Economic Benefit & Using the BEN Model in RCRA Cases

Presentation to NEWMOA

April 13, 2021

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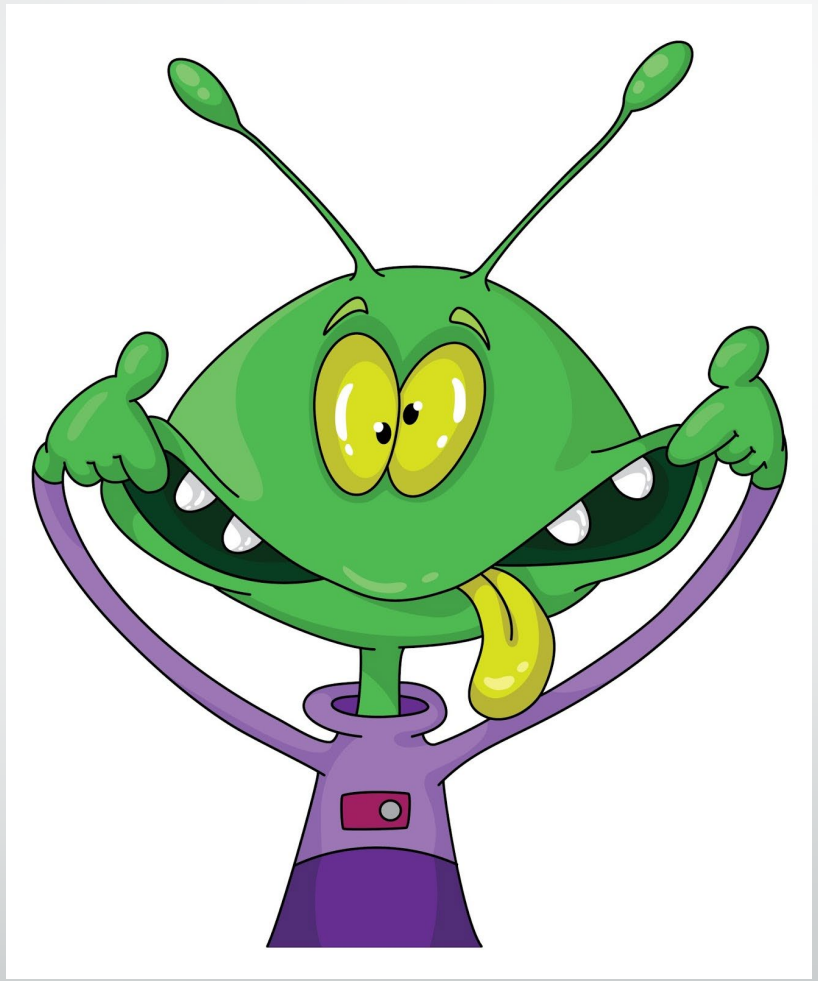
David Smith-Watts

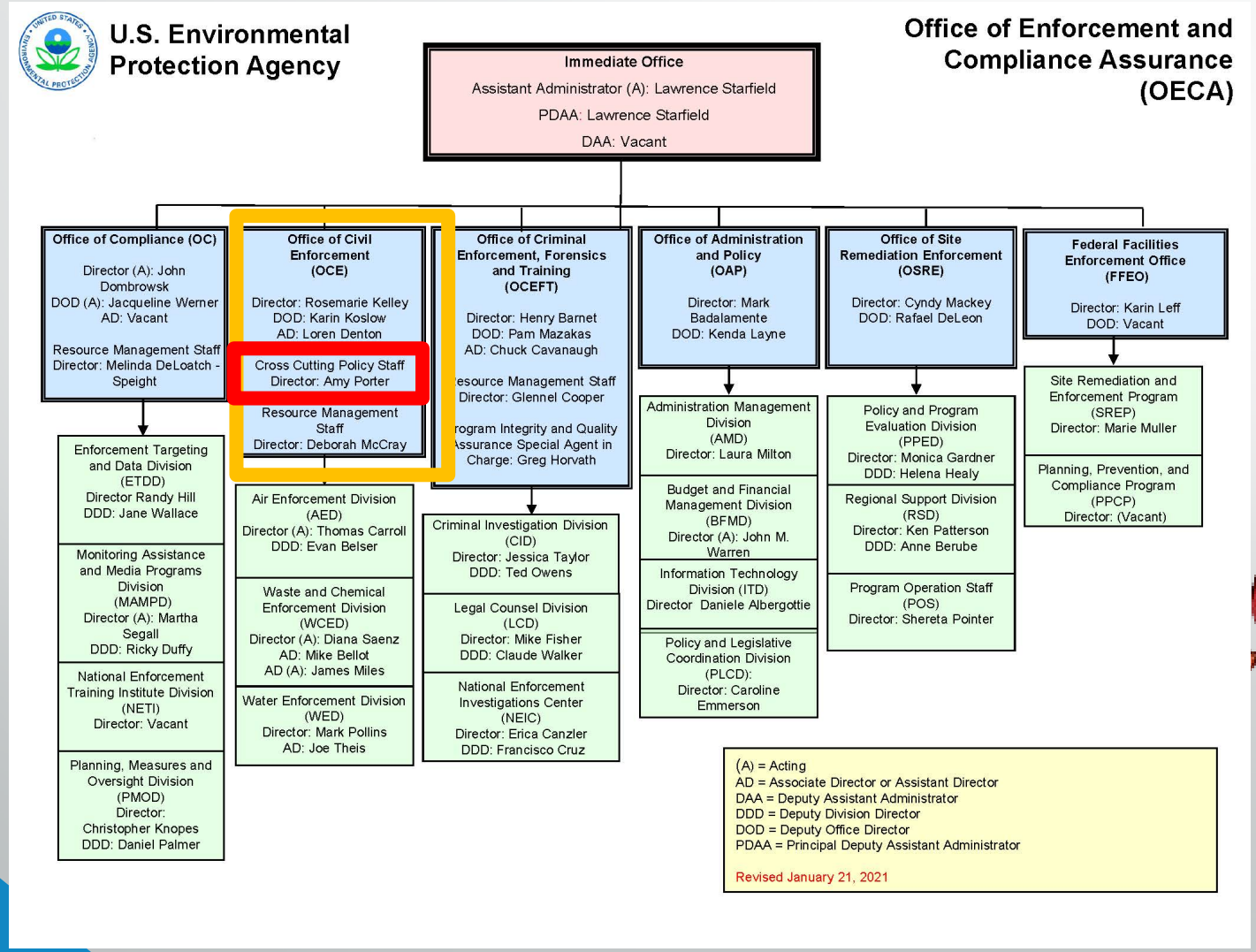
Alien



Bad Guy

Where in the World is David Smith-Watts?

- EPA's National point of contact for financial, legal, and policy issues impacting the assessment of civil penalties.
- EPA's Office of Enforcement and Compliance Assurance (OECA) org. chart:



Housekeeping

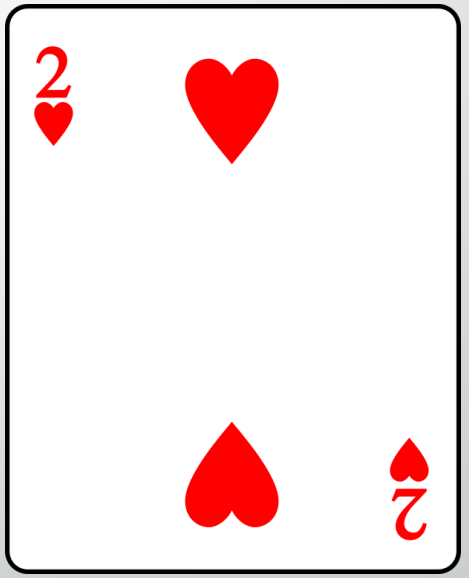
- Slides throughout presentation designated for questions – ask orally or through chat box
- Slides available for download in webinar
- Please refrain from multi-taking; we will move quickly through slides
- Information herein pertains to EPA policies and case teams; consult your state policies and practices for application to state cases

Outline of Presentation

1. Overview of economic benefit and the BEN Model
2. Case examples outside of BEN and using BEN
3. Strategic Considerations
4. Resources
5. Application to RCRA Cases

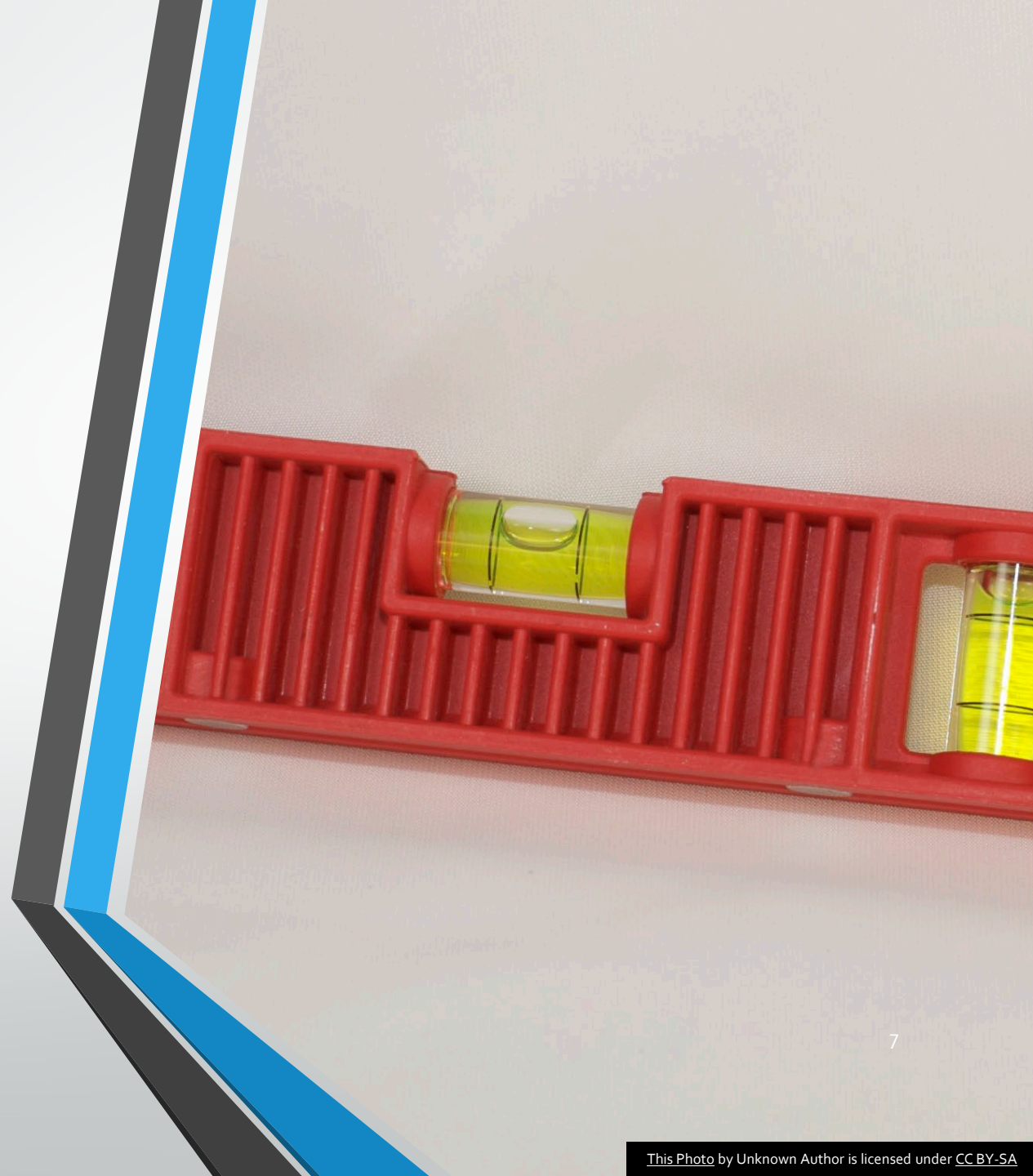
Two Main Components of Civil Penalties

1. Gravity-Based Penalty
   - Seriousness of the violation
   - Actual or potential harm to the environment
   - Harm to the regulatory program
2. Economic Benefit



