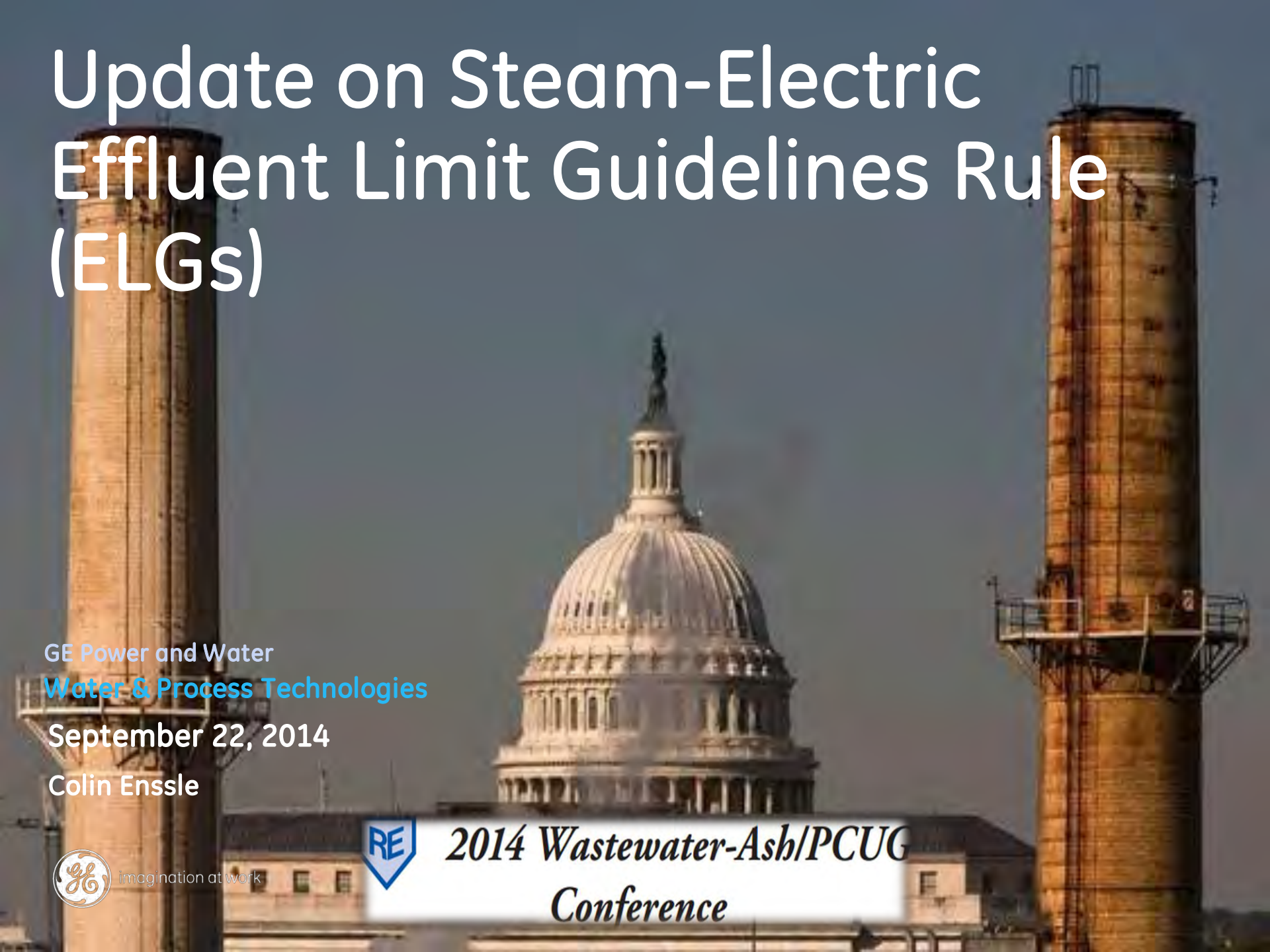
REINHOLD ENVIRONMENTAL Ltd.

