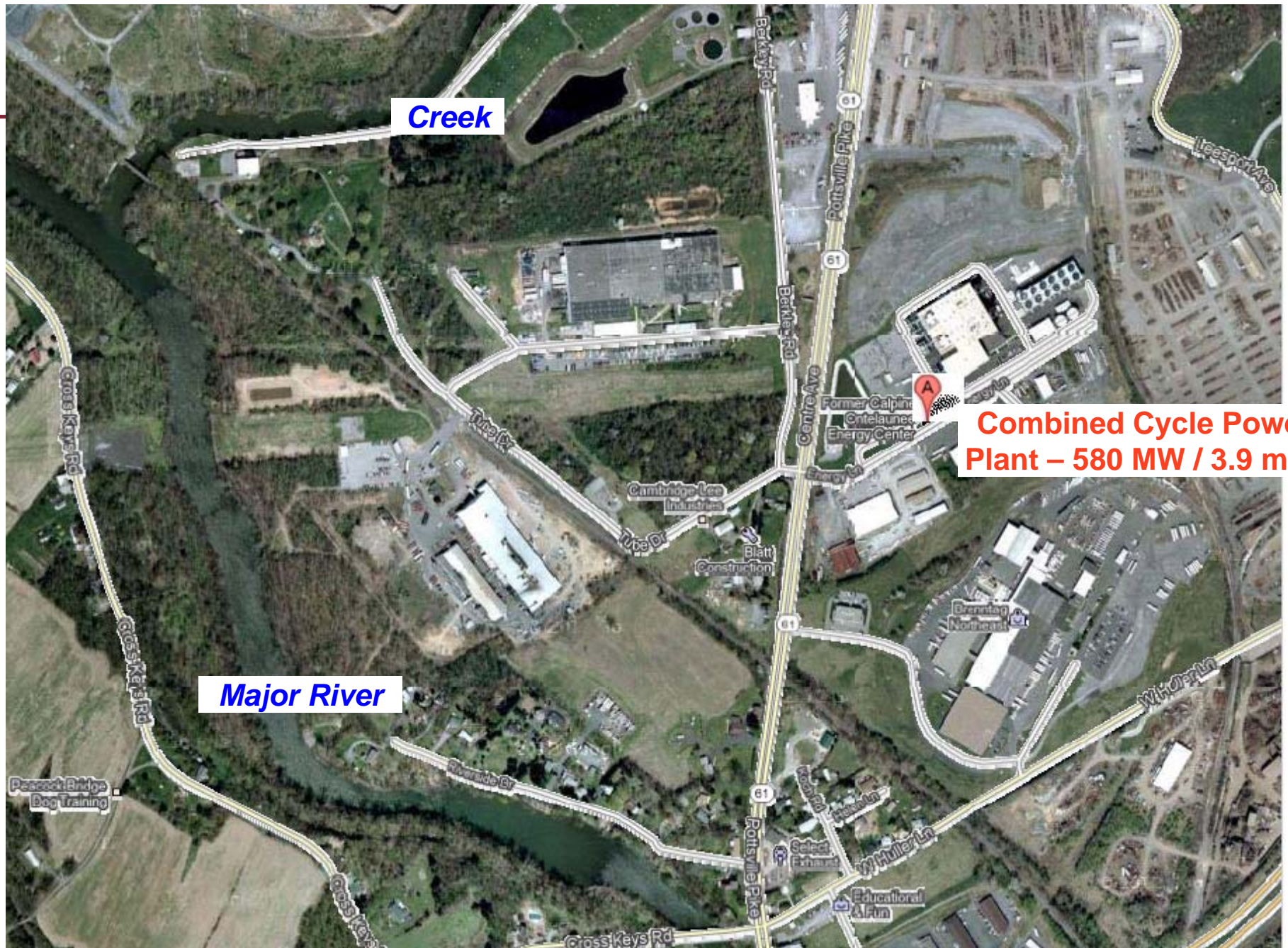
## Water use for boilers and energy production – the challenge

- Water for energy production
  - Hydroelectric
  - Thermal electric
    - Once-through systems
    - Recirculating systems / consumptive use
    - DOE projection: 3.3 BGD in 1995 => 7.3 BGD by 2030
    - One driver: Clean Water Act § 316(b) entrainment/impingement avoidance requirements
    - Example: Susquehanna Basin: power generation = 26.4% of consumptive use