Concept of Economic Benefit

- Definition: Economic benefit (EcBen) is the amount by which a party is financially better off due to not complying with an environmental law in a timely manner
- Purpose of recapturing economic benefit:
  - Removes economic savings a violator derives from its noncompliance
  - Levels the playing field among all regulated entities



Theory Behind EcBen

- Violator could have used money to generate additional revenue and gain an unfair competitive advantage
- For example:
  - Hire additional employees
  - More advertising
  - More research and development

Three Types of EcBen

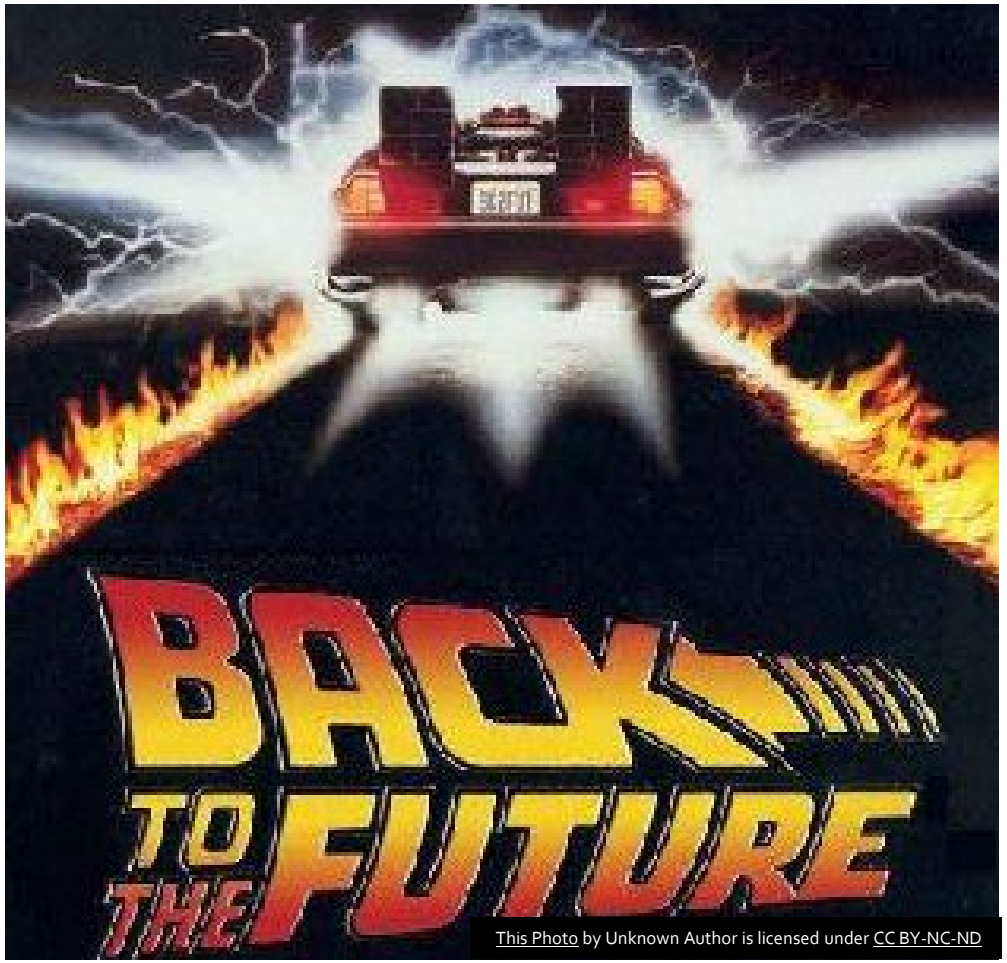
- **Delayed Costs** – Delayed purchase of pollution control equipment
- **Avoided Costs** – Party hasn't purchased pollution control equipment to date (less frequent)
- **Wrongful Profits** – Profit gained as a result of noncompliance. This benefit goes beyond BEN model's simplifying paradigm of delayed/avoided costs

BEN Computer Model

- BEN calculates EcBen derived from ***avoided*** and ***delayed*** costs, not wrongful profits
- Called BEN b/c short for economic benefit
- Available to download on EPA's website or Industrial Economic's website (EPA financial analysis contractor)
- Also installs four other models: ABEL, INDIPAY, MUNIPAY, PROJECT
- Annual updates to BEN require annual download and installment by users

What Does the BEN Model Do?

- Compares the *noncompliant, actual* scenario versus the *compliant, hypothetical* scenario
- Conceptually, go back to the date of noncompliance and think what happened versus should have happened



Time Value of Money

- "A dollar today is worth more than a dollar tomorrow."
- Inflation AND because of alternative investment opportunities
- Investment returns are a combination of expected inflation and the additional return of business activity
- The value of money is quantified by "discounting" or "compounding" cash flows from different years to the net present value of a common date
- Allows comparing cash flows from different years

Discount/Compound Rate

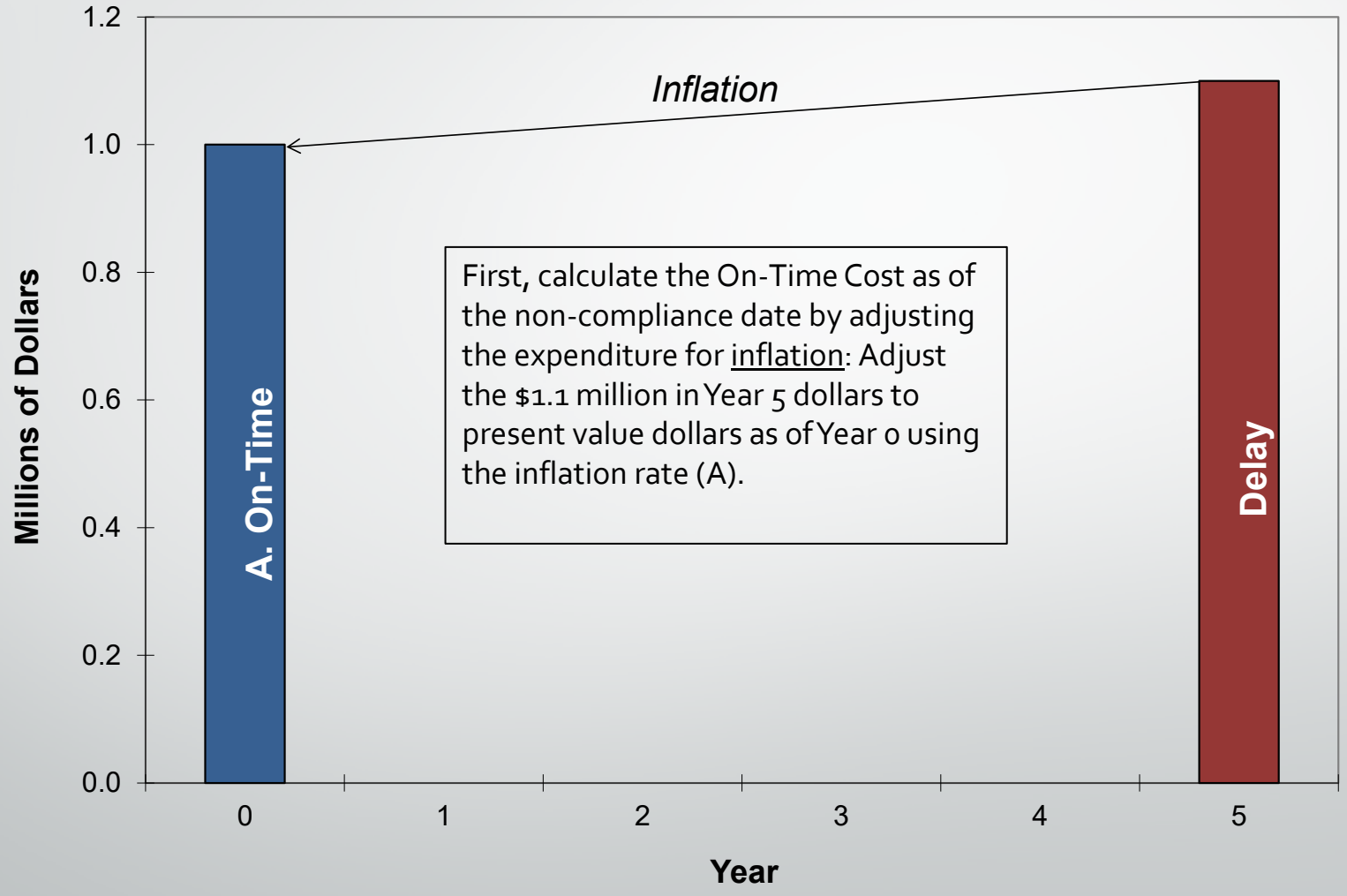
- Discount rate and compound rate are the same for a particular business
- Discount rate: rate used to adjust money ***backward*** in time
- Compound rate: rate used to adjust money ***forward*** in time
- BEN uses the weighted-average cost of capital (WACC) as the discount/compound rate
- For a typical company, this percentage is the cost of debt and equity weighted by the value of each financing source
- Companies need to earn a rate of return to repay debts (e.g., banks, bond holders) and equity owners (e.g., partners, stockholders)
- WACC represents the return a company can earn on monies not invested in pollution control
- Companies make business decisions by discounting cash flows at its WACC, and BEN follows the internal analysis a company will normally perform

