

**EXPERT OPINION
on
Economic Benefit
and
Economic Impact**

In:

**Suncoast Waterkeeper,
Our Children's Earth Foundation, and
Ecological Rights Foundation**

v.

City of St. Petersburg

United States District Court
Middle District of Florida
Tampa Division
Case No. 8:16-cv-03319-JDW-AEP

Submitted on:
May 18, 2018

Expert Report of:
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Expert Opinion of Jonathan S. Shefftz

**Economic Benefit of Noncompliance
and**

Economic Impact of Penalty Payment and Injunctive Relief Costs

May 18, 2018

1. Summary of Opinion

I have been asked by counsel for Plaintiffs Suncoast Waterkeeper, Our Children's Earth Foundation, and Ecological Rights Foundation in this matter to provide an expert analysis of financial economic factors relevant to the setting of a civil penalty and the determination of injunctive relief: specifically, the economic benefit of environmental regulatory noncompliance that potentially accrued to Defendant City of St. Petersburg, and the economic impact on Defendant of a penalty payment and injunctive relief.

My opinion is as follows:

- Based on my analysis of compliance measures and associated cost estimates that have been identified both by the City and by Plaintiffs' engineering expert, the City's economic benefit from failing to implement these measures at an earlier point in time is approximately \$17.4 million.
- My economic benefit results are present value figures calculated as of May 18, 2018 (i.e., the date of this report). Therefore the economic benefit will continue to grow after this date until the City effectively pays back its economic benefit in the form of a civil penalty. Specifically, for a trial date of November of 2018, and a judicial decision in February of 2019, the economic benefit by then would be approximately \$17.8 million.
- For the economic impact of a penalty payment and injunctive relief costs, the City's overall recent financial performance has been strong, with millions of dollars currently available from both the General Fund and the sewer-related Enterprise Fund to pay a penalty potentially. A comparison of the City's sewer rates to other Florida systems reveals that St. Petersburg is still roughly in the middle even after a substantial increase for 2018. And the U.S. Environmental Protection Agency's sewer overflow financial capability

assessment places St. Petersburg only in the “medium burden” category even with future projected rate increases. The City is still in the “medium burden” category with the additional costs of the compliance measures identified by Plaintiffs’ engineering expert and the imposition of a large civil penalty.

- For civil penalties to achieve financial deterrence, their value must substantially exceed the economic benefit that Defendants in environmental enforcement actions can realize by delaying and/or avoiding adequate pollution control. Because not all violations are detected, prosecuted, and ultimately penalized, an adequately deterring civil penalty should also be adjusted by probability of detection, prosecution, and ultimate payment, as explained in further detail in my report.

I may revise my opinion as additional information becomes available to me or upon the reconsideration of existing information.

2. Basis for Opinion: Professional Expertise and Materials Considered

My opinion is based broadly on my expertise in financial economic analysis, as further detailed in the Curriculum Vitae included as Attachment A to this report. I hold both undergraduate and graduate degrees with a focus on economics in various contexts. I have been qualified numerous times as an expert witness on various economics matters in U.S. District Court trials and hearings, the U.S. Environmental Protection Agency's Administrative Court hearings, and state courts trials.

My experience with financial analysis of civil penalty issues dates back to 1992, encompassing expert witness casework, computer model development, training of state and federal agency staff, as well as involvement in federal agency public comment and peer review processes.

More specifically, regarding the analysis of financial gain / economic benefit, I have been involved with the periodic revisions and modifications to the U.S. EPA BEN economic benefit computer model since 1992, first as an employee of Industrial Economics, Incorporated ("IEc") and since April 2006 as a subcontractor to IEc. Both federal and state environmental enforcement staff use the BEN model to develop their economic benefit results for penalty determinations. As compared to the case-specific economic benefit analysis that I have performed for this report, the BEN model performs essentially the same calculations from a conceptual viewpoint, but in a more routine and somewhat more constrained manner, so as to be amenable to financial laypersons.

In 1998, I managed IEc's development (under contract to EPA) of an entirely new version of the model for the Windows operating system (which was based largely upon the spreadsheet that I typically used for my case-specific economic benefit calculations). Since then, I have continued to work on all aspects of IEc's support to EPA on the BEN model, encompassing researching relevant tax code changes, implementing new features, supervising a helpline that assists EPA and state environmental agencies, managing academic peer reviews, assisting in public comment processes and outside reviews, developing training course materials, and even typing in individual formulas. I have also created foreign versions of the BEN model for Canada, Chile, and El Salvador. And I have published articles on the subject matter (both concerning the BEN model, and related economic benefit issues).

Regarding the assessment of the ability to pay for environmental expenditures and the economic impact of penalty amounts, I have been involved with the periodic revisions and modifications to the EPA's ABEL, INDIPAY, and MUNIPAY ability-to-pay computer models since 1992, first as an employee of IEc and since April 2006 as a subcontractor to IEc. Both federal and state environmental enforcement staff use these models to assess the ability of companies, individuals, and municipalities to afford penalties, Superfund cleanup costs, and other environmental expenditures. I managed IEc's development (under contract to EPA) of the current versions of these models for the Windows operating system. Since then, as with the BEN model, I have continued to work on all aspects of IEc's support to EPA on these models, encompassing researching relevant tax code changes, implementing new features, supervising a helpline that assists EPA and state

environmental agencies, developing training course materials, and even typing in individual formulas.

Specifically for this case, I have:

- Reviewed legal filings in this case, including the Second Amended Complaint (filed January 26, 2017) and Joint Motion for Entry of Stipulated Order Modifying Case Management and Scheduling Order (filed April 3, 2018).
- Reviewed various documents provided to me by Plaintiff, including the City's Consent Order Tracking Sheet prepared for the Florida Department of Environmental Protection (revised July 26, 2017, with a transmittal email dated October 20, 2017 also incorporating earlier email exchanges, St0071223 - St0071227) and the video of the presentation provided to the City Council on April 19, 2018 by the Administrator of Public Works, Claude D. Tankersley, P.E.
- Reviewed publicly available financial documentation for the City, including the annually produced Popular Annual Financial Report, Comprehensive Annual Financial Report, Debt Supplement Report, and Budget, all for the years covered by my economic benefit analysis.
- Reviewed agendas and incorporated reports from City Council meetings, in particular the *Utility Rate Discussion* presented at the Budget, Finance and Taxation (“BFT”) Committee meeting for November 9, 2017, and the *FY2018 Utility Rate Studies* memorandum presented at the City Council meeting for December 7, 2017 (St0089859 - St0089877).
- Reviewed various resources concerning wastewater rates and their affordability, in particular the U.S. Environmental Protection Agency (“EPA”) *Combined Sewer Overflows – Guidance for Financial Capability Assessment and Schedule Development* guidance document (February 1997), Raftelis Financial Consultants, Inc. *2016 Florida Water and Wastewater Rate Survey* publication, the University of North Carolina Environmental Finance Center *Florida Water And Wastewater Rates Dashboard* on-line database tool (incorporating the Raftelis survey information), and the State of Florida Auditor General *Financial Condition Assessment Procedures* web pages and accompanying spreadsheets.
- Reviewed newspaper articles on St. Petersburg’s sewage issues in the Tampa Bay Times.

- Discussed certain aspects of the case with Plaintiffs' counsel, and received compliance-related costs estimates from Plaintiffs' engineering expert.
- Conducted independent research for various economic inputs (e.g., interest rates, inflation rates), as cited specifically throughout my report.

Further details on my background and experience follow the main body of this report in the form of my Curriculum Vitae as Attachment A, which also includes a list of my publications and public presentations going back at least ten years plus a list of the cases in which I have testified going back at least four years.

3. Basis for Opinion: Financial Gain / Economic Benefit

This section on financial gain / economic benefit covers the following topics:

- a. Case-specific background that gives rise to the potential for economic benefit;
- b. General concepts and adjustments for the probability of detection, prosecution and penalty payment;
- c. Financial economic methodology for the time value of money and present value adjustments;
- d. Financial economic methodology for the underlying basis of the rate used for the present value adjustments;
- e. Financial economic methodology for the calculations and resulting values of the rate used for the present value adjustments;
- f. Case-specific economic benefit inputs; and,
- g. Case-specific economic benefit calculations and results.

a. Case-Specific Background

Plaintiffs' Second Amended Complaint in this matter, filed January 26, 2017, states in part:

St. Petersburg has reported numerous overflows and discharges of raw and/or partially treated sewage from its WRFs and WCTS since September 28, 2011. These overflows and discharges are referred to as sanitary sewer overflows ("SSOs").