2014 Wastewater-Ash Round Table & Expo Presentation

September 22, 2014, in Birmingham, AL / Hosted by Southern Company

Update on Steam-Electric Effluent Limit Guidelines Rule (ELGs)



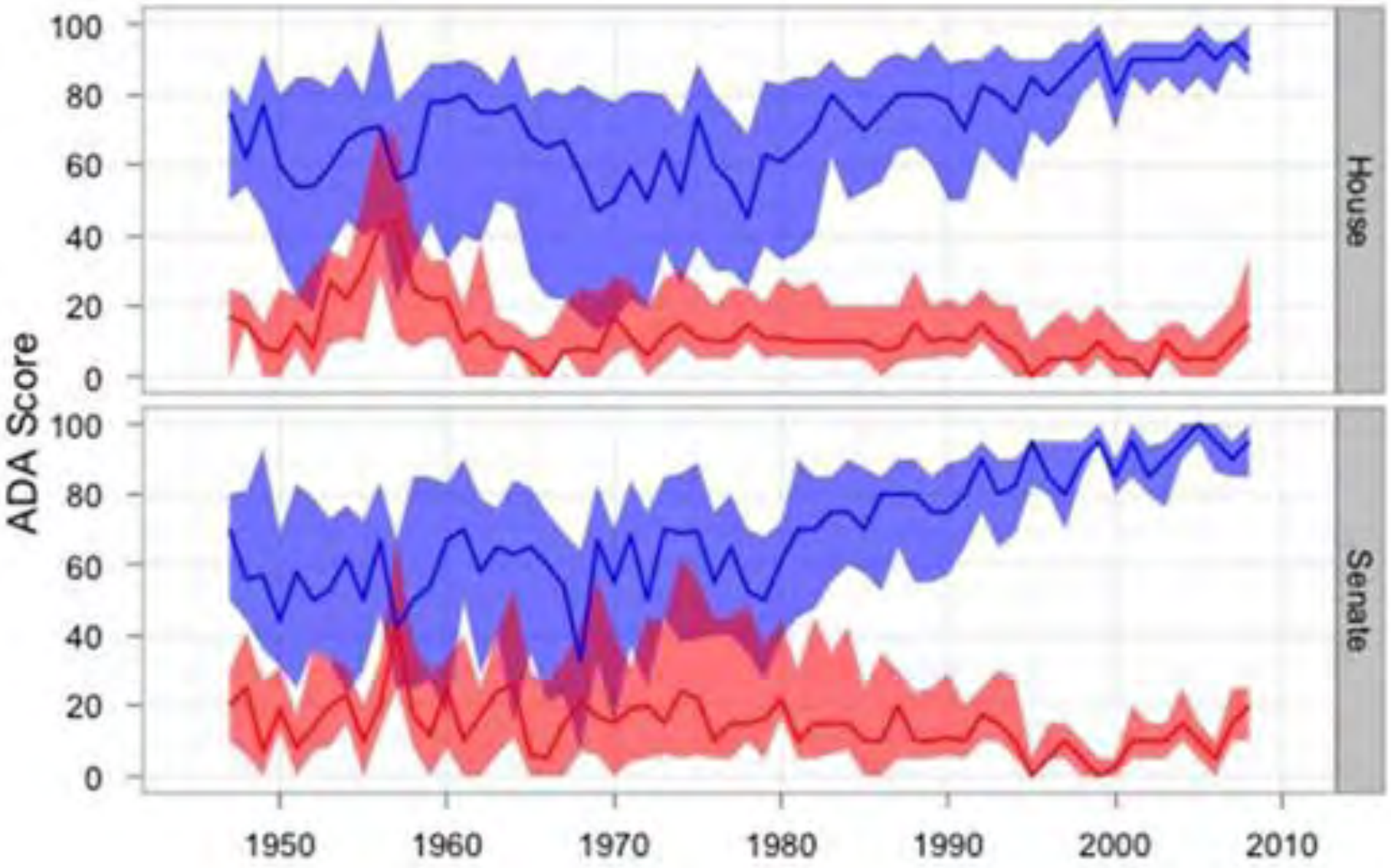
GE Power and Water
Water & Process Technologies