## Key questions

- What water rights may industrial boiler or energy project operators acquire to procure necessary supplies?
- What regulatory and permitting programs affect water supply development?
- If water withdrawals adversely impact other water users or in-stream uses, what liability can be imposed on the gas well developer?
- If project development affects the quantity or quality of water supplies used by third parties, what are the operator's responsibilities? (*Beyond the scope of this presentation*)





Creek

Major River

Combined Cycle Power Plant – 580 MW / 3.9 mgd

## What is a water right?

- Different “rights” impact different activities
  - Rights relating to access to waterways / ownership of stream beds
  - Rights relating to water withdrawal and use
  - Rights relating to drainage, management and discharge of stormwater
- No one owns the water; water rights are rights of use.
- Two ways of looking at water rights.
  - What can I do? (*Where, when & how much can I withdraw? Where, when can I use water instream?*)
  - What can someone else do to me? (*To what extent is my withdrawal/source of supply protected? To what extent is my instream use protected?*)



## Western vs. Eastern States Water Rights Systems

- General water rights approaches
  - Western – prior appropriation system
  - Eastern – riparian rights doctrine
  - Some mixed systems (e.g., California)
- Modifications/limitations on general water rights systems
  - State regulatory / permit arrangements displacing common law
  - Federal reserved water rights
  - Interstate equitable apportionment
  - Interstate compacts
  - Impacts of environmental / ecological regulation:
    - Federal Endangered Species Act & state counterparts
    - Federal Clean Water Act & state water quality laws

## Prior appropriation doctrine

- Adopted in the arid west
- Fundamental tenant – first in time, first in right
- Types of water rights recognized (depending on state)
  - Direct flow – diversion from natural flow of stream, usually measured in cfs
  - Storage – water stored in on- or off-stream reservoir, measured in acre-fee
  - Groundwater – right to withdraw from a specific aquifer
  - Instream flow – right to protect and maintain a certain flow in a stream or level in a lake



## Prior appropriation

- Elements of a valid appropriation
  - Intent to appropriate and apply water to a beneficial use
  - Actual diversion of water from the source
  - Application of the water to a beneficial use
- Priority system
  - “Junior” appropriators must curtail or cease withdrawals to allow “senior” appropriators the full amount of their right
- Subject to loss for abandonment or forfeiture for non-use over some period defined in state law
- Transfer of rights - change in use may be allowed subject to “no injury rule” precluding impacts on other water users, whether junior or senior to the changed rights
- Rights may be determined via individual adjudications, basin adjudications, permitting systems

## Western groundwater rights

- Four groundwater use doctrines
  - Rule of capture
  - Reasonable use
  - Correlative rights
  - Prior appropriation
  - *Systems may or may not be compatible with surface water rights regime*

## Federal reserved water rights

- *Winters* Doctrine
  - Applies to Indian and non-Indian reservations
  - Reservation of land by federal government implies a reservation of water for present and future uses of the reservation
  - Reservation may apply to surface water, groundwater or both
  - Not subject to loss for non-use
  - Often not well documented or quantified
  - May be subject to quantification in basin adjudications

## Bases of water rights in the east

- Common law
  - Historical and hydrologic basis ▶ riparian rights in the east; prior appropriation in the west
  - Administration of rights ▶ courts
- Evolving in eastern states to “regulated riparian” regimes
  - Statutory & regulatory codification / modification of common law
  - Administration of rights ▶ administrative agencies

## What water is subject to water rights?

- Not all “water” is legally the same
  - Different rules apply to different sources
- Common law classifications
  - Surface waters in defined lakes & streams
  - Diffused surface waters
  - Groundwater in well-defined subterranean streams
  - Percolating groundwater
- Different rules for each class
- Doctrines based on legal fictions, rather than hydrologic fact



## Common law riparian rights in surface waters

- Right to make use of water on riparian land
- Applicable to surface waters in streams (defined bed and banks), lakes, and identifiable subterranean streams
- What is “riparian land”?
  - Unity of title test
  - Rights do not extend to non-contiguous land
  - Rights do not extend to lands not in same watershed
- What is the measure of a riparian right?
  - Natural flow doctrine
  - Reasonable use doctrine
  - No fixed amount – no priority in time

## Common law rights in groundwater

- Three theories:
  - “English rule” of absolute dominion by overlying landowner
  - “American rule” of “reasonable use”
  - Correlative rights doctrine
- Use on overlying land vs. off-land
  - “*Per se*” unreasonable (some states) for off-land use
- Surface-groundwater interaction not often addressed