My analysis therefore starts with Plaintiffs' position that Defendant has therefore avoided and/or delayed the costs of projects and other measures identified both by the City and by Plaintiffs' engineering expert that might have avoided or limited those SSOs. The economic benefit section of my report estimates the financial gain to Defendant of avoiding and/or delaying spending on such controls.

b. General Concepts and Probability Adjustments

When entities like the Defendant in this case delay and/or avoid undertaking measures that would prevent noncompliance with environmental requirements, an economic benefit can occur

from such delay and/or avoidance. By postponing such measures, a benefit can be realized from delaying investing in capital equipment and/or incurring other costs, from delaying or avoiding operations interruption losses necessitated by upgrades for compliance, and/or from avoiding the payment of certain necessary ongoing costs. Economic benefit is simply a term for the financial gains that accrue through such delayed and/or avoided expenditures. Funds not spent on environmental compliance are available for financially productive economic activities or, alternatively, the costs associated with obtaining additional funds for environmental compliance are avoided.¹

Economic benefit is hence the amount by which entities (such as the City of St. Petersburg in this case) are financially better off as a result of not having complied with environmental requirements in a timely manner. Economic benefit is “no fault” in nature: entities need not have deliberately chosen to delay compliance (for financial or any other reasons) – or in fact even have been aware of the noncompliance – to have accrued the economic benefit of noncompliance.

In situations with for-profit entities, the economic benefit will manifest itself in the form of higher profits (than otherwise would have prevailed had the entity been in compliance during all relevant times). But non-profit entities – whether municipalities in this case or other non-taxable entities whose goal is not profit maximization – can still gain financially from delayed and/or avoided compliance expenditures. Hence the potential for economic benefit to accrue to an entity is not limited to for-profit companies. Even if, say, a municipal government lacks the pressure from investor to provide a financial return, such an entity still faces pressure to minimize tax rates and/or user fees while providing essential municipal services to taxpayers and rate payers.

The economic benefit figure should represent the amount of money that would make a Defendant indifferent between compliance versus noncompliance. Ideally, for penalty-setting purposes the economic benefit result should be adjusted for the probability of detection, prosecution, and ultimate payment. That is, if Defendant in this case knew that for every similar violator the probability of ultimately paying a penalty that recaptured economic benefit was only 25 percent (i.e., one-fourth), then the economic benefit result would have to be multiplied by a factor of four for penalty-setting purposes. As the probability of detection-prosecution-payment declines, then the amount of money proportionately increases that would make the Defendant indifferent between compliance versus noncompliance.

This aspect of penalty setting is so compelling that it was raised by a peer review panel of U.S. EPA-convened academic experts in *An Advisory of the Illegal Competitive Advantage (ICA) Economic Benefit (EB) Advisory Panel of the EPA Science Advisory Board*² even though the charge

¹ The concept that the true cost of any action can be measured by the value of the alternative that must be forgone is known in economics as the concept of “opportunity cost.”

² The advisory report, dated September 7, 2005, is available for downloading at:
http://www.epa.gov/sab/pdf/ica_eb_sab-adv-05-003.pdf or <http://tinyurl.com/SABadvisory>

questions were entirely unrelated to this aspect. (I am intimately familiar with the charge questions, as I managed under contract to EPA the “White Paper” document that the panel was reviewing.)

The Science Advisory Board (“SAB”) Advisory noted in part that:

It should be emphasized that what is sought here is an approximate estimate of the general probability of detection, not a highly elaborate calculation tailored to all the specific details of the particular violation. This could well be handled in a practical manner by identifying a small number of different types of violation, each associated with a generic estimate of the probability of detection. (p. 30)

The SAB Advisory goes on to recommend (at p. 31) that, “[. . .] EPA begin to study the feasibility of formalizing these concepts and providing more explicit guidance on how to calculate penalties that take into account both the harm and probability of detection.” The footnote to this sentence reads:

One public commenter (Fuhrman, 2004 and 2004a) questioned whether EPA had the legal authority to consider probability in setting penalties. But as noted in Section 3.2 above, deterrence has long been one of the objectives of EPA penalty policy. And the **probability of detection and imposition of a penalty is a key factor in the deterrent power of a penalty policy.** [emphasis added]

The general principle can be illustrated via a simple analogy with parking tickets. When I was in graduate school, at first I was not able to obtain a parking permit for any nearby university-owned parking facilities. I often parked on the adjacent city streets, often illegally in metered spaces that were intended to be limited to only a certain time period.³

What fine should the municipal parking authority have levied to deter my illegal parking? First, at a minimum, the fine should have been set equal to the going rate at nearby commercial parking facilities. Suppose that was \$15 at the time. But I recall now from my experience back then that I received a parking ticket for only about half the days that I parked illegally. Therefore, the parking ticket would need to be \$30 in order to establish financial indifference. And an additional sum would have been necessary not just to render me financially indifferent between parking illegally versus paying for commercial parking, but to also actually deter me from such illegal parking.

If a civil penalty fails to recover at least the economic benefit, then Defendant will retain a gain from failing to undertake measures that were necessary to prevent noncompliance. Because of the precedent of this retained gain, Defendant and similarly situated entities may see an economic

³ Just so that the record is clear, I paid all my parking tickets promptly and in full.

advantage in similar noncompliance. Hence any such insufficiently high penalty would fail to deter potential future violations, whether at the municipality in this case or at other municipalities..

Economic benefit does not represent compensation to Plaintiffs as in a typical “damages” calculation for a tort case, but instead is the minimum amount that Defendant must pay as a civil penalty so as to return Defendant to the financial position it would have been in had Defendant complied in a timely manner. Therefore, were the economic benefit not to be fully disgorged in the form of a civil penalty payment, the residual financial gain could be construed as representing an unfair advantage to Defendant.

A civil penalty insufficient to disgorge the entire amount of the probability-adjusted economic benefit figure would fail to make a Defendant financially indifferent between compliance versus noncompliance. As noted earlier, such indifference is the first step in achieving financial deterrence, which would additionally require an even higher penalty over and above the disgorgement of the economic benefit. For example, if the economic benefit were \$1,000 and the civil penalty only \$700, the Defendant would have a \$300 incentive to violate the law. By contrast, if the civil penalty were exactly \$1,000, the Defendant would come out even, and have no incentive either to comply or not comply. Alternatively, if the penalty were \$1,500, the Defendant would have a \$500 incentive to comply. Note that all of these examples implicitly assume a 100-percent probability of detection, prosecution, and payment. As previously explained, as the probability of detection-prosecution-payment declines, then the amount of money proportionately increases that would make the Defendant indifferent between compliance versus noncompliance.

In the environmental regulatory enforcement context, even rough estimates of these probabilities are difficult to obtain.⁴ Therefore, for purposes of this report, I am unable to assess any probability-adjusted economic benefit component for a civil penalty, and do not apply any such probability-based multiplier factor to my economic benefit results. Hence, were my economic benefit results to be used as the basis for a civil penalty without any further adjustments, this would implicitly assume a 100-percent probability of detection-prosecution-payment for these types of violations, even though such an absolute certainty does not actually exist.

c. Financial Economic Methodology: Time Value of Money and Present Values

The economic benefit calculation incorporates the concept of the “time value of money.” For example, in simple terms, a dollar yesterday is worth more than a dollar today, because one had investment opportunities for yesterday’s dollar. Thus, the further in the past that the dollar was obtained, the more it is worth in “present-value” terms. The greater the time value of money (i.e.,

⁴ See U.S. EPA Office of Inspector General, *EPA Performance Measures Do Not Effectively Track Compliance Outcomes* (December 15, 2005), available at:

<http://www.epa.gov/oig/reports/2006/20051215-2006-P-00006.pdf> or
<http://tinyurl.com/ComplianceTracking>

the greater the “discount” or “compounding” rate), the more value past costs have in present-value terms.