September 22, 2014

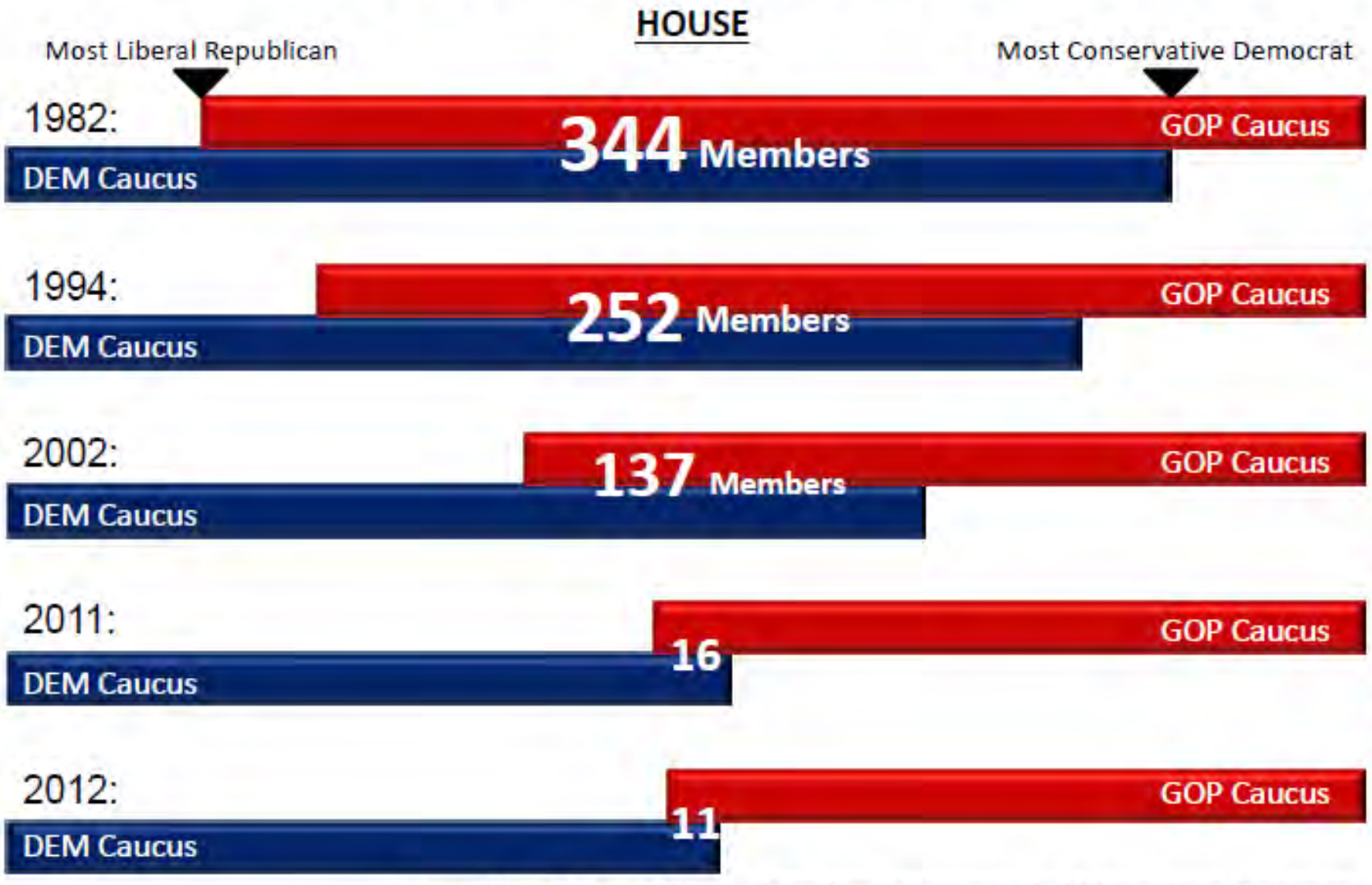
Colin Enssle

imagination at work

House, Senate voting diverges sharply



The political middle has disappeared.