Questions? Examples forthcoming

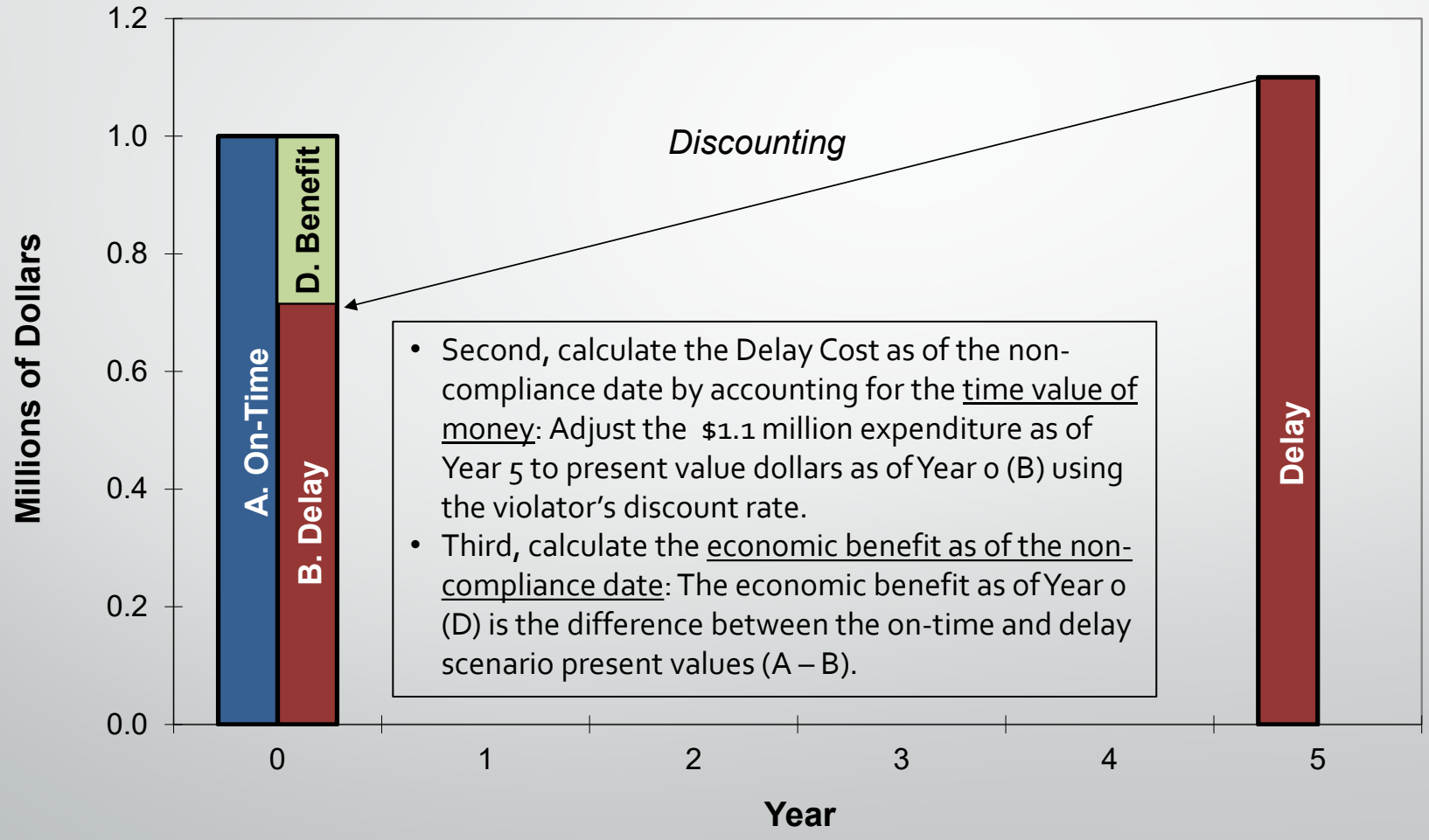
Scenario of What the BEN Model Actually Does

- Suppose a company made a $1.1 million expenditure in Year 5
- The company should have incurred the compliance expenditure in Year 0
- The company will not pay a penalty until Year 7
- What is the company's economic benefit of this delayed cost?

Simplification of What the BEN Model Does – Step 1

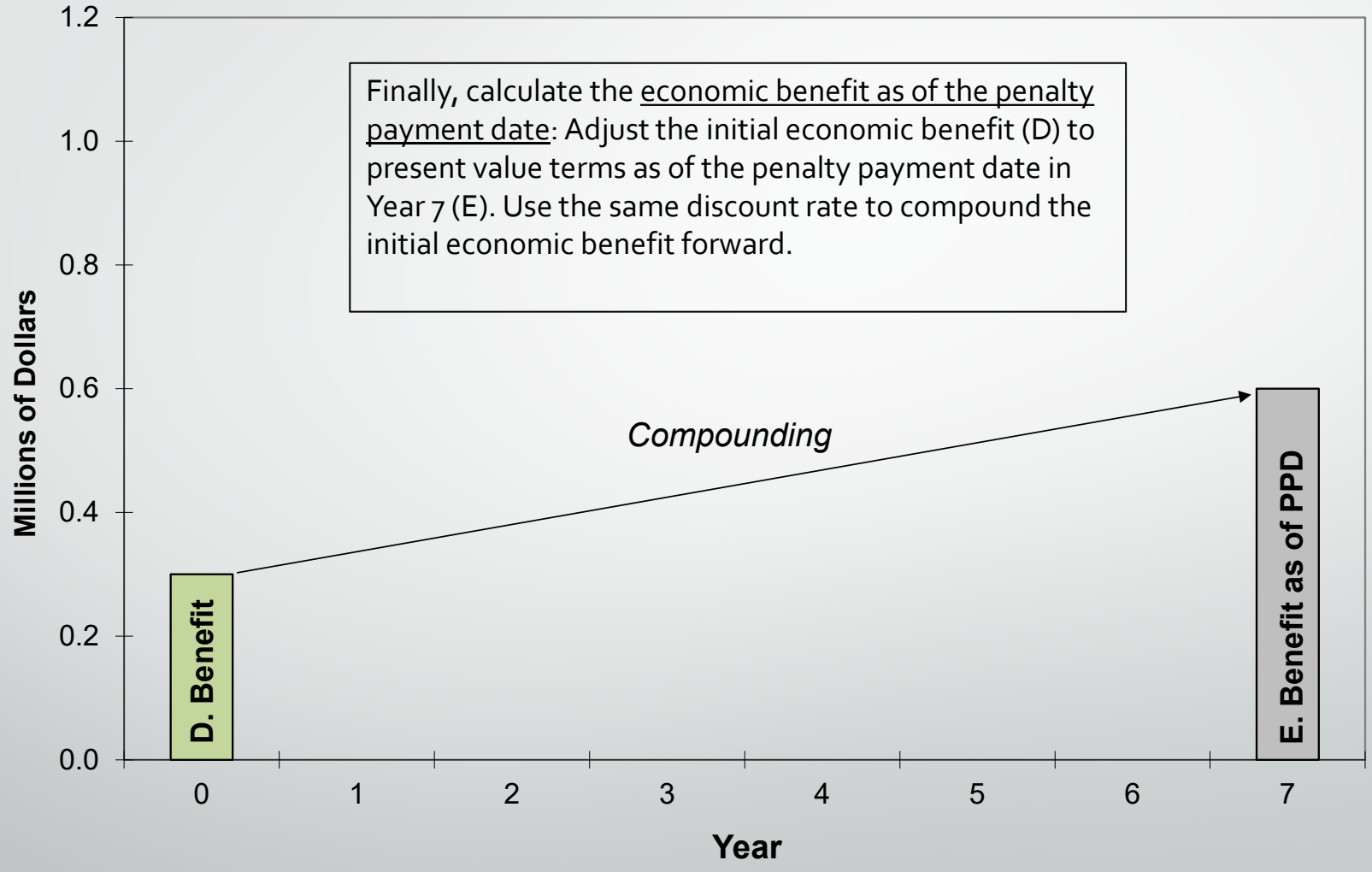


Simplification of What the BEN Model Does – Steps 2 & 3



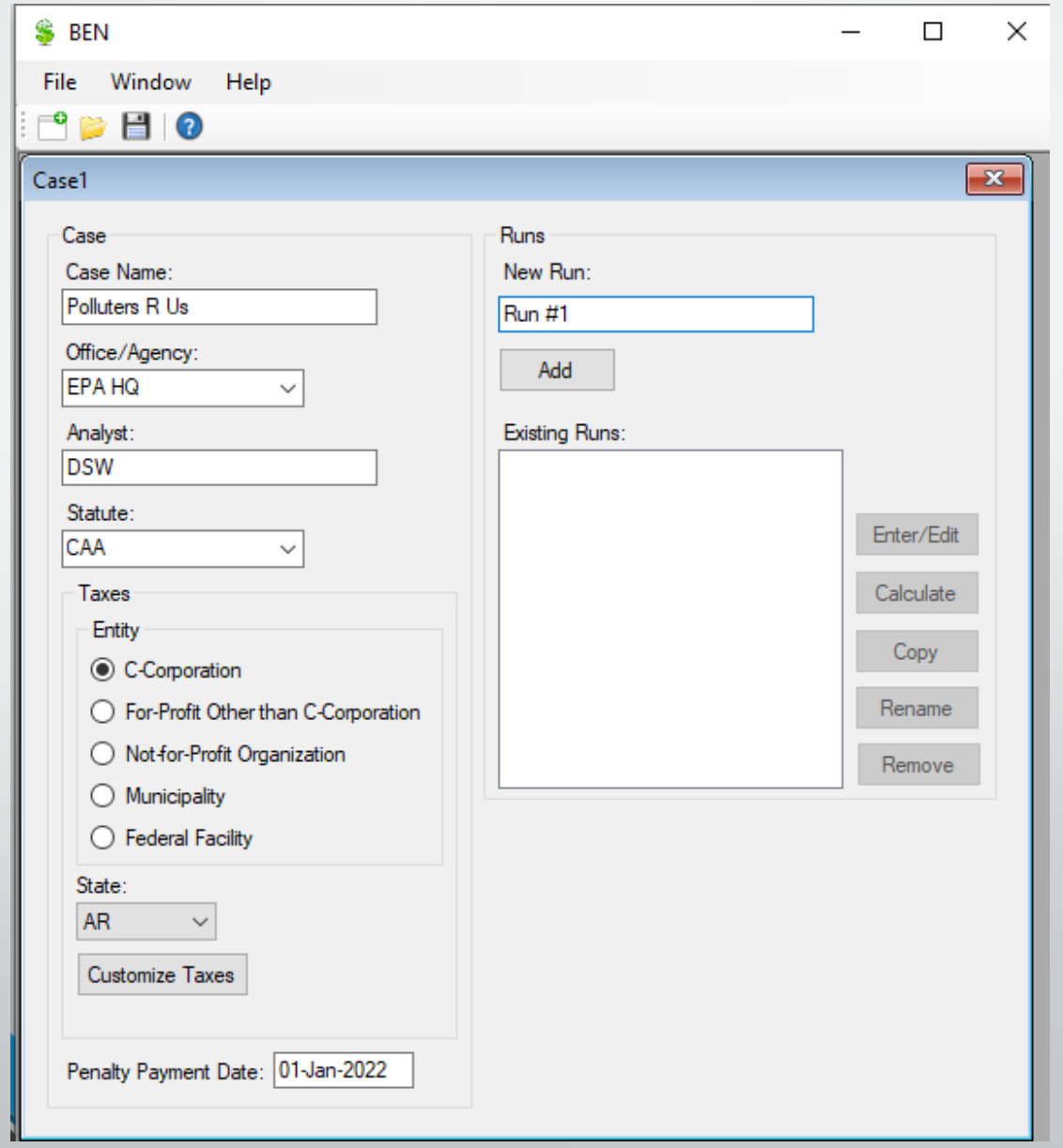
- Second, calculate the Delay Cost as of the non-compliance date by accounting for the time value of money: Adjust the $1.1 million expenditure as of Year 5 to present value dollars as of Year 0 (B) using the violator's discount rate.
- Third, calculate the economic benefit as of the non-compliance date: The economic benefit as of Year 0 (D) is the difference between the on-time and delay scenario present values (A – B).