To calculate economic benefit, I use standard financial cash flow and net present value analysis techniques, based on modern and generally accepted financial principles. Such an approach is the underpinning of any capital budgeting exercise, and is the standard approach by which alternative investments should be judged according to any financial economics or corporate finance text. This is the same approach that the U.S. EPA’s BEN economic benefit computer model employs.⁵ This is also the same approach that I employ when testifying, whether on behalf of U.S. EPA, the U.S. Department of Justice (“DOJ”), state environmental enforcement agencies and attorneys general, or citizen suit Plaintiffs.

In a typical case, first I calculate:

- (a) the “on-time” costs for compliance measures that would have been necessary had a Defendant undertaken them at an earlier point in time so as to prevent and/or mitigate the violations that are alleged to actually have occurred; and,
- (b) the “delay” costs for compliance measures that a Defendant has incurred or can be expected to incur to stop the violations at issue in this case.

These calculations incorporate adjustments for inflation over the intervening years from when the costs are currently estimated to when they would have been incurred at the times of both the “on-time” and “delay” compliance scenarios.

I then adjust for the tax deductions available for these costs. Next, I calculate the present value of the costs, or “cash flows” (using a rate whose basis and values are discussed in detail in the next two subsections of this report). Finally, I subtract the present value of the “delayed” compliance from the present value of the “on-time” compliance to determine the economic benefit that the violator has gained. (Note that any recurring costs are entirely avoided over the period of noncompliance, so their after-tax net present value is part of the “on-time” scenario, but not the “delay” scenario.)

⁵ The BEN model has been the subject of three academic peer reviews convened by EPA, along with a review by the federal Office of Management and Budget, plus two rounds of public notice and comment in the *Federal Register*. Furthermore, economic benefit issues that go beyond the BEN model were the subject of yet another academic peer review convened by EPA, under the auspices of its Science Advisory Board, as previously cited. As I explained under Section 2 of this report (“Basis for Opinion: Professional Expertise and Materials Considered”), I have provided support to EPA for all of these reviews and processes, with the exception of the first of the three academic peer reviews.

d. Financial Economic Methodology: Rate for Present Value Adjustments, Basis

In general, for my economic benefit casework, I perform all of my present value adjustments at a rate that reflects my results for the weighted-average cost of capital (“WACC”). The WACC represents the cost of an entity’s debt and equity weighted by the value of each source of financing. The debt cost of capital is based upon the after-tax interest rate on company debt. (Interest payments on debt may be deducted from taxable income.) The equity cost of capital is based upon the Capital Asset Pricing Model (“CAPM”), which states that investors will demand a return from a risky investment that is equal to the return on a risk-free investment plus an additional return to compensate for the additional risk taken on by the investor.⁶

As I opined in my expert report accompanying my sworn affidavit *In the matter of Titan Wheel Corporation of Iowa*:

A company must on average earn a rate of return necessary to repay its debt capital holders (e.g., banks, bondholders) and satisfy its equity capital owners (e.g., partners, stock holders). While companies often earn rates in excess of their cost of capital, companies that do not on average earn at least their cost of capital will not survive The cost of capital therefore represents the minimum expected return a company can earn on average on monies not invested in pollution control, or, viewed alternatively, represents the avoided costs of financing pollution control investments. Thus, a company should make its business decisions by adjusting cash flows to present values at its cost of capital, and my economic benefit approach follows the internal analysis a company will normally perform.

The EPA Administrative Law Judge adopted my economic benefit figure in the May 4, 2001 Initial Decision. The above passage was then favorably quoted in both the June 6, 2002 Final Decision of the Environmental Appeals Board (p. 56) and the November 10, 2003 Order on Cross Motions for Summary Judgment by the U.S. District Court for the Southern District of Iowa, Central Division (p. 60), both of which confirmed my economic benefit methodology and results.⁷

And in a more recent U.S. District Court opinion, the Court ruled:

⁶ Although other methodologies exist for estimating the equity cost of capital, the CAPM is the most widely used in the field of financial economics. The CAPM’s development also played a major role in the awarding of the Nobel Prize in economics to one of the three 1990 winners, Harry Markowitz. (Another 1990 winner, Merton Miller, served in the 1988 peer review of EPA’s BEN economic benefit computer model.)

⁷ See (respectively): *In the matter of Titan Wheel Corp. of Iowa*, 10 E.A.D. 526, 563-65 (2002); and, *Titan Wheel Corp. v. United States Envtl. Prot. Agency*, 291 F. Supp. 2d 899, 930-33 (D. Iowa 2003) (affirmed by 8th Circuit).

On the whole, the Court finds the approach of the Shefftz Report to be reasonable and consistent with case law. *See, e.g., Smithfield Foods*, 191 F.3d at 530 (approving of district court's application of the WACC).⁸

In another recent U.S. District Court opinion, the Court ruled:

Further, the Court finds Shefftz's report in this case highly credible because it employs an accepted methodology--known as the Weighted Average Cost of Capital or "WACC"--to determine the present value of Magar's noncompliance over a given period of time. *See, e.g., id.; United States v. Smithfield Foods, Inc.*, 972 F.Supp. 338, 348-49 (E.D. Va. 1997).⁹

In general, a cost of capital calculation can be tailored to a particular line of business whose riskiness varies from that of the overall entity, but such a calculation is not specific to the context of environmental violations. As James C. Van Horne, A. P. Giannini Professor of Finance at Stanford University's Graduate School of Business, commented in his 1991 peer review of the U.S. Environmental Protection Agency BEN economic benefit computer model:

Environmental cash flows have about the same risk as projects overall in a division or in a company; they are necessary to stay in business. Given this assumption, the overall required rate of return is based on both debt and equity costs, the same mix as used to finance investment projects in general.

Note that this 1991 peer review was a follow-on to an earlier 1988 U.S. EPA sponsored academic peer review of the BEN model. Relevant excerpts of the 1988 academic peer review are quoted below:

The most defensible and conservative escalation rate is the corporate borrowing rate, although a reasonable argument supports the use of WACC. [...] the WACC is the firm's overall borrowing rate and the return it most likely received on money from the government "loan" if the capital was invested in the firm's typical projects during the noncompliance period.

- Deems Buell and Marc Blaustein; Temple, Barker & Sloane (TBS), Inc. (EPA contractor facilitating peer review).

⁸ See: *Idaho Conservation League v. Atlanta Gold Corp.*, 879 F. Supp. 2d 1148, 1166-68 (D. Idaho 2012). Note that in the Smithfield case (i.e., cited in the Atlanta Gold decision), I testified in deposition regarding the use of the WACC.

⁹ See: *Idaho Conservation League v. Magar E. Magar, d/b/a Syringa Mobile Home Park*, LEXIS 18326 (D. Idaho 2015).

The approach which TBS has outlined in their August 22 memorandum is a reasonable approach to the problem, and one which I support.

- Charles Upton; then Associate Professor, Graduate School of Management, Rutgers University (now Professor Emeritus of Economics, College of Business Administration, Kent State University); note that Dr. Upton was also providing comments on behalf of Merton Miller of the University of Chicago, who would later win the Nobel Prize in Economics.

I believe Mr. Blaustein's memo puts forth a reasonable approach to the discounting issues it addresses.

- Stewart Myers; Professor of Finance, Sloan School of Management, Massachusetts Institute of Technology.

e. Financial Economic Methodology: Rate for Present Value Adjustments, Results

For the rate that I apply to my present value adjustments, the WACC for the City of St. Petersburg is much more simple than for a company, since a municipality does not have any equity investors expecting a financial return from their stock ownership. Therefore, Table 1, on the following page, is essentially the annual interest rates on the City's relevant bond issues.