Source: National Journal Vote Rankings from a presentation by Mehlman Vogel Castagnetti

Overview of power regulations

MATS CO_2
CSAPR

316(b) P/N
ELG CCR CI

Capital

Key concepts:

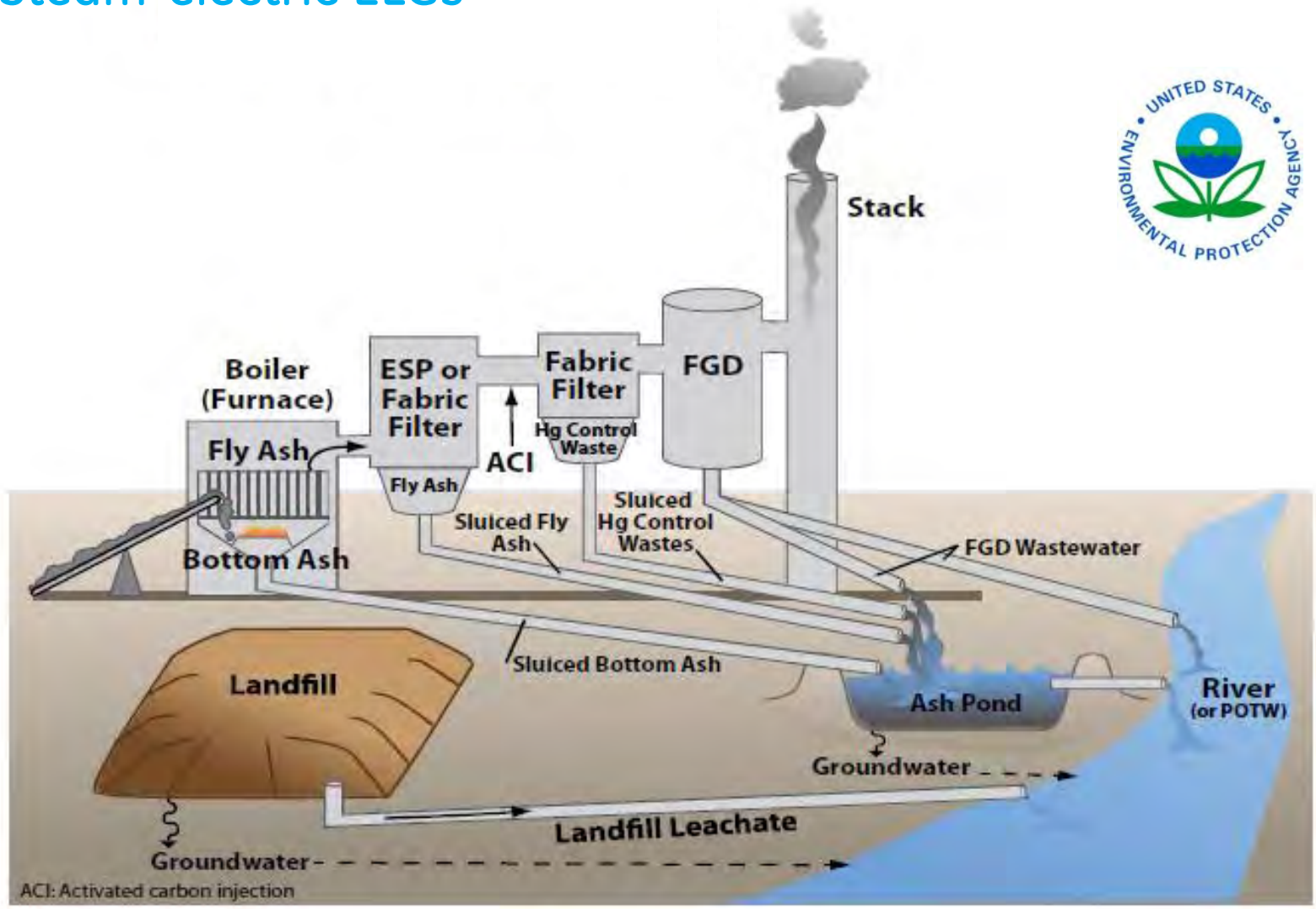
- Coal has a difficult regulatory future
- "Sue-and-settle": environmentalists more savvy
- Change in WH, S, or H ≠ change in regulation
- EPA Administrator (McCarthy) focused on execution