Simplification of What the BEN Model Does – Step 4

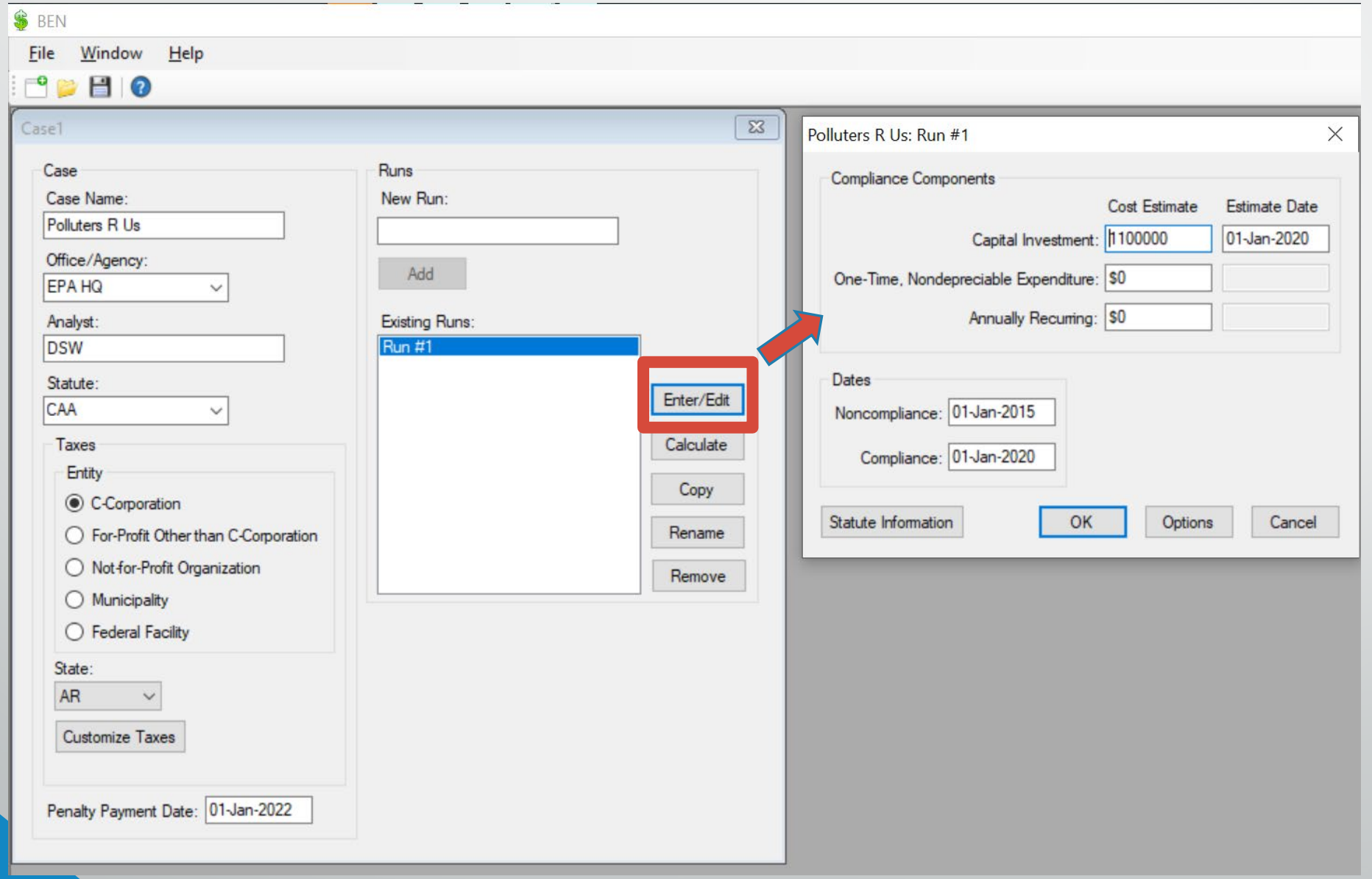


Questions?

Using BEN – Main Screen

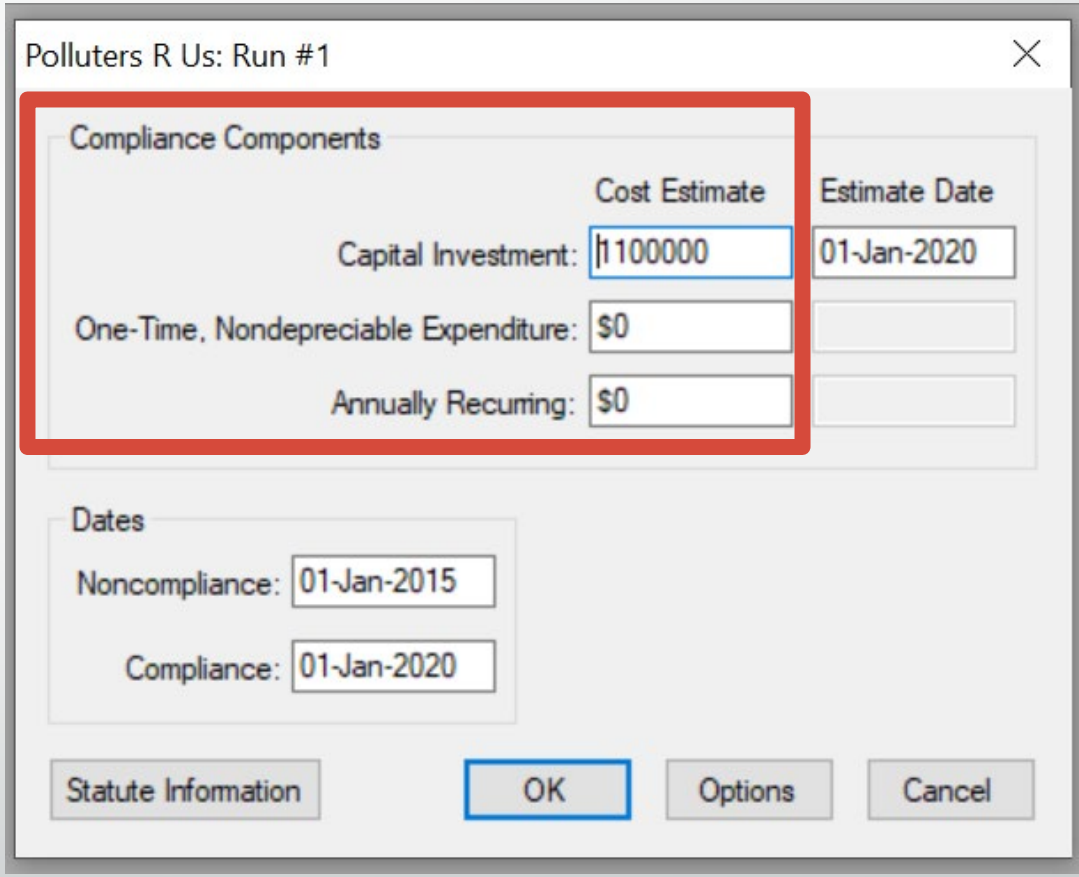


Add a "Run" to Input Data



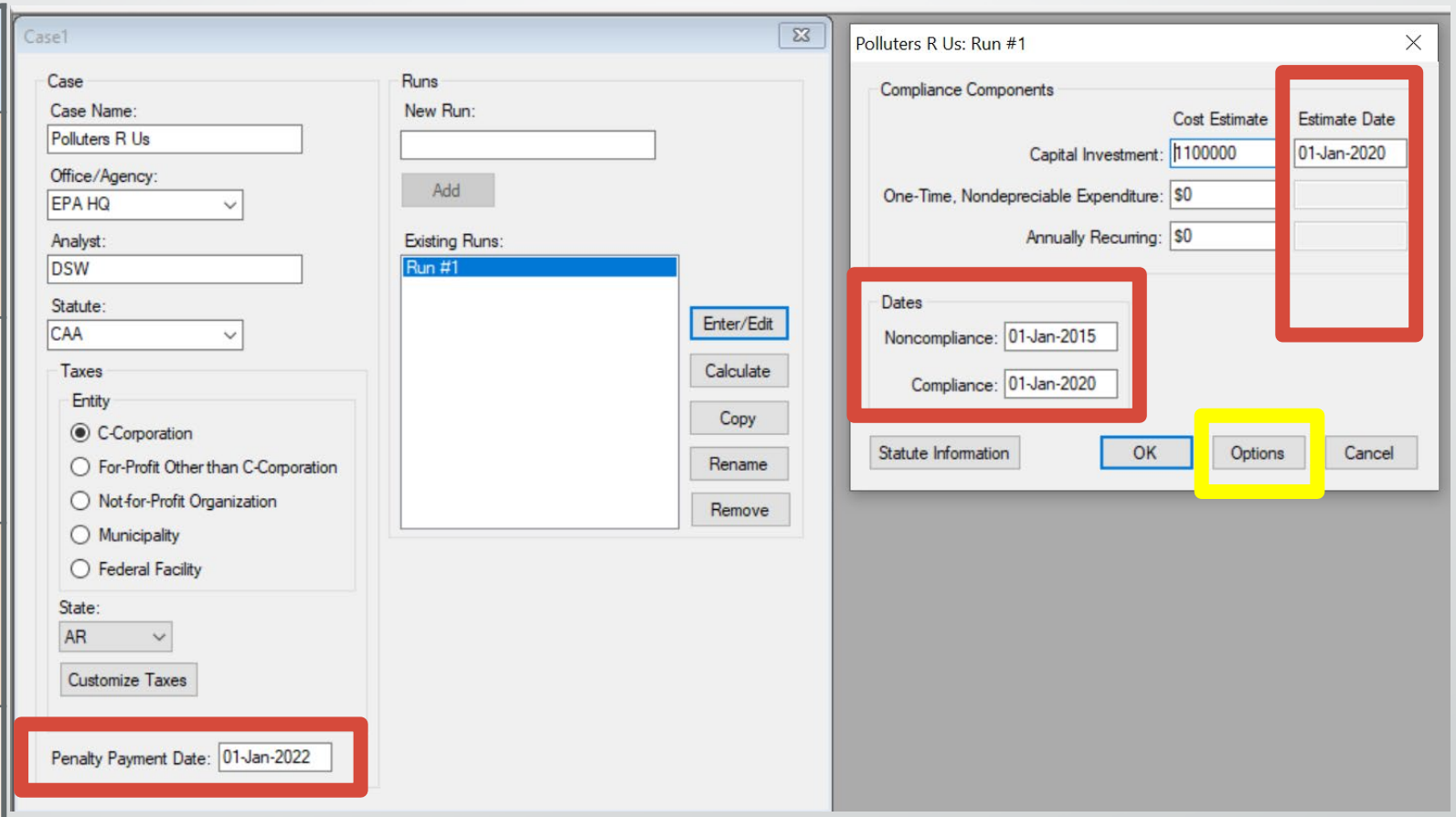
Input Data - Compliance Costs

Types of Compliance Costs	Description	Examples
Capital Investment	The cost of designing, purchasing, and installing the pollution control equipment (things that wear out).	• Buildings • Equipment
One-Time Nondepreciable Expenditure	Expenditures that need to be made only once and are non-depreciable (things that don't wear out).	• Land • Disposal • Staff Costs
Annually Recurring Costs	The average annual incremental cost of operating and/or maintaining the required pollution control measures.	• Labor • Materials