## Regulated riparian regimes

- Statutory/regulatory arrangements requiring permit for water withdrawals (above certain quantity)
- Applied statewide or in certain regions, basins, watersheds
- Examples:
  - Delaware River Basin Compact
  - Susquehanna River Basin Compact
  - Great Lakes St. Lawrence Basin Water Resources Compact
  - Pennsylvania (partial)
  - Ohio (partial)
  - New Jersey
  - Florida

## Delaware River Basin Commission (DRBC)

- Delaware River Basin Compact – Pub. L. 87-328 (1961) - federal/interstate compact: NY, NJ, PA, DE, US
- Project review authority
  - Any surface or groundwater withdrawal  $\geq 100,000$  gpd (30-day average)
  - Industrial wastewater discharges  $\geq 50,000$  gpd
  - Electric generating facilities designed to consumptively use  $\geq 100,000$  gpd
  - Water diversions into/out of basin
  - All shale gas development projects in special protection water drainage (effectively, all Marcellus Shale projects – current moratorium pending adoption of regulations)
- Protected areas – special regulatory programs
- Drought / emergency powers

## DRBC (con't)

- The primary review criterion = consistency with basin comprehensive plan (including regulations and policies)
- DRBC power to allocate water among the states, but allocation cannot constitute ***prior appropriation***
- Protected area authority
  - Areas where demands threaten water shortage or impair or conflict with comprehensive plan
  - Southeastern PA Groundwater Protected Area
- Drought / emergency powers
  - Ability to suspend, modify state-issued permits
  - Power to direct increase/decrease in withdrawals
  - Power to direct increase/decrease in releases
  - Implemented under detailed drought management plans (basin and subbasin)



## Susquehanna River Basin Commission (SRBC)

- Susquehanna River Basin Compact – Pub. L. 91-575, 84 Stat. 1509 (1970) - federal / interstate compact – NY, PA, MD, US
- Project review authority
  - Any surface or groundwater withdrawal  $\geq$  100,000 gpd (30-day average)
  - Any consumptive use  $\geq$  20,000 gpd (30-day average)
  - Water diversions into or out of the basin
  - All natural gas well development projects targeting the Marcellus or Utica Shales (irrespective of quantity of water)
  - Approval required prior to commencement of construction

## SRBC approach (con't)

- Dockets required for surface water and groundwater withdrawals (approved by full Commission after hearing)
- Approval-by-rule (ABR) process for consumptive use associated with unconventional gas well pads (approved by SRBC staff)
- Increased concern regarding cumulative impacts on stream flow
- Low flow protection policy – tiered approach, with monthly exceedance values (stringent protection of headwaters)
- Significant penalties imposed for project commencement without approval

## Great Lakes-St. Lawrence River Basin Water Resources Compact

- Compact – approved by 8 states (effective 12/8/2008)
- Water withdrawal permitting:
  - Requires and relies on state adoption/implementation of withdrawal permitting programs
  - Trigger level – as set by state, but default of 100,000 gpd/30-day avg.
- Decision making standard:
  - Prohibition against out-of-basin diversions
  - Whether withdrawal is designed for efficient use
  - Whether efficient use is being made of existing sources
  - Balance between economic and social development, environmental protection
  - Use of environmentally sound and economically feasible conservation
  - No significant individual or cumulative adverse impacts to the quantity or quality of the source watershed (defined as watershed of each Great Lake and its respective tributaries) -- *is source of greatest debate*

## Eastern state regulated riparian regimes

- Scope
  - Statewide water withdrawal permitting program for surface and/or groundwater withdrawals (Example: NJ, MD)
  - Regional / basin permitting program for surface and/or groundwater (Example: FL)
  - Permitting program in critical or special protection areas (Example: VA)
- Common elements
  - Permit required for new or increased withdrawals > defined quantity
  - Allowable withdrawal is quantified
  - Permit issued for defined time period / subject to renewal
  - Conditions to protect other users and instream uses (passby flow, consumptive use compensation)
  - Some allowance for transfer in some states, subject to state approval.

## State examples (con't)

- Ohio
  - Common law clarified – statutory adoption of Restatement (Second) of Torts § 858
  - Withdrawal permits within Great Lakes Basin & Ohio Basin – with different triggers
- New Jersey
  - Common law with strong permitting system
  - Statewide permitting under Water Supply Management Act – surface and groundwater withdrawals  $\geq$  100,000 gpd
  - Special protection areas with special rules
- Virginia
  - Designated surface water and groundwater management areas with permitting by VA State Water Control Board



# Questions ?