Recent big ideas:

– "Polar vortex" and fuel diversity
– CO2 challenges
– Drought in west
– Major sea change: **shale gas**

EPA mock-up of key power plant waste streams

Re: Steam-electric ELGs



Steam-electric ELGs: the details (p. 1 of 6)

Overview

- Revision of 30 year-old guidelines based upon demonstrated technological capabilities
  - 4 years worth of study, sampling, information gathering across the US at a variety of facilities
  - Technology-based
- Covers wastewater discharges not previously addressed nationally
  - FGC/IGCC wastewater and CCR impoundment leachate no longer low volume wastes
- Guidance for EPA and State regulators to set NPDES discharge limits
- Individual permitting authorities have ability to set lower limits
- **Incentives** for time extension through CCR pond elimination (2 years) or ZLD (5 years)

Steam-electric ELGs: the details (p. 2 of 6)

Timeline and structure

- Draft Rule issued 4/19/13, published in Federal Register 6/7/13
- **Final Rule: Sept. 22, 2015**
  - Compliance 2017-2022 **(est.)** through NPDES renewals
  - More delays? – Answer *should* be no
    - ➢ Clause in modified consent decree in *Defenders of Wildlife and Sierra Club v. EPA* allows enviros to seek earlier deadline if EPA misses Dec. 19 deadline for CCR
- **Eight** options for regulating waste streams; **EPA favors four** for existing sources, with one option preferred for new sources
- The primary differences between the preferred options are
  a) At what level to treat FGD wastewater, and
  b) Whether or not to eliminate discharge of bottom ash transport w
- Every preferred option eliminates the discharge of fly ash sluice wate

Steam-electric ELGs – draft rule

OMB-added options

Increasing pollution reduction →

Table VIII -1. Steam-electric main regulatory options.

Waste streams	Technology Basis for the Main BAT/NSPS/PSES/PSNS Regulatory Options							
	1	3a	2	3b	3	4a	4	5
FGD wastewater	ChemPPT	BPJ	ChemPPT + Bio	TWSC > 2GW = ChemPPT + Bio; < 2GW = BPJ	ChemPPT + Bio	ChemPPT + Bio	ChemPPT + Bio	ChemPPT + Evap
Fly ash transport water	Impound (= BPT)	Dry handle	Impound (= BPT)	Dry handle	Dry handle	Dry handle	Dry handle	Dry handle
Bottom ash transport water	Impound (= BPT)	Impound (= BPT)	Impound (= BPT)	Impound (= BPT)	Impound (= BPT)	Dry handle/close-loop (>400MW); impound (= BPT) (≤400 MW)	Same as 4a	Same as 4a
Combustion residual leachate	Impound (= BPT)	Impound (= BPT)	Impound (= BPT)	Impound (= BPT)	Impound (= BPT)	Impound (= BPT)	ChemPPT	ChemPPT
FGMC wastewater	Impound (= BPT)	Dry handle	Impound (= BPT)	Dry handle	Dry handle	Dry handle	Dry handle	Dry handle
Gasification WW	Evap	Evap	Evap	Evap	Evap	Evap	Evap	Evap
Non-chem metal cleaning wastes	ChemPPT	ChemPPT	ChemPPT	ChemPPT	ChemPPT	ChemPPT	ChemPPT	ChemPPT
TWP removals (000 lb-eq)	1,530,719	2,488,470	2,603,628	3,396,653	5,092,098	6,664,693	7,831,298	8,200,804
Cost ($MM '10)	266	168	393	265	561	948	1,373	2,277
Cost effec'v ($/lb)	69	27	60	31	44	57	70	111
Social cost ($MM)	268	185	387	281	572	954	1,381	2,329
Benefits ($MM)	82	139*	112	206*	184	483*	435	434