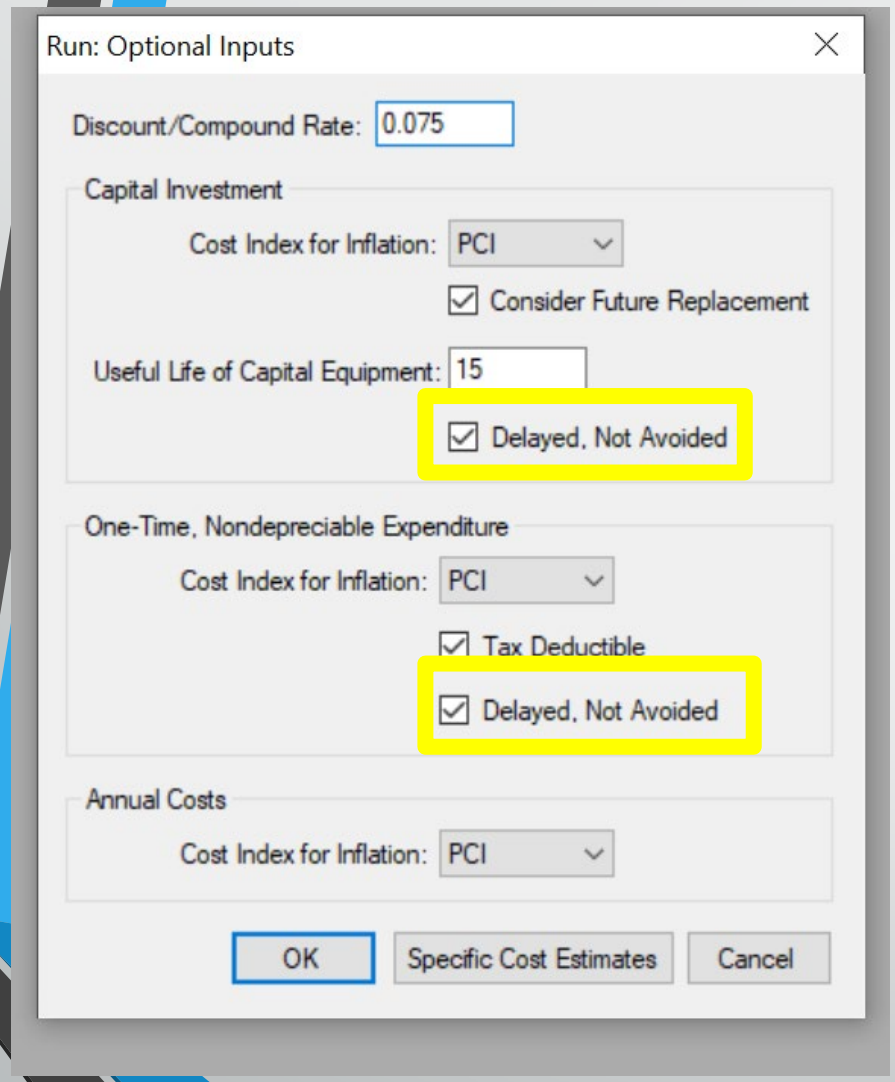


Input Data - Dates

Dates	Description
Cost Estimate Dates	When the reported compliance costs were estimated.
Noncompliance Date	When the Respondent should have spent the money.
Compliance Date	When the Respondent actually spent the money.
Penalty Payment Date	When the Respondent will pay the penalty.



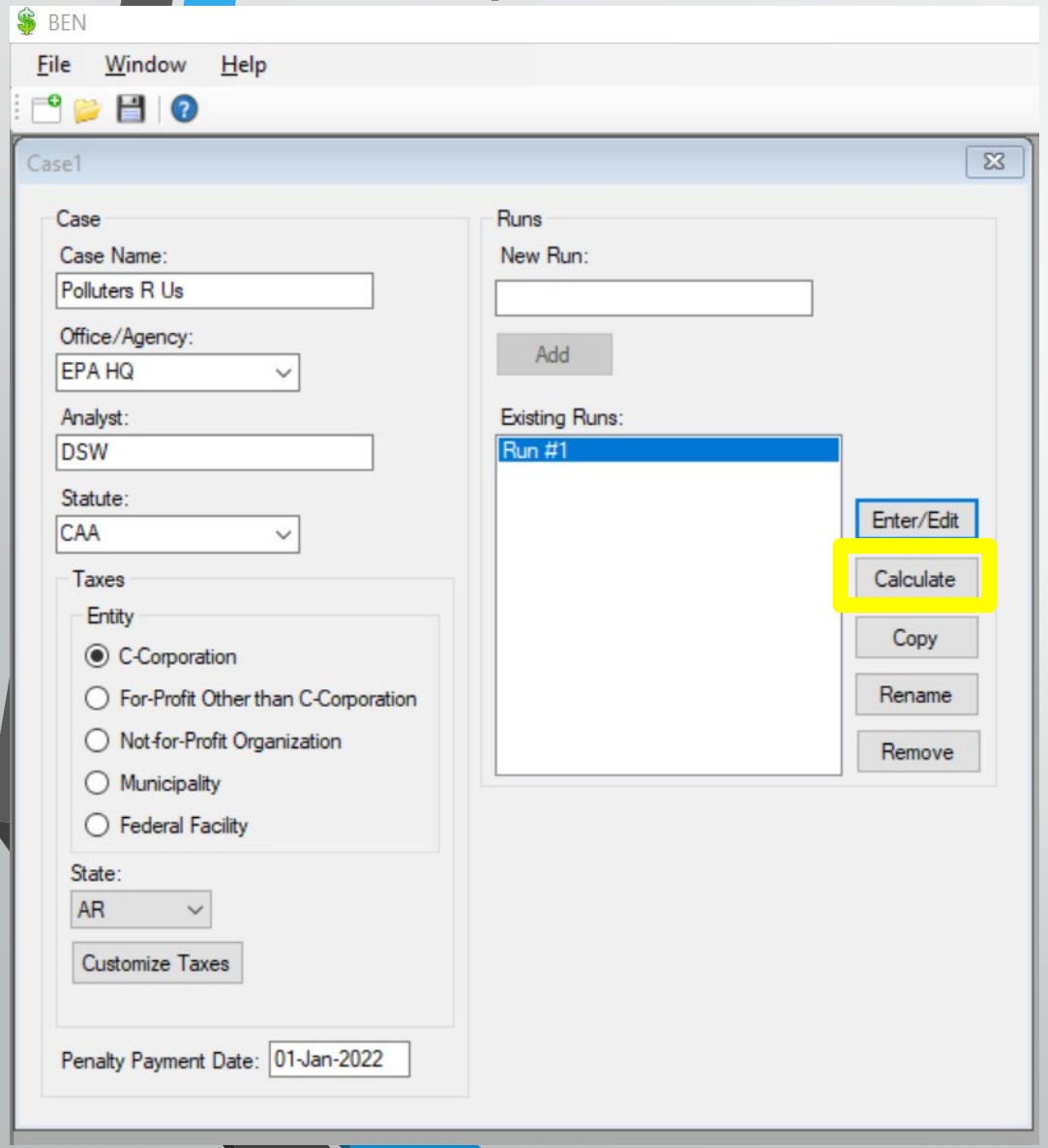
Input Data – Optional Run Inputs

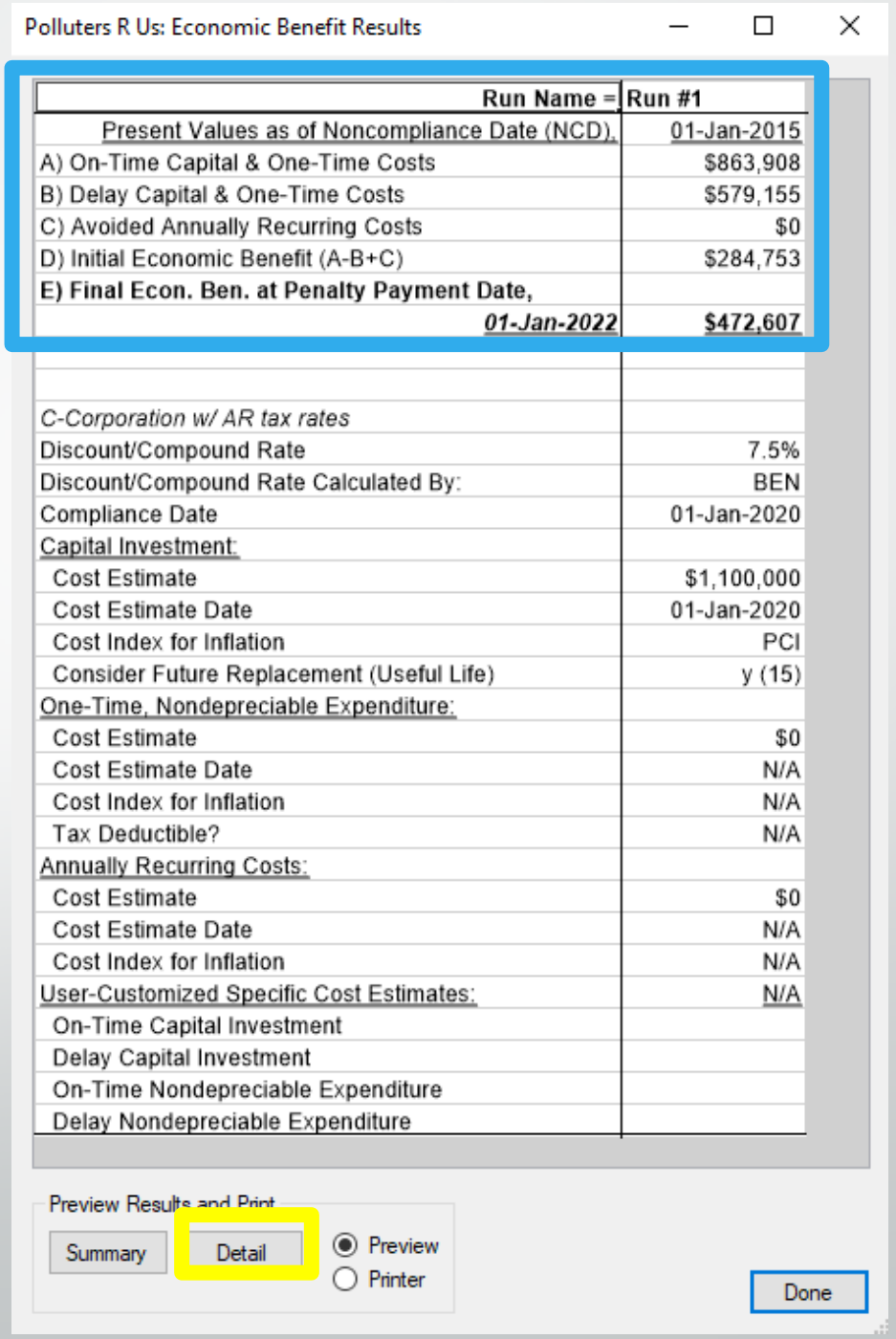


Cost Indices:

Abbr	Name	Description
PCI	Plant Cost Index	• Appropriate for general industrial process equipment. • Default inflation index for BEN; good fit for most BEN cases.
2.5%	2.5 Percent	• Assumes constant annual inflation rate of 2.5%.
CCI	Construction Cost Index	• Appropriate for general construction costs, especially where labor costs are a high proportion of total costs.
ECI	Employment Cost Index	• Appropriate for one-time nondepreciable expenditures or annual costs that comprise mainly labor.
GDP	Gross Domestic Product Implicit Price Deflator	• Appropriate for general expenses that affect multiple sectors of the economy (e.g., labor and construction).
PPI	Producer Price Index for Finished Goods	• Also appropriate for general expenses that affect multiple sectors of the economy (e.g., labor and construction).