Table 1

WEIGHTED-AVERAGE COST OF CAPITAL

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
					After-Tax	Long-Term		Long	Company					Average	
Cost of	Marginal Tax Rate:	Tax	Debt	Treasury	Equity Beta:	Horizon	Risk	Equity	Equity	Annual	through:				
Year	Debt	FL	U.S.	Combine	Cost	Weight	Notes	Raw	Adj.	Risk Prem	Premium	Cost	Weight	Rate	2018
2012	3.876%	0.0%	0.0%	0.00%	3.88%	100%	2.54%			6.6%			0.0%	3.8760%	3.5104%
2013	3.876%	0.0%	0.0%	0.00%	3.88%	100%	3.12%			6.7%			0.0%	3.8760%	3.4494%
2014	3.469625%	0.0%	0.0%	0.00%	3.47%	100%	3.07%			6.96%			0.0%	3.4696%	3.3641%
2015	3.467%	0.0%	0.0%	0.00%	3.47%	100%	2.55%			7.00%			0.0%	3.4670%	3.3378%
2016	3.294679%	0.0%	0.0%	0.00%	3.29%	100%	2.22%			6.90%			0.0%	3.2947%	3.2947%
2017	3.294679%	0.0%	0.0%	0.00%	3.29%	100%	2.66%			6.90%			0.0%	3.2947%	3.2947%
2018	3.294679%	0.0%	0.0%	0.00%	3.29%	100%	2.66%			6.90%			0.0%	3.2947%	3.2947%

Notes:

- (1) Year for calculation.
- (2) Year-specific values based on effective interest rate at time of sale for City's Public Utility Revenue Bonds for water and wastewater projects: Series 2013 A, Series 2014A, Series 2015, Series 2016C.
- (3) Set equal to zero to reflect municipal status.
- (4) Set equal to zero to reflect municipal status.
- (5) Marginal tax rates, combined State and Federal (reflecting deductibility of state taxes from federal taxable income).
- (6) Calculated as: (1) * (100%-(2)). [Adjusts for tax-deductibility of interest payments.]
- (7) Set equal to 100% for municipality.
- (8) Federal Reserve Statistical Release H.15. [Risk-free rate proxy in Capital Asset Pricing Model (CAPM)].
- (9) Measures risk relative to overall market.
- (10) Blume adjustment of 2/3 beta plus 1/3.
- (11) Difference of average returns between stock market vs. Treasuries, 1926 - prior year; Duff & Phelps.
- (12) Calculated as (6) * (7).
- (13) Calculated as (5) + (8). [Reflects risk-free rate of return plus the company risk premium.]
- (14) Calculated as 100% - (4). [Reflects: total financing - debt = equity financing.]
- (15) Calculated as (3) * (4) + (9) * (10). [Reflects: (debt cost x debt wt) + (equity cost x equity wt).]
- (16) Average from each year through 2018.

f. Case-Specific Economic Benefit Inputs and Calculation Components

In addition to the weighted-average cost of capital to use as the rate for the present value adjustments (as described in the prior subsections and previously displayed in Table 1), my economic benefit calculations use the following inputs, which are shown in Table 2 and Table 3 on successive pages.

- *Compliance Measures and Cost Estimates – Table 2:* In Table 2, the rows correspond to the Tracking Sheet (revised July 26, 2017, with a transmittal email dated October 20, 2017 also incorporating earlier email exchanges, St0071223 - St0071227) that the City provided for its Consent Order with the Florida Department of Environmental Protection (“DEP”). Plaintiffs’ position is that these budgeted costs should have been incurred earlier than they actually have been incurred or are projected to be incurred. Many of the actual expenditures might eventually exceed their budgeted amounts, so for this reason I also include the budgeted contingency item.
- *Compliance Measures and Cost Estimates – Table 3:* In Table 3, the rows are taken from the columns for Years 1 through 5 in the short-term plan identified by Plaintiffs’ engineering expert, Thomas J. Christ, P.E. Table 3 essentially maps to sections 6h and 6i in Table 2. Therefore, sections 6h and 6i in Table 2 omit the budgeted amounts for fiscal years beyond 2018 since my economic benefit calculations are based upon a scenario under which the City commences with the expenditure schedule that I present as my Table 3. However, I offset the first-year cost estimate in Table 3 by the amounts that have already spent in Fiscal Year 2017 or that will be spent in FY 2018.
- *Dates for On-Time Compliance versus Delayed Compliance:* In Table 2, I model all the amounts as being spent on the earlier of either the Consent Order due date or the actual completion date. Once again, my modeling here is conservative (i.e., in that the economic benefit is downwardly biased in favor of Defendant) as many of the full amounts might not be spent until after the projected future dates. For the on-time compliance that would have prevented or substantially mitigated the violations alleged in this case, in Table 2 I model the costs as being spent four years earlier. In Table 3, I use the years provided in the original data by Plaintiff’s engineering expert, and then move the entire schedule back to February of 2013.
- *Inflation Adjustments and Cost Indices:* I need to adjust the compliance cost estimates for inflation from when they are budgeted or estimated to when they should have occurred at an earlier date to prevent the SSOs. I use a mix of the construction Cost Index (*Engineering News Record* magazine) and the Employment Cost Index (from the U.S. Department of Labor, Bureau of Labor Statistics). These are the same cost indices that I have programmed into the U.S. EPA BEN economic benefit

computer model, whose help system provides detailed explanations of the various indices and their entire data series.¹⁰

- *Tax Rates:* For the taxation adjustments, I would typically use the highest year-specific combined U.S. federal and state marginal income tax rates. But since the compliance costs are not tax-deductible for a municipality, all of these rates simplify to zero.
- *Capital Investment Depreciation:* Capital investments are not fully deductible for tax purposes during the year in which they are made; instead, a portion can be deducted in each future year until the investment is fully depreciated. The allowed depreciation schedule is usually far shorter than the actual useful life of the capital equipment. My economic benefit calculations would be modeled on the modified Accelerated Cost Recovery System (“MACRS”) as specified by the U.S. Internal Revenue Service, which entails a double declining balance schedule with conversion to straight line. This is the most rapid depreciation schedule likely to be used (and legally allowed to be used) for tax purposes, and thus is conservative in that it lends a downward bias to the economic benefit calculations.¹¹ An additional depreciation “bonus” applies to equipment placed in service during certain years.¹² However, because of the zero-percent tax rate applied across all years in my economic benefit calculations, this factor is not relevant here.
- *Capital Investment Replacement:* In addition to the previously described “paper” depreciation, capital investments also wear out and eventually need to be replaced. Therefore, an additional gain accrues in the future since the equipment from

¹⁰ In more detail, in Table 2 and Table 3 I use these cost indices to adjust the cost estimates for inflation to the relevant dates in the economic benefit calculations. To perform these inflation adjustments, I use the monthly values from each cost index. I then apply the ratio between the different values to the initial cost estimate.

For example, suppose that as of the month for when an initial cost estimate was developed, a cost index has a value of 100. The initial cost estimate needs to be adjusted to a later date, as of when the cost index reported a value of 110. The initial cost estimate is divided by 100, then multiplied by 110, i.e., a ratio of 110 divided by 100, or 1.1 in this example. The net effect in this simple illustrative example is to increase by initial cost estimate by 10 percent.

¹¹ Depreciation generates positive after-tax cash flows; the nearer these are to the current date, the lower the net present value of the capital equipment.

¹² Specifically, the incorporation of the first-year depreciation bonus models the: Economic Stimulus Act of 2008; American Recovery and Reinvestment Act of 2009; Small Business Jobs Act of 2010; Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010; American Taxpayer Relief Act of 2012; Tax Increase Prevention Act Of 2014; Protecting Americans from Tax Hikes Act of 2015; Tax Cuts and Jobs Act of 2017.

noncompliant delayed installation is newer than if it had been installed on time. That is, had the compliance occurred on time as it should have, then the installed equipment would have needed to be replaced at an earlier date in the future than it now does. But to be conservative, I omit this element from my calculations in this particular case, especially given the potentially very long useful lives for most of the required capital investments.

- *Penalty Payment Date:* I use a penalty payment date of May 18, 2018, i.e., the date of this report. This date is used to calculate my present value factors. But the economic benefit will continue to grow after this date until disgorged in the form of a penalty payment. Since any order from the Court setting and requiring Defendant to pay civil penalties would occur after this date, I also provide information in the following section on how this economic benefit should be adjusted forward with the passage of time (specifically keyed off the current trial date of November in 2018).