EPA preferred options

*Inferred values

EPA seems to have chosen preferred options based in major part on cost effectiveness

Steam-electric ELGs: the details (p. 3 of 6)

Information on limits and discharges

- ***Stream commingling to lower concentrations before discharge <u>not</u> allowed***
- Wet FGD stream limits for Se, As, Hg, NO_3
- Leachate stream limits for As, Hg *(new sources only)*
- Non-chemical cleaning waste limits for Cu, Fe
- Wet fly ash stream discharges are prohibited
- Wet bottom ash stream discharges are prohibited
- Sub 50 MW facilities are mostly exempt from all
- Sub 400 MW facilities can continue with wet bottom ash

Example: CCR leachate <u>can</u> be combined with FGD waste-water before treatment <u>so long as</u> the WW is treated to the new FGD WW limits

Steam-electric ELGs: the details (p. 4 of 6)

FGD stream impacts

- Proposed FGD BAT effluent limits:

Constituent	30-day avg. values	Max 1-day limit
Total Selenium	10 µg/L	16 µg/L
Mercury	119 ng/L	242 ng/L
Arsenic	6 µg/L	8 µg/L
Nitrate-Nitrogen	0.13 mg/L	0.17 mg/L

- Limits must be met prior to reuse; comingling with any other stream; or discharge
- Multiple options presented, 5 of which are based on phys/chem + anoxic/anaerobic biological systems

Steam-electric ELGs: the details (p. 5 of 6)

Ash stream impacts

- Proposed leachate BAT effluent limits:

Constituent	30-day avg. values	Max 1-day limit
Mercury	119 ng/L	242 ng/L
Arsenic	6 µg/L	8 µg/L

- Limits must be met prior to reuse; comingling with any other stream; or discharge
- Zero-pollutant discharge allowed from stations' ash ponds in most cases

Steam-electric ELGs: the details (p. 6 of 6)

Current issues around ELG

What's EPA currently doing?

- Finalizing technical response to industry, environmentalists comments
- EPA goal: solidify final options in 1Q 2015
- Freedom of Information Act (FOIA) requests
    1. Get info around "watering down" at OMB
    2. Prove that EPA has technical data that supports strictest option(s)

What's Industry currently doing? **IRP compliance costs**

Company	IRP published	Coal-fired capacity (MW)	Compliance effective (est.)	Cost ($MM)
No. Indiana Public Service Co.	Aug. 2014	~3,300	2020	178
Dynegy	June 2014	~7000	2022	75

ELG aligned w/ Coal Combustion Residual Rule

Alignment with steam-electric ELGs

- Coal Combustion Residual (CCR)
- Draft: June 2010, final: Dec. 2014
- Two options:
  - RCRA subtitle C (hazardous)
  - RCRA subtile D (non-hazardous)
- EPA leaning toward non-hazardous
- **ELG draft gives hint**

III. DEADLINE FOR AGENCY ACTION

4. The EPA Administrator shall, by December 19, 2014, sign for publication in the Federal Register a notice taking final action regarding EPA's proposed revision of RCRA subtitle D regulations pertaining to coal combustion residuals. EPA will promptly transmit this

From the ELG Draft Rule:

the revised risks, coupled with the ELG requirements that the Agency may promulgate, and the increased Federal oversight such requirements could achieve, could provide strong support for a conclusion that regulation of CCR disposal under RCRA Subtitle D would be adequate.

- **Also**: EPA *already* concluded CCRs non-hazardous in '88, '93, '99, & '00
- **And**: States (ECOS) resolved that EPA should use existing, *adequate* state frameworks

Therefore, EPA very likely to rule CCRs as non-hazardous

(Still: difficult to hit Dec. target!)

imagination at work