Calculate & Interpret BEN Results



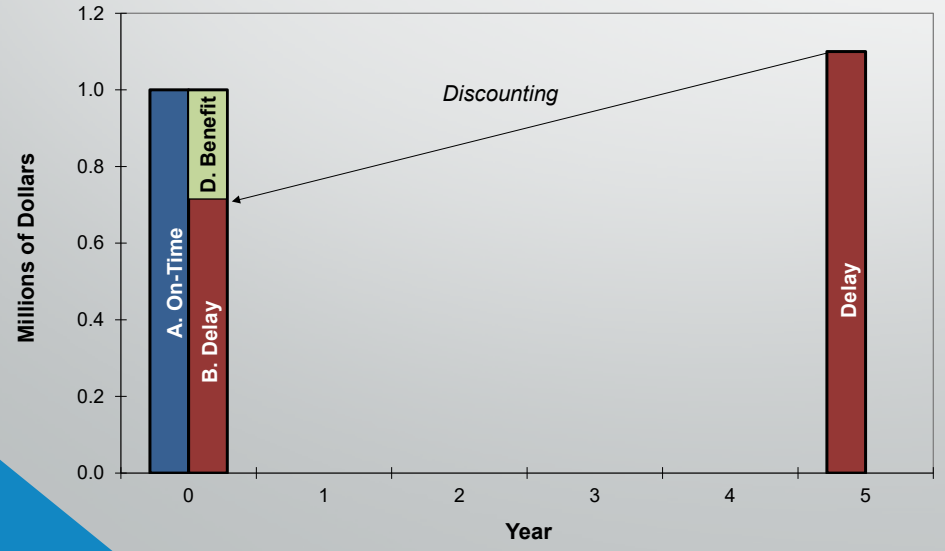


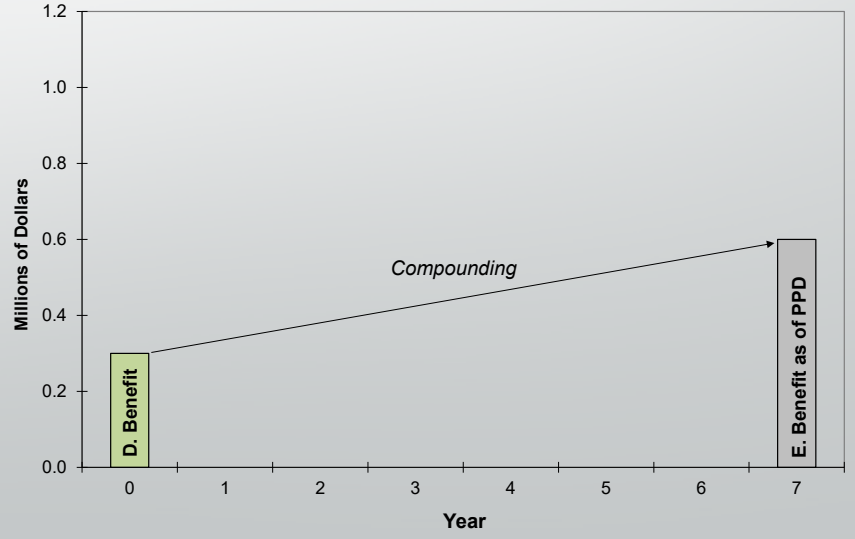
Calculate & Interpret Ben Results

Polluters R Us: Economic Benefit Results

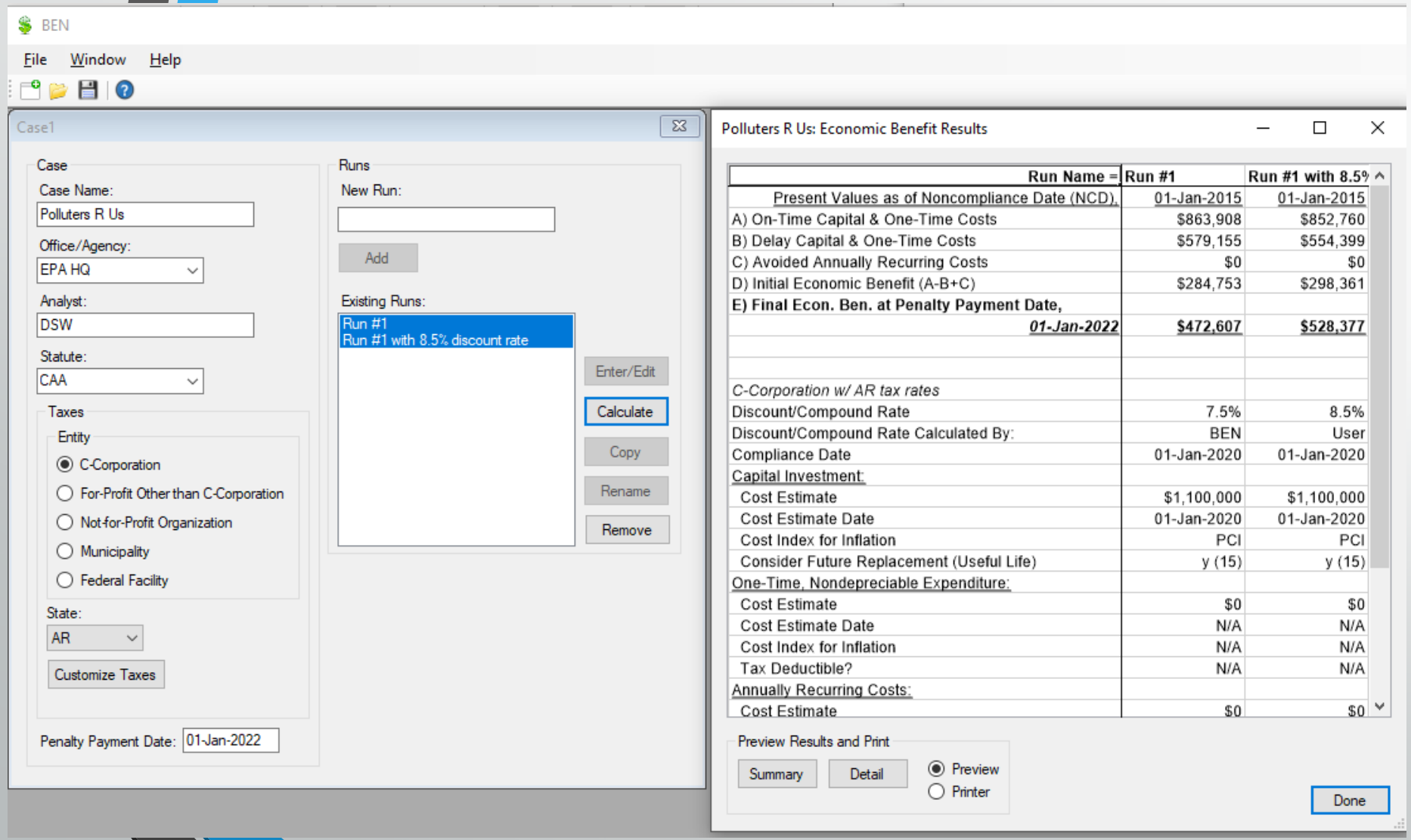
Run Name =	Run #1
Present Values as of Noncompliance Date (NCD),	01-Jan-2015
A) On-Time Capital & One-Time Costs	$863,908
B) Delay Capital & One-Time Costs	$579,155
C) Avoided Annually Recurring Costs	$0
D) Initial Economic Benefit (A-B+C)	$284,753
E) Final Econ. Ben. at Penalty Payment Date, 01-Jan-2022	$472,607

* Note that numbers are different from previous hypothetical.



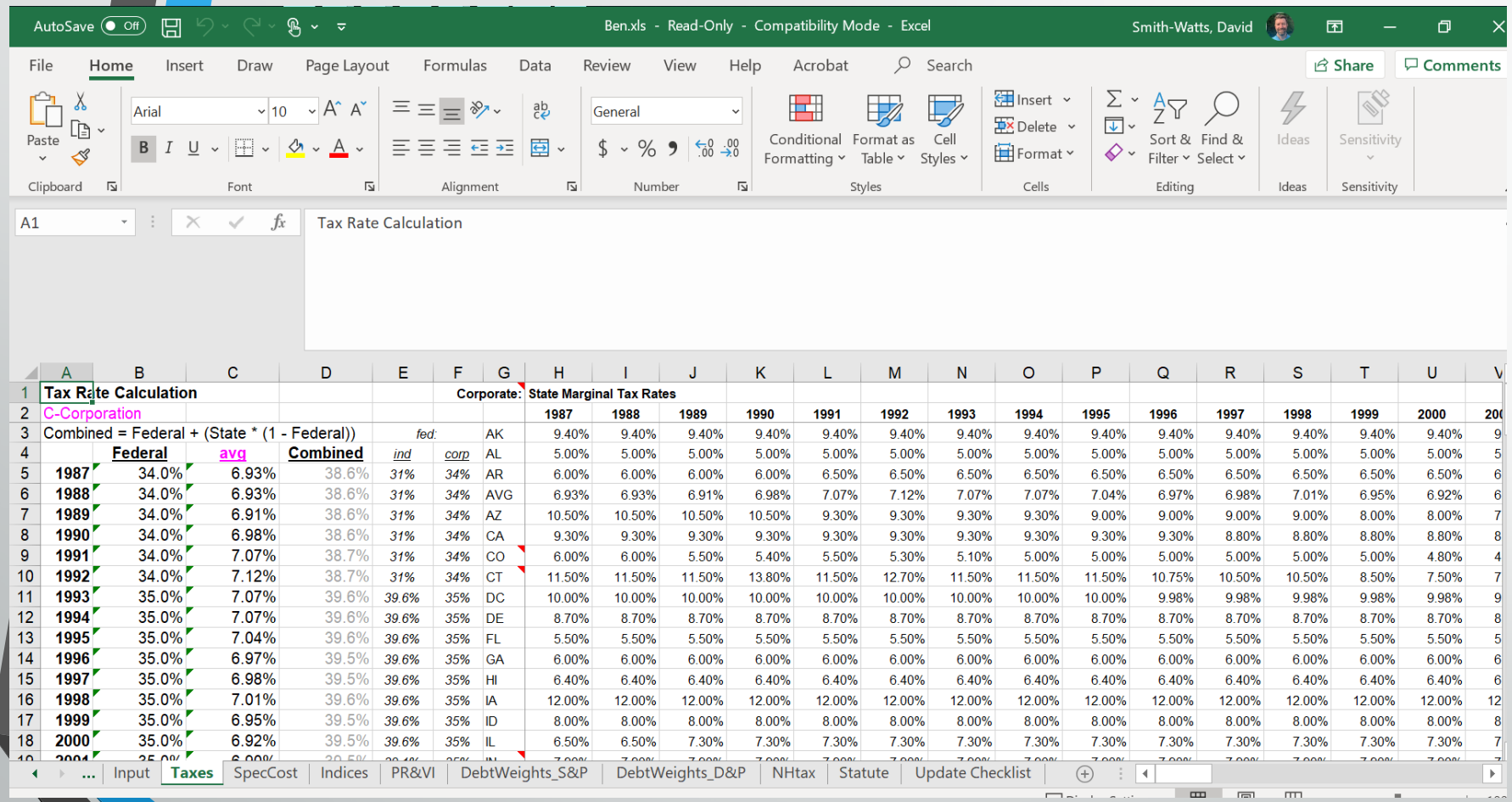


Doing Multiple "Runs"



- How will changing the discount rate effect the calculation?
- First, highlight the run and select "copy"
- Then rename the copied run
- Change discount rate
- Then highlight both runs by holding the shift key and click on the runs
- Then select calculate