Table 2

ECONOMIC BENEFIT FROM DELAYED COMPLIANCE MEASURES:
City's Consent Order with Florida Department of Environmental Protection

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
6a	WRF SW Splitter Box/Disk Filters	2-Jan-18	15290	WRF SW Digester Biosolids FY16	\$4,049,316	1.0121	\$4,098,487	CCI	10878.0	2-Jan-14	9664.5	\$3,597,570	1.1557	\$4,157,568	
		2-Jan-18	15771/15965	WRF SW Capacity Upgrade FY17	\$15,268,699	1.0121	\$15,454,107	CCI	10878.0	2-Jan-14	9664.5	\$13,565,310	1.1557	\$15,676,885	
		2-Jan-18	15928	WRF SW New Filters FY17	\$4,589,948	1.0121	\$4,645,684	CCI	10878.0	2-Jan-14	9664.5	\$4,077,890	1.1557	\$4,712,653	
		2-Jan-18	15956	WRF SW Construction Manager	\$2,520,614	1.0121	\$2,551,222	ECI	132.5	2-Jan-14	120.5	\$2,292,332	1.1557	\$2,649,156	
	WRF SW Capacity Imps.	30-Sep-19		SW Increased CCC Capacity & Pumping	\$8,000,000	0.9566	\$7,652,764	CCI	11329.6	30-Sep-15	10065.0	\$7,107,050	1.0902	\$7,748,292	
		30-Sep-19		SW New Clarifier #4	\$6,000,000	0.9566	\$5,739,573	CCI	11329.6	30-Sep-15	10065.0	\$5,330,287	1.0902	\$5,811,219	
		30-Sep-19		SW Existing Media Filter Rehab	\$2,000,000	0.9566	\$1,913,191	CCI	11329.6	30-Sep-15	10065.0	\$1,776,762	1.0902	\$1,937,073	
		30-Sep-19		SW Additional Effluent Pumps	\$2,900,000	0.9566	\$2,774,127	CCI	11329.6	30-Sep-15	10065.0	\$2,576,306	1.0902	\$2,808,756	
		30-Sep-18		SW Injection Well Piping- FY18	\$15,095,000	0.9881	\$14,915,224	CCI	11091.1	30-Sep-14	9870.1	\$13,433,201	1.1276	\$15,147,736	
		30-Sep-19		SW Injection Well Piping- FY19	\$20,000,000	0.9566	\$19,131,910	CCI	11329.6	30-Sep-15	10065.0	\$17,767,625	1.0902	\$19,370,729	
	6b	30-Sep-19		SW Add'l Headworks (60 mgd) Phase II	\$6,100,000	0.9566	\$5,835,233	CCI	11329.6	30-Sep-15	10065.0	\$5,419,126	1.0902	\$5,908,072	
		30-Sep-17	20-Mar-17	15772 WRF SW RW & Inj Wells Imp FY16	\$395,740	1.0383	\$410,915	CCI	10667.0	20-Mar-13	9456.0	\$350,813	1.1913	\$417,912	
		31-Oct-17	28-Dec-16	15838 WRF SW New Injection Wells FY17	\$10,846,518	1.0459	\$11,344,707	CCI	10530.0	28-Dec-12	9412.0	\$9,694,912	1.2042	\$11,674,479	
		28-Dec-17		WRF SW New Injection Wells FY18	\$3,000,000	1.0126	\$3,037,777	CCI	10873.0	28-Dec-13	9667.8	\$2,667,462	1.1604	\$3,095,255	
	6c	28-Feb-18	31-Jul-17	15956 WRF SW Construction Manager	\$771,072	1.0262	\$791,245	ECI	130.7	31-Jul-13	119.6	\$705,587	1.1766	\$830,228	
		1-Jan-17	18-Nov-16	15926 WRF NW New Filters FY17	\$6,236,198	1.0497	\$6,545,827	CCI	10442.0	18-Nov-12	9398.0	\$5,612,698	1.2087	\$6,784,318	
		31-Oct-17	6-Jan-17	15960 WRF NW Construction Manager FY17	\$1,688,804	1.0451	\$1,764,961	ECI	129.0	6-Jan-13	118.4	\$1,550,034	1.1994	\$1,859,065	
	6d	30-Sep-17	5-Jan-17	15927 WRF NW New Injection Wells FY17	\$5,882,298	1.0452	\$6,148,110	CCI	10542.0	5-Jan-13	9437.3	\$5,265,873	1.1995	\$6,316,320	
		5-Jan-18		WRF NW New Injection Wells FY18	\$16,095,000	1.0119	\$16,286,105	CCI	10878.0	5-Jan-14	9664.5	\$14,299,428	1.1553	\$16,520,785	
		31-Oct-17	17-Feb-17	15960 WRF NW Construction Manager FY17	\$792,123	1.0412	\$824,765	ECI	129.0	17-Feb-13	118.4	\$727,034	1.1947	\$868,590	
	6e	31-Dec-19	30-Sep-18	TBD WRF Masterplan	\$3,000,000	0.9881	\$2,964,271	ECI	133.9	30-Sep-14	122.2	\$2,737,521	1.1276	\$3,086,922	
		31-Dec-19		Master Plan Contingency	\$100,000,000	0.9488	\$94,881,677	CCI	11390.0	31-Dec-15	10152.0	\$89,130,762	1.0812	\$96,372,388	
	6f	Albert Whitted Decision	31-Dec-19	TBD TBD											
		31-Dec-18	15-Dec-17	15411 SAN Wet Weather Mit FY16 PHII	\$4,689,728	1.0138	\$4,754,264	CCI	10873.0	15-Dec-13	9667.8	\$4,169,890	1.1618	\$4,844,479	
6g	Pipe Lining, Replacement, and Manhole Rehab	30-Sep-18		TBD SAN Annual CIPP Lining FY18	\$2,500,000	0.9881	\$2,470,226	CCI	11091.1	30-Sep-14	9870.1	\$2,224,777	1.1276	\$2,508,734	
		30-Sep-19		TBD SAN Annual CIPP Lining FY19											
		30-Sep-20		TBD SAN Annual CIPP Lining FY20											
		30-Sep-21		TBD SAN Annual CIPP Lining FY21											
		30-Sep-22		TBD SAN Annual CIPP Lining FY22											
		30-Sep-18		TBD SAN Annual Manhole Rehab FY18	\$750,000	0.9881	\$741,068	CCI	11091.1	30-Sep-14	9870.1	\$667,433	1.1276	\$752,620	
		30-Sep-19		TBD SAN Annual Manhole Rehab FY19											
		30-Sep-20		TBD SAN Annual Manhole Rehab FY20											
		30-Sep-21		TBD SAN Annual Manhole Rehab FY21											
		30-Sep-22		TBD SAN Annual Manhole Rehab FY22											
		30-Sep-18		TBD SAN I&I Removal FY18	\$12,000,000	0.9881	\$11,857,084	CCI	11091.1	30-Sep-14	9870.1	\$10,678,928	1.1276	\$12,041,924	
		30-Sep-19		TBD SAN I&I Removal FY19											
		30-Sep-20		TBD SAN I&I Removal FY20											
		30-Sep-21		TBD SAN I&I Removal FY21											
		30-Sep-22		TBD SAN I&I Removal FY22											
6i	Manhole Rehab and CIPP Lining Contracts	30-Apr-17	1-Feb-17	15282 SAN CIPP Lining FY16	\$2,500,000	1.0427	\$2,606,717	CCI	10559.0	1-Feb-13	9453.0	\$2,238,138	1.1965	\$2,677,885	
		16-Feb-17	15963	SAN Annual CIPP Lining FY17	\$1,090,000	1.0413	\$1,135,017	CCI	10559.0	16-Feb-13	9453.0	\$975,828	1.1948	\$1,165,933	
		19-Jan-17	15812	SAN Manhole Rehab FY17	\$500,000	1.0439	\$521,945	CCI	10542.0	19-Jan-13	9437.3	\$447,603	1.1979	\$536,195	
		30-Jun-17	15-Dec-16	15813 SAN I&I Removal FY17	\$6,845,000	1.0471	\$7,167,661	CCI	10530.0	15-Dec-12	9412.0	\$6,118,247	1.2057	\$7,376,561	
		6-Apr-17	16017	SAN CIPP Lining FY17	\$2,410,000	1.0368	\$2,498,643	CCI	10678.0	6-Apr-13	9484.0	\$2,140,517	1.1894	\$2,545,910	
		5-Jan-17	15961	SAN Lateral Lining FY17	\$450,000	1.0452	\$470,335	CCI	10542.0	5-Jan-13	9437.3	\$402,843	1.1995	\$483,203	

Notes:

- (a) Consent Order Location.
- (b) Project description.
- (c) Consent Order due date.
- (d) Completion date.
- (e) Oracle project number.
- (f) Oracle project name.
- (g) Amount budgeted, whether current or future.
- (h) Present value factor, using the year-specific cost-of-capital average through 2018 from Table 1.
- (i) Present value, column (g) multiplied by column (h).
- (j) Choice of cost index for inflation adjustments, with abbreviations from U.S. EPA "BEN" economic benefit computer model ("ECI" = Employment Cost Index and "CCI" = Construction Cost Index).
- (k) Monthly value for chosen cost index.
- (l) Earlier expenditure date, set equal to 4 years before the earlier of the two dates in columns (c) and (d).
- (m) Monthly value for chosen cost index.
- (n) Budgeted cost from column (g) adjusted for inflation to earlier date in column (l) by dividing budgeted cost by cost index value in column (k) then multiplying by cost index value in column (m).
- (o) Present value factor, using the year-specific cost-of-capital average through 2018 from Table 1.
- (p) Present value, column (m) multiplied by column (o).