Finding BEN's Internal Metrics



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	**Tax Rate Calculation**						Corporate:	**State Marginal Tax Rates**													
2	C-Corporation							1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
3	Combined = Federal + (State * (1 - Federal))				fed:		AK	9.40%	9.40%	9.40%	9.40%	9.40%	9.40%	9.40%	9.40%	9.40%	9.40%	9.40%	9.40%	9.40%	9.40%
4		**Federal**	**avg**	**Combined**	*ind*	*corp*	AL	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
5	**1987**	34.0%	6.93%	38.6%	*31%*	*34%*	AR	6.00%	6.00%	6.00%	6.00%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%	6.50%
6	**1988**	34.0%	6.93%	38.6%	*31%*	*34%*	AVG	6.93%	6.93%	6.91%	6.98%	7.07%	7.12%	7.07%	7.07%	7.04%	6.97%	6.98%	7.01%	6.95%	6.92%
7	**1989**	34.0%	6.91%	38.6%	*31%*	*34%*	AZ	10.50%	10.50%	10.50%	10.50%	9.30%	9.30%	9.30%	9.30%	9.00%	9.00%	9.00%	9.00%	8.00%	8.00%
8	**1990**	34.0%	6.98%	38.6%	*31%*	*34%*	CA	9.30%	9.30%	9.30%	9.30%	9.30%	9.30%	9.30%	9.30%	9.30%	9.30%	8.80%	8.80%	8.80%	8.80%
9	**1991**	34.0%	7.07%	38.7%	*31%*	*34%*	CO	6.00%	6.00%	5.50%	5.40%	5.50%	5.30%	5.10%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	4.80%
10	**1992**	34.0%	7.12%	38.7%	*31%*	*34%*	CT	11.50%	11.50%	11.50%	13.80%	11.50%	12.70%	11.50%	11.50%	11.50%	10.75%	10.50%	10.50%	8.50%	7.50%
11	**1993**	35.0%	7.07%	39.6%	*39.6%*	*35%*	DC	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	9.98%	9.98%	9.98%	9.98%	9.98%
12	**1994**	35.0%	7.07%	39.6%	*39.6%*	*35%*	DE	8.70%	8.70%	8.70%	8.70%	8.70%	8.70%	8.70%	8.70%	8.70%	8.70%	8.70%	8.70%	8.70%	8.70%
13	**1995**	35.0%	7.04%	39.6%	*39.6%*	*35%*	FL	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%
14	**1996**	35.0%	6.97%	39.5%	*39.6%*	*35%*	GA	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%
15	**1997**	35.0%	6.98%	39.5%	*39.6%*	*35%*	HI	6.40%	6.40%	6.40%	6.40%	6.40%	6.40%	6.40%	6.40%	6.40%	6.40%	6.40%	6.40%	6.40%	6.40%
16	**1998**	35.0%	7.01%	39.6%	*39.6%*	*35%*	IA	12.00%	12.00%	12.00%	12.00%	12.00%	12.00%	12.00%	12.00%	12.00%	12.00%	12.00%	12.00%	12.00%	12.00%
17	**1999**	35.0%	6.95%	39.5%	*39.6%*	*35%*	ID	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%
18	**2000**	35.0%	6.92%	39.5%	*39.6%*	*35%*	IL	6.50%	6.50%	7.30%	7.30%	7.30%	7.30%	7.30%	7.30%	7.30%	7.30%	7.30%	7.30%	7.30%	7.30%

- On your computer go to *C:\Program Files (x86)\EPA Enforcement Economic Models\BEN*
- These are the internal files for BEN.
- Screenshot shows taxes
- View or save in another location on your computer ***BUT DON'T ALTER*** in current location as it will alter BEN

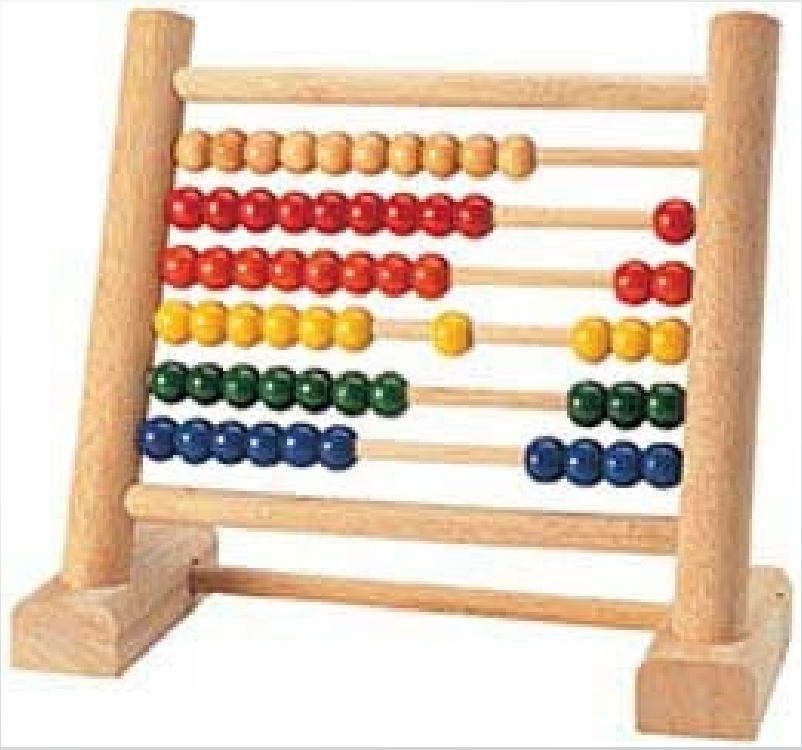
Questions?

Wrongful Profits

- Third type of economic benefit besides delayed costs and avoided costs
- Additional revenue gained through noncompliance
- AKA, illegal profits, beyond BEN, illegal competitive advantage, competitive advantage, etc.
- Examples:
  - Selling banned products
  - Selling products for banned uses
  - Selling products without required labeling or warnings
  - Selling products without required regulatory clearance
  - Removing or altering pollution control equipment for a fee
- Generally, with delayed/avoided costs, party should have done something but didn't to comply; with wrongful profits, party took action causing its noncompliance

Wrongful Profit Calculations

- Cannot use the BEN model for wrongful profit calculations
  - When calculating wrongful profits, the revenue in the *noncompliant, actual* scenario is different than the *compliant, hypothetical* scenario. BEN assumes revenue is the same because it enables us to evaluate cash flows from different time periods in one specific date.
- Need independent calculation
- Basic equation is (Profit = Revenue – Cost)
- Can be complex: $\pi(L = 0) = P_1(y_1^* + s_1, Q_1)(y_1^* + s_1) + P_2(y_2^* + s_2, Q_2)(y_2^* + s_2) - C(y_1^*, y_2^*, s_1, s_2, L = 0)$
- If complex, ask a financial analyst for assistance



Questions?

Tips & Strategic Considerations

- Try not to get frustrated when determining inputs in an actual case, can be tricky
- The analytic standard for calculating economic benefit is a "reasonable approximation"
- Reference previous case examples if you get confused about what BEN does
- BEN is amoral - you may not have large EcBen result and that's ok
- Negative results happen - that means the EcBen is $0

Tips & Strategic Considerations (continued)

- Do multiple BEN runs for multiple violations or when trying to understand how inputs effect calculation
- Companies know their discount rate
- Accept using alternative rates (e.g., discount, inflation, tax) only if makes sense

Economic Benefit Authority

- Know where your authority to collect EcBen comes from
- Many statutes say EPA "shall take into account" or "shall consider" EcBen
- RCRA is silent on EcBen
- EcBen in RCRA cases comes from EPA General Enforcement Policies GM#21 and GM#22 from 1984 and also from EPA's 2003 RCRA Civil Penalty Policy

BEN in Hearing/Trial – Be Cautious!

- In general, EPA case teams are not obligated to use BEN but are strongly encouraged
- BEN has been used in hearings and trial, especially when both parties agree to it
- However, a witness needs to explain the BEN calculations from start to finish
- If the witness cannot explain the EcBen calculation in BEN, then the witness needs to perform and explain the calculation outside of BEN (i.e., use an Excel spreadsheet)

In re VSS International, Inc. (Sept. 16, 2020)

- EPA case team submitted BEN model results page to an administrative court showing the Respondent owed $28,159 for its economic benefit penalty
- The Judge noted in her decision that the EPA case team did not explain the full calculation in the BEN model, and therefore, "the Agency's economic benefit calculation falls short"
- Ultimately, the Judge found enough information in the record to support EPA's economic benefit figure
- Lesson learned: don't just submit a piece of the calculation, the case team or an expert needs to explain the EcBen calculation from start to finish

Questions?

Economic Benefit & BEN Resources

- BEN "Help System"
  - PDF document and information built into model
  - Covers BEN's economic principles, input instructions, calculations, etc.
  - Access by opening BEN, selecting "Help" at the top, then selecting "View Help" or "View Help as PDF"
  - Specific topics can be searched in "View Help as PDF" (i.e., Ctrl F)
- Federal register notices when the BEN model was being developed:
    - 61 FR 53026 (October 9, 1996)
    - 64 FR 32948 (June 18, 1999)
    - 70 FR 50326 (August 26, 2005)
- EPA General Enforcement Policies GM#21 and GM#22 from 1984 – foundation for media specific penalty policies
- EPA's 2003 RCRA Civil Penalty Policy

Economic Benefit & BEN Resources (continued)

- Contact Industrial Economics (IEc) on EPA's Helpline
  - Call 888-326-6778 or email benabel@indecon.com
  - Five hours of FREE support to every EPA and state case team
  - Helpline can answer basic questions (i.e., how to download BEN model) to complex questions (i.e., what is the approximate discount rate of a dry cleaners with yearly revenue of $1.2 million)
  - Helpline can answer hypothetical case questions but cannot calculate EcBen in actual cases using a party's information
  - Industrial Economics is EPA's financial analysis contractor

Economic Benefit & BEN Resources (continued!)

- Email David Smith-Watts to be added to the "EPA & States Financial & Penalty Analysis Monthly Call"
- Recorded trainings on FedTalent for EPA and states:
  - "The BEN Model" Course = https://epafedtalent.ibc.doi.gov/course/view.php?id=12227
  - Advanced BEN Model Training" Course = https://epafedtalent.ibc.doi.gov/course/view.php?id=12234
  - Contact David Smith-Watts if you need assistance accessing trainings
- Download BEN model on EPA's website or Industrial Economic's website (EPA financial analysis contractor)
- Contact David Smith-Watts with questions
  - Smith-watts.David@epa.gov
  - 202-564-4083

Questions?

EcBen Application in RCRA Cases: Topics

- De Minimis or Insignificant EcBen Amounts
- Finding and Inputting Cost Information into BEN
- Modifying Cost Information
- High and Low EcBen Results
- Documenting Your EcBen Calculations

De Minimis or Significant Threshold

- De minimis or insignificant EcBen amounts do not need to be pursued by EPA case teams
- EPA General Enforcement Policies GM#21 and GM#22 from 1984 states that EPA case teams have discretion to seek or not seek EcBen amounts lower than $10,000 (see page 14 of the PDF)
- ***However***, the 2003 RCRA Civil Penalty Policy further refined the threshold for RCRA cases… (see next slide)
- Check your state penalty policies!

De Minimis or Significant Threshold - From the 2003 RCRA Civil Penalty Policy

When the gravity-based and multi-day total penalty is:	EBN should be pursued if it totals:
$30,000 or less	at least $3,000
$30,001 to $49,999	at least 10% of the proposed penalty
$50,000 or more	$5,000 or more

From page 28 of the RCRA policy or page 35 of the PDF

Finding & Inputting Cost Information Into BEN

- Calculating capital costs, one-time expenditures, and annual costs can be challenging
- Remember, you need a "reasonable approximation"
- Ask the violating party about costs
- Talk to colleagues in your state, other states, and at U.S. EPA
- Reference materials:
  - "Unit Cost Compendium – Data & Algorithms for Estimating Costs Associated with 'Cradle-to-Grave' Management of RCRA Solid and Hazardous Wastes"
  - Cost Reports and Guidance for Air Pollution Regulations
  - Labor rates
  - GSA rates for an environmental contractor

Modifying Cost Information Before Inputting in BEN

- Cost information from past cases or reference materials may be outdated
- Might be appropriate to incorporate inflation. For instance, could use this calculator which is based on the Consumer Price Index (CPI) for inflation
- Important to understand particular industry to see if certain equipment or technology is now obsolete

RCRA Violations with Generally Lower EcBen

- Open container violations
- Container labeling violations
- No weekly inspections violations
- RCRA training violations
- Contingency Plan updates violations
- Aisle space violations
- Storage of incompatibles violations
- >55-gallons in a satellite accumulation area violations

RCRA Violations with Generally Higher EcBen

- Hazardous waste identification violations
- Illegal disposal/dumping violations
- Speculative accumulation violations
- Leak detection and repair violations
- Storing >90-days violations
- Treatment without a permit violations
- RCRA tank requirement violations
- Failure to minimize releases violations

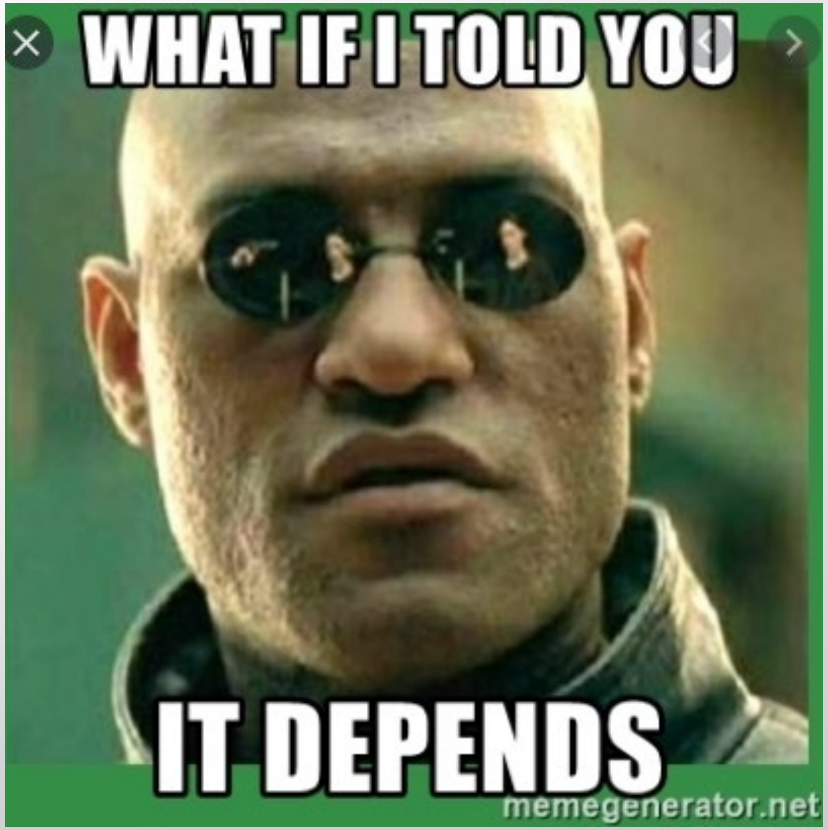
(State-only violations for secondary containment, closure plans…)

RCRA Violations with Likely Larger EcBen mentioned in EPA's RCRA Civil Penalty Policy

- *"The following are examples of regulatory areas for which violations are likely to result in significant economic benefits: groundwater monitoring, financial requirements, closure/post-closure, surface impoundment retrofitting, improper land disposal of restricted waste, clean-up of discharges, Part B permit application submittals, and minimum technology requirements." – Page 28*

Is My RCRA Violation Above or Below the De Minimis/Insignificant Threshold?

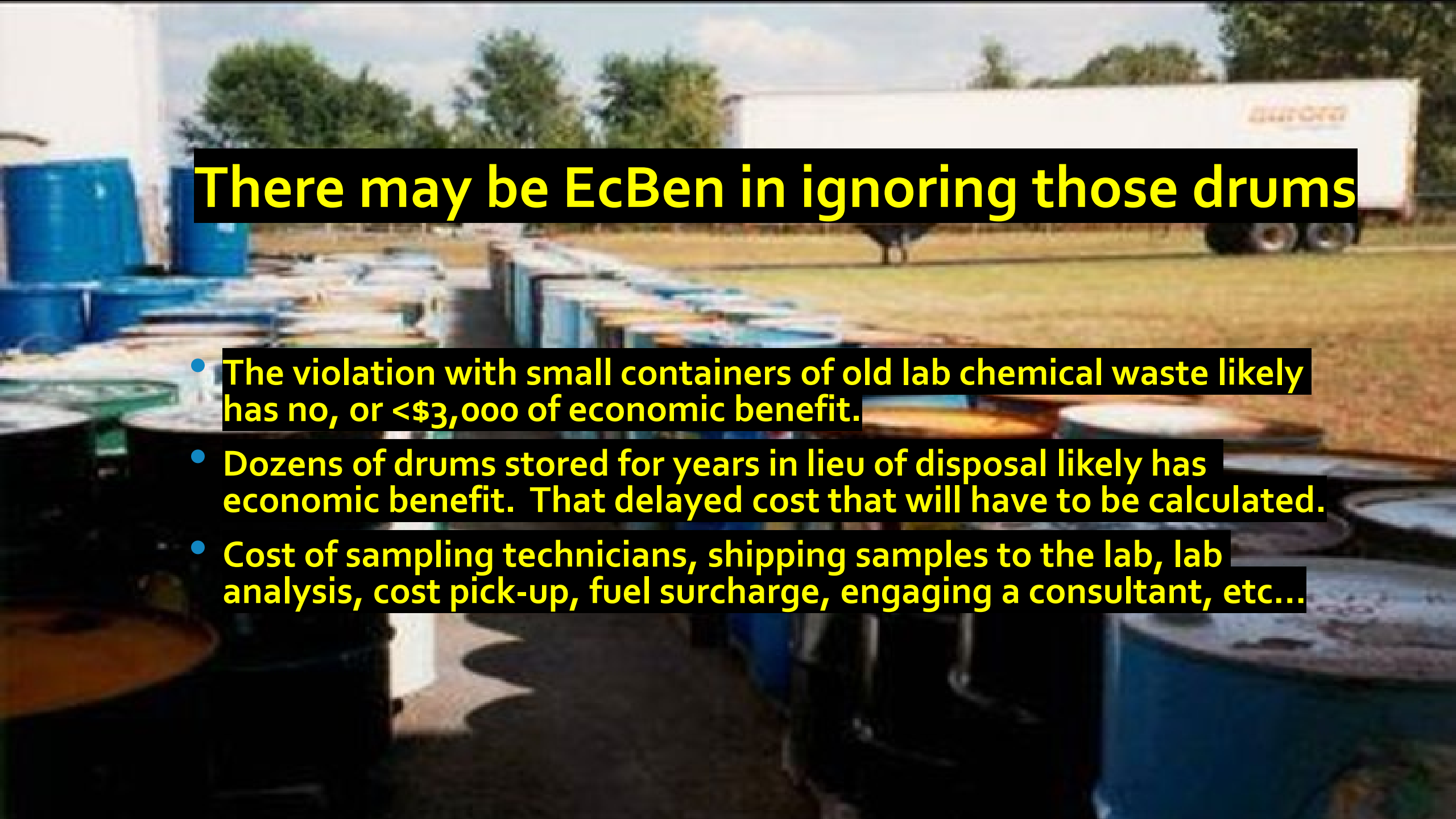
- Of course, "it depends" on the facts of the case
- Need to calculate EcBen based on those facts



Example - EcBen in a Failure to Make a Hazardous Waste Determination Violation

- How many containers of unknowns, can they use knowledge, or do they need to sample and get lab results, TCLP ($) or fingerprinting?

This? - or - This?



There may be EcBen in ignoring those drums

- The violation with small containers of old lab chemical waste likely has no, or <$3,000 of economic benefit.
- Dozens of drums stored for years in lieu of disposal likely has economic benefit. That delayed cost that will have to be calculated.
- Cost of sampling technicians, shipping samples to the lab, lab analysis, cost pick-up, fuel surcharge, engaging a consultant, etc…

Web search for costs related to this violation

PARAMETER	PRICE
FULL TCLP (Toxicity Characteristic Leachate Procedure):	$765.00
VOLATILES - 8260	80.00
SEMIVOLATILES - 8270	300.00
PESTICIDES and HERBICIDES	200.00
METALS (As, Ba, Cd, Cr, Pb, Hg, Se, Ag)	135.00
TCLP EXTRACTION (per sample)	50.00
RCI (Reactivity, Corrosivity, Ignitability):	115.00
REACTIVITY (Releasable Sulfides and Cyanides)	65.00
CORROSIVITY (pH)	20.00
IGNITABILITY (Flashpoint)	30.00

- Lab in Pacific Northwest with published prices: https://www.anateklabs.com/hazardous-waste-analyses-pricing/
- Lab in the Southwest with published prices: http://www.satestinglab.com/PDFs/Price%20List%202018.pdf
- Lab in Midwest with published prices: http://midwestanalytical.com/services_price_list.html

Example - EcBeN in a Failure to maintain a LDAR program Violation

- How many monitoring points, purchase and maintain the instruments or contract the service?

This? - or - This?

There may be EBN at a site that has numerous monitoring points

- The violation at a solvent recovery still likely has no, or <$3,000 of economic benefit. (The instruments are expensive though)
- There is an initial cost and a recurring cost

Source: Environmental Defense Fund Comments on EPA's Proposed Rule for Oil and Natural Gas Sector

Appendix 1: Detailed Critique of API Cost Estimates

One-time Costs per Company		EPA	API	Comments
LABOR	Read Rules	$231	$231	
	Develop Corporate Monitoring Plan	$3,468	$7,200	
	Activities Planning	$1,850	$1,850	
	Notify of Initial Compliance Status	$1,272	$1,272	
	OGI certification training	$0	$2,000	EPA implicitly includes in thi
CAPITAL PURCHASE	OGI Camera		$95,000	EPA implictly includes camer contractor). API assumes 176 sites x 4 hr/site x 2)- this is l company buys their own.
	OGI data Mangement System		$225,000	EPA implicitly includes this c Rebellion confirms its site-le services.[1]
	M21 Data Collection System	$10,800	$10,800	
	TOTAL	**$17,620**	**$343,352**	

Documenting Your EcBen Calculations

- Regardless of calculated EcBen amount, document your calculation in your case file!
  - Summarize the violation
  - Explain whether you used the BEN model or not
  - Explain the inputs you used
  - State the calculated amount
  - Explain how the amount was resolved
  - Overall, make sure to tell the story
- GM-22 at 27 states, "[T]o promote consistency, it is essential that each case file contain a complete description of how each penalty was developed."
- See also Documenting Penalty Calculations and Justifications in EPA Enforcement Actions, James M. Strock (Aug. 9, 1990)(Strock Memo)

Done.
Questions?