Table 3

ECONOMIC BENEFIT FROM DELAYED COMPLIANCE MEASURES:
Plaintiffs' Engineering Expert

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
	Cost	Projected:		Adjusted	Present Value (PV):		Earlier:		Adjusted	Present Value (PV):	
Yr	Estimate	Date	CCI	Cost	Factor	Amount	Date	CCI	Cost	Factor	Amount
1	\$5,411,476	Mar-19	11209.7	\$5,411,476	0.9723	\$5,261,353	Feb-13	9453.0	\$4,563,417	1.1949	\$5,452,939
2	\$34,581,476	Mar-20	11454.9	\$35,337,938	0.9412	\$32,547,559	Feb-14	9681.0	\$29,865,413	1.1511	\$34,376,962
3	\$35,581,476	Mar-21	11719.8	\$37,200,633	0.9112	\$32,421,309	Feb-15	9962.0	\$31,620,977	1.1127	\$35,184,692
4	\$35,581,476	Mar-22	11995.3	\$38,074,848	0.8821	\$31,387,898	Feb-16	10181.0	\$32,316,118	1.0758	\$34,764,848
5	\$35,506,476	Mar-23	12277.1	\$38,887,465	0.8540	\$30,323,374	Feb-17	10559.0	\$33,445,304	1.0414	\$34,829,677

Notes:

- (a) Project year number as per convention of Plaintiffs' engineering expert.
- (b) Original cost estimate as per Plaintiffs' engineering expert, with Year 1 reduced by amounts already spent in FY 2017 or to be spent in FY 2018 from 6h and 6i in Table 2.
- (c) Mid-date of projected fiscal year for corresponding project year as per Plaintiffs' engineering expert.
- (d) Cost index value as of date in prior column for CCI .
- (e) Original cost estimate adjusted for inflation to date in two columns prior.
- (f) Present value factor, using the year-specific cost-of-capital average through 2018 from Table 1.
- (g) Present value, calculated as product of the prior two columns.
- (h) Date based on entire expenditure pattern pushed back earlier to February 2013.
- (i) Cost index value as of date in prior column for CCI .
- (j) Original cost estimate adjusted for inflation to date in two columns prior.
- (k) Present value factor, using the year-specific cost-of-capital average through 2018 from Table 1.
- (l) Present value, calculated as product of the prior two columns.

g. Case-Specific Economic Benefit Calculations and Results

Table 4 below provides a summary of my individual economic benefit calculations by combining the present values from the different cost items as calculated in Table 2 and Table 3. All of my calculations and results should be replicable within a reasonable approximation for any analyst. (These results are very similar to those that would be obtained by running the U.S. EPA BEN economic benefit model.)

Table 4			
SUMMARY OF ECONOMIC BENEFIT CALCULATIONS			
<i>Present Values as of:</i>		<i>18-May-18</i>	
<u>Description</u>		<u>Economic</u>	<u>Monthly</u>
<u>Benefit</u>	<u>Increase</u>		
6a	WRF SW Splitter Box/Disk Filters	\$1,216,619	\$3,291
6b	WRF SW Capacity Imps.	\$433,230	\$1,172
6c	WRF NW Effluent Filter	\$332,594	\$900
6d	WRF NW Injection Well	\$446,715	\$1,208
6e	WRF Masterplan	\$122,651	\$332
	Master Plan Contingency	\$1,490,711	\$4,032
6f	Albert Whitted Decision		
6g	Wet Wx Flow Mitigation Prog	\$90,214	\$244
6h	Pipe Lining, Replacement, and Manhole Rehab	\$234,900	\$635
6i	Manhole Rehab and CIPP Lining Contracts	\$385,368	\$1,042
Plaintiff's Engineering Expert (from Table 3)		\$12,667,624	\$34,265
Totals:		\$17,420,626	\$47,122
<i>Economic benefit calculated for each Table:</i>			
2	<i>= column (p) minus column (i)</i>		
3	<i>= column (l) minus column (g)</i>		

As shown in Table 4, based on my analysis of compliance measures and associated cost estimates that have been identified both by the City and by Plaintiffs' engineering expert, the City's economic benefit from failing to implement these measures at an earlier point in time is approximately \$17.4 million.

My economic benefit results are present value figures calculated as of May 18, 2018 (i.e., the date of this report). Therefore the economic benefit will continue to grow after this date until disgorged in the form of a penalty payment, as shown in the final column of Table 4. Specifically, the economic benefit total will increase at approximately \$47,000 per month beyond the date of my report. So for a trial date of November of 2018, and a judicial decision in February of 2019, the economic benefit by then would be approximately \$17.8 million (as calculated from the figures in Table 4).

Moreover, as I explained earlier in this report, for civil penalties to achieve financial deterrence, their value must substantially exceed the economic benefit that Defendant realize by delaying and/or avoiding adequate pollution control. Because not all violations are detected, prosecuted, and ultimately penalized, an adequately deterring civil penalty should also be adjusted by probability of detection, prosecution, and ultimate payment, as explained in further detail earlier in my report.

4. Basis for Opinion: Economic Impact

For the economic impact of a civil penalty payment and injunctive relief costs, I divide up my assessment into the following topics:

- A comparison of the City's current sewer rates to other Florida systems, relative to which St. Petersburg is roughly in the middle, even after a substantial increase for 2018.
- The U.S. Environmental Protection Agency sewer overflow financial capability assessment, under which even future rate projections place St. Petersburg only in the "medium burden" category.

I address each of these topics in turn in the following subsections of my report.

In summary, the City has already raised its sewer rate fee structure substantially for the current fiscal year (i.e., ending September 30, 2018). The City has also already published projections for future combined water and wastewater household bill increases out through the next several years. I am not aware of any arguments that the City has advanced as for how these future rates and resulting bills could in any sense be considered unaffordable or unduly burdensome. As shown in my assessment in the following subsections of my report, even with the substantial rate increase for the 2018, the City's wastewater bill for a typical household is still roughly in the middle across all Florida systems statewide. And even with the future rate increased already projected by the City plus my own rate projections for additional costs estimated by Plaintiffs' engineering expert plus a large civil penalty payment, the wastewater costs for the City will be still be considered "Medium Burden" under the relevant guidance from the U.S. Environmental Protection Agency.

a. Wastewater Household Bill Comparison with Other Florida Systems

On December 7, 2017, the St. Petersburg City Council approved the rate increases proposed in the revised *FY2018 Utility Rate Studies (Water Resources and Stormwater)* memorandum (St0089859 - St0089877), presented at the City Council meeting for December 7, 2017, and prepared by the City's Administrator of Public Works, Claude D. Tankersley, P.E. For a typical customer utility bill reflecting 4,000 gallons of water and wastewater use per month, the wastewater charge (incorporating both the fixed base charge and the variable usage charge) is \$42.15 per month, or \$505.80 per year.

To see how this increased household wastewater bill compares to other Florida municipal systems, I used the *Wastewater Rates Dashboard* on-line database tool, which the University of North Carolina Environmental Finance Center has created using the *2016 Florida Water and Wastewater Rate Survey* publication created by Raftelis Financial Consultants, Inc., plus other database information.

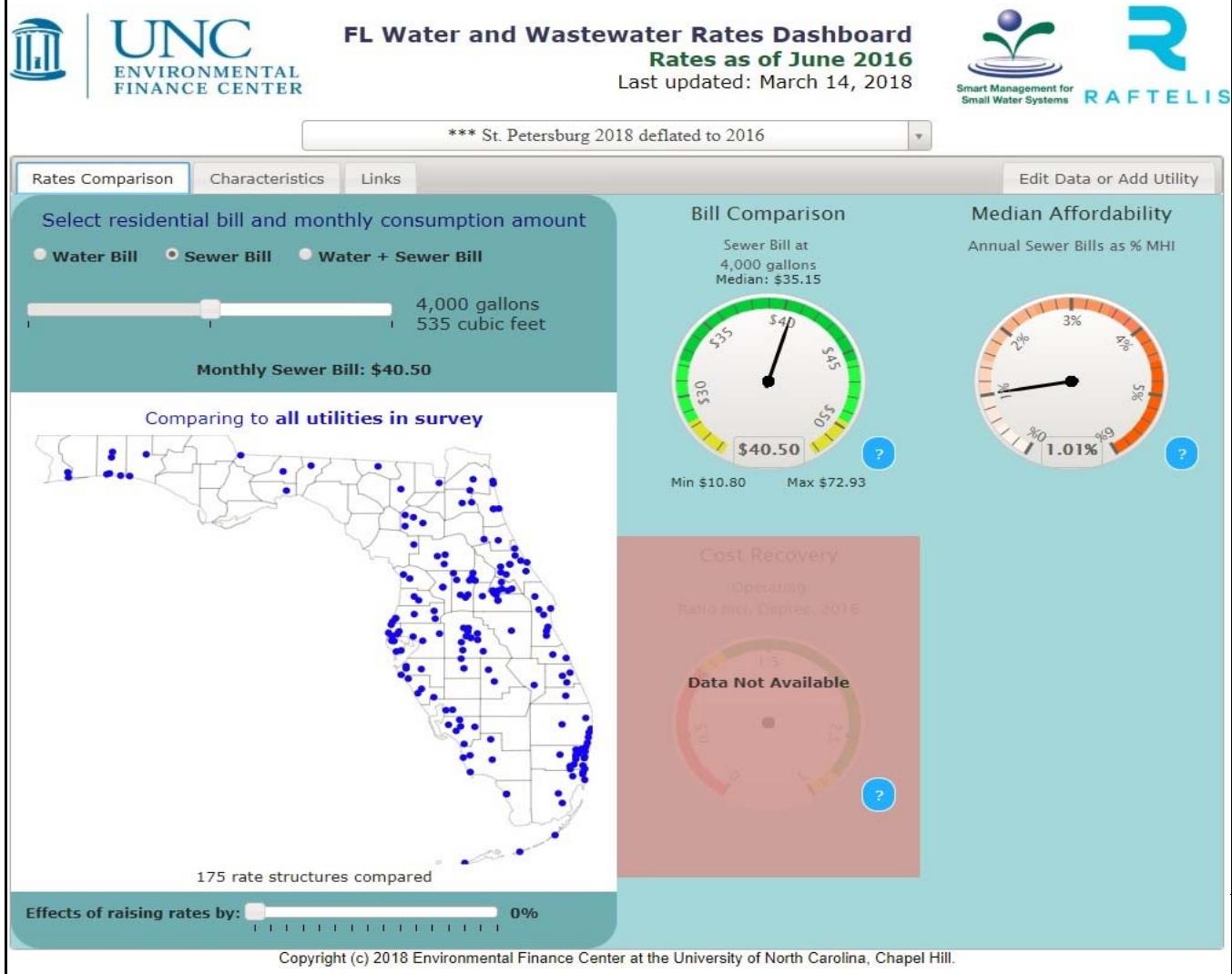
As can be inferred from the title of the underlying rate survey publication, the on-line database tool uses 2016 rate information, and St. Petersburg has increased its rates twice since then. Therefore, I used the database's "Edit Data or Add Utility" to create a copy of St. Petersburg for the 2018 data. I deflated the 2018 monthly charge back to 2016 dollars at the rate of general price inflation from the Consumer Price Index ("CPI") so that I am effectively comparing St. Petersburg's 2018 rate to other Florida municipalities' 2016 rates, even though those other charges have most likely increased at a rate higher than general price inflation. Therefore, if anything I am probably making St. Petersburg appear more costly relatively to other Florida municipalities.

As shown though in Table 5, on the following page, even with the significant wastewater rate increase for 2018, St. Petersburg is still roughly in the middle of other Florida systems for its monthly charge. And the annual bill is only about one percent of median household income.

Table 5

WASTEWATER HOUSEHOLD BILL COMPARISON WITH OTHER FLORIDA SYSTEMS

\$42.15	St. Petersburg 2018 monthly charge for typical 4,000 gallons
223.157	CPI value, Tampa-St. Petersburg-Clearwater, FL: March 2018
214.037	CPI value, Tampa-St. Petersburg-Clearwater, FL: Annual 2016
\$40.43	St. Petersburg 2018 monthly charge, deflated to 2016 dollars



b. U.S. EPA Sewer Overflow Financial Capability Assessment

To assess the City's financial capability to afford the future rate increases that will be necessary to finance all of the upcoming items in the Consent Order, plus the additional measures that have been identified by Plaintiffs' engineering expert, and also a civil penalty payment for the violations at issue in this case, I use the U.S. Environmental Protection Agency ("EPA") *Combined Sewer Overflows – Guidance for Financial Capability Assessment and Schedule Development* guidance document (February 1997).

The EPA's guidance document employs a two-part approach. The first part is to project the cost per household and compare it to median household income ("MHI").

For the cost per household, I start with the projections for a bill with the typical household consumption already prepared by the City in the *Utility Rate Discussion* document presented at the Budget, Finance and Taxation ("BFT") Committee meeting for November 9, 2017. Although that document does not provide a breakdown for water versus wastewater in future years, I use the actual breakdown for the current fiscal year (ending September 30, 2018). I then project out the wastewater-only portion in future years by increasing the water-only portion at merely the projected increase in the Consumer Price Index ("CPI"), with the remainder of the increased bill in each future year attributed to wastewater. Since the water-only portion will most likely increasing at a rate higher than the CPI projection, this approach results in an upwardly biased wastewater-only portion.

Next, I incorporate the additional measures that have been identified by Plaintiffs' engineering expert, and then also a civil penalty payment for the violations at issue in this case. Based upon these costs plus information about the City's typical financing arrangements and the wastewater system information, I develop an estimate for the incremental household wastewater bill in addition to the City's current projections.

As shown in Table 6, on the following page, even all the way out through the fiscal year ending September 30, 2027, the wastewater bill does not even approach the U.S. EPA's key cut-off of two percent of MHI.

Table 6

ST. PETERSBURG BILL PROJECTIONS AND PERCENT OF HOUSEHOLD INCOME

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
Fiscal	CPI		City Projections:		Sewer	With add'l costs:	With penalty:		
Year	Increase	MHI	W + S	Sewer	% of MHI			Sewer	% of MHI
2016		\$48,183							
2017	2.53%	\$49,404							
2018	2.15%	\$50,466	\$71.57	\$42.15	1.00%	\$46.26	1.10%	\$49.06	1.17%
2019	2.15%	\$51,551	\$80.59	\$50.54	1.18%	\$54.65	1.27%	\$57.45	1.34%
2020	2.30%	\$52,737	\$82.33	\$51.63	1.17%	\$55.74	1.27%	\$58.54	1.33%
2021	2.35%	\$53,976	\$84.11	\$52.71	1.17%	\$56.81	1.26%	\$59.61	1.33%
2022	2.35%	\$55,245	\$88.92	\$56.78	1.23%	\$60.89	1.32%	\$63.69	1.38%
2023	2.35%	\$56,543	\$91.23	\$58.33	1.24%	\$62.44	1.33%	\$65.24	1.38%
2024	2.35%	\$57,872	\$93.61	\$59.94	1.24%	\$64.05	1.33%	\$66.85	1.39%
2025	2.35%	\$59,232	\$96.04	\$61.58	1.25%	\$65.69	1.33%	\$68.49	1.39%
2026	2.35%	\$60,624	\$98.54	\$63.27	1.25%	\$67.38	1.33%	\$70.18	1.39%
2027	2.35%	\$62,048	\$101.10	\$65.00	1.26%	\$69.11	1.34%	\$71.91	1.39%

Notes:

(a)	Fiscal year ended September 30.								
(b)	Projection from City's <i>Utility Rate Discussion</i> presentation (November 9, 2017), p. 6, column for "50% PAY GO" by FY 2022 (so as to match up with actual rate increase for 2018).								
(c)	Actual sewer-only bill for 2018, with future years based upon the water portion increasing at only the CPI, with the remainder of the increase thereby attributed exclusively to sewer.								
(d)	Actual CPI increase for 2017 (Tampa-St. Petersburg-Clearwater, FL area) with future years based upon the average of the projections from the federal Office of Management & Budget and Congressional Budget Office (from Table 2-3 in Analytical Perspectives supplement to federal budget).								
(e)	Median Household Income ("MHI") for St. Petersburg, actual estimate from U.S. Census Bureau for 2016, then increased at the CPI % in future years.								
(f)	Percent of MHI, sewer-only annual bill, based on City's projections.								
(g)	Projections for household sewer bills, based upon:								
	\$146,662,378	\$146,662,378	Additional compliance costs, Table 3 column b						
		\$100,000,000	Civil penalty, initial baseline estimate of statutory maximum						
	\$146,662,378	\$246,662,378	Total additional costs (calculated)						
	3.294679%	3.294679%	Interest rate (from Table 1, City's Series 2016C bond issue)						
	30	30	Maturity period, year (set equal to City's Series 2016C bond issue)						
	\$7,770,422	\$13,068,592	Annual financing cost (calculated)						
	108,815	108,815	Total households (2016 estimate as per U.S. Census via City website)						
	\$31,468,093	\$31,468,093	Residential wastewater revenue (Series 2016C bond statement, p. C-3)						
	\$45,585,084	\$45,585,084	Total wastewater revenue (Series 2016C bond statement, p. C-3)						
	69%	69%	Residential portion of system revenue (calculated)						
	\$4.11	\$4.11	Monthly additional bill amount, with additional compliance costs (calculated)						
		\$6.91	Monthly additional bill amount, with add'l compliance costs and civil penalty (calculated)						
(h)	Percent of MHI, sewer-only annual bill, based on City's projections plus additional compliance costs from Plaintiffs' engineering expert and a civil penalty payment.								

Note that my projection for the wastewater household bill in Table 6 is most likely biased upward for the following reasons:

- As previously explained, since I lack information on the breakout for the water-only versus wastewater-only portions of the City’s projected future household bills, I use my own estimate of the wastewater-only portion via an approach that effectively minimizes the water-only portion and maximizes the wastewater-only portion.
- I omit any possible adjustments for the potential for median household income to increase at a rate higher than the projection for nationwide general price inflation (i.e., which would thereby decrease the wastewater household bill as a percentage of income).
- I omit any possible adjustments for the potential for the number of households to increase significantly (i.e., which would thereby spread the system-wide costs across a larger number of households and decrease the per-household amount).
- My simplified estimate for annual debt service to finance the additional costs (as identified by Plaintiffs’ engineering expert) and also a possible penalty amount (as provided to me by Plaintiffs’ counsel) omits the potential for more sophisticated financing arrangements by the City (e.g., as evidenced by the frequent refunding bonds to take advantage of lower interest rates over time) and also immediately incurs financing costs even for monies that will not be fully expended for another half-decade.
- I place the entire financing burden upon user fees even though other financing sources might be available (e.g., the \$66 million as of September 30, 2017 in the Local Option Sales Surtax Improvement Fund for capital improvement projects, funded by the “Penny for Pinellas” program.

After Table 6, the next step is to assess the overall financial condition of the municipality via a set of standard measures. As shown in Table 7, on the following page, St. Petersburg has three criteria that score in the “Strong” category and three criteria in the “Mid-range” category. Moreover, two of the “Mid-range” scores are very close to scoring in the “Strong” category. Specifically, the City’s own unemployment rate is 0.8 percent under the national average, which could be considered strong given the very low national rate of 4.1 percent. And the City’s property tax collection rate has approached the 98-percent “strong” cut-off value in recent years when delinquent collections are included (e.g., 97.82 percent for the 2012 fiscal year).

Table 7

U.S. EPA FINANCIAL CAPABILITY INDICATORS

<u>Line No.</u>	<u>Financial Capability Indicator</u>	<u>Value</u>
Worksheet 3 Bond Rating		
	Most Recent Revenue (Water/Sewer or Sewer) Bond	Water/Sewer
	Date	Oct-16
	Rating Agency	Moody's
302	Rating	Aa2
303	Summary Bond Rating: <i>Score : Moody's: Weak (Ba, B, Caa, Ca, C); Mid-range (Baa); Strong (Aaa, AA, A)</i>	Strong 3
Worksheet 4 Overall Net Debt as a Percent of Full Market Property Value (as of September 30, 2017)		
401	Direct Net Debt (G. O. Bonds Excluding Double-Barreled Bonds)	\$139,869,000
402	Debt of Overlapping Entities (Proportionate Share of Multijurisdictional Debt)	\$6,099,185
403	Overall Net Debt	\$145,968,185
404	Market Value of Property	\$17,444,800,000
405	Overall Net Debt as a Percent of Full Market Property Value (403/404 *100)	0.84%
	Summary <i>Score: Weak (Above 5%); Mid-range (2-5%); Strong (Below 2%)</i>	Strong 3
Worksheet 5 Unemployment Rate (as of March 2008)		
501	Unemployment Rate - Permittee	3.3%
503	Average National Unemployment Rate	4.1%
	Summary <i>Score: Weak (>1% above nat'l avg); Mid-range (+/-1% of nat'l avg); Strong (>1% below nat'l avg)</i>	Mid-range 2
Worksheet 6 Median Household Income (estimated by U.S. Census Bureau for 2016)		
601	Median Household Income	\$48,183
602	National Median Household Income	\$55,322
603	MHI Adjustment Factor	
604	Adjusted National MHI	\$55,322
	Compared to National MHI (= 12.9% below)	Mid-range
	<i>Score: Weak (>25% below nat'l MHI); Mid-range (+/-25% nat'l MHI); Strong (>25% above nat'l MHI)</i>	2
Worksheet 7 Property Tax Revenues as Percent of Full Market Property Value		
701	Full Market Value of Real Property	\$17,444,800,000
702	Property Tax Revenues	\$103,700,661
703	Property Tax Revenue as a Percent of Full Market Property Value (702/701*100)	0.59%
	Benchmark <i>Score: Weak (>4%); Mid-range (2%-4%); Strong (<2%)</i>	Strong 3
Worksheet 8 Property Tax Revenue Collection Rate		
801	Property Tax Revenue Collected (<i>restricted here to within the fiscal year of the levy</i>)	\$103,700,661
802	Property Taxes Levied	\$107,448,133
803	Property Tax Revenue Collection Rate	96.51%
	Benchmark <i>Score: Weak (<94%); Mid-range (94-98%); Strong (>98%)</i>	Mid-range 2
Worksheet 9 Summary of Permittee Financial Capability Indicators		
	Indicator	Rating on Benchmark
901	Bond Rating	Strong
902	Overall Net Debt as Percent of Full Market Property Value	Strong
903	Unemployment Rate	Mid-range
904	Median Household Income	Mid-range
905	Property Tax Revenues as a Percent of Full Market Property Value	Strong
906	Property Tax Revenue Collection Rate	Mid-range
907	Permittee Indicators Score: <i>Weak (<1.5); Mid-range (1.5-2.5); Strong (>2.5)</i>	Mid-range

Finally, the two steps are combined into the financial capability matrix in Table 8 below. As shown in Table 8, the cost-per-household of between one and two percent from Table 6 for the future projected wastewater bill places St. Petersburg in the “Mid-Range” category for the Residential Indicator. When combined with the “Mid-Range” financial capability score from Table 7, this assessment finds only a “Medium Burden” for the currently projected future wastewater costs per household for St. Petersburg. Moreover, since St. Petersburg is on the lower edge of score from Tables 7, the City is essentially on the lower end of the Medium Burden.

Table 8			
U.S. EPA FINANCIAL CAPABILITY MATRIX			
Financial	Residential Indicator (Cost Per Household as a % of MHI):		
<u>Capability Score:</u>	<u>Low (Below 1.0%)</u>	<u>Mid-Range (1.0-2.0%)</u>	<u>High (Above 2.0%)</u>
Weak (<1.5)	Medium Burden	High Burden	High Burden
Mid-Range (1.5-2.5)	Low Burden	MEDIUM BURDEN	High Burden
Strong (>2.5)	Low Burden	Low Burden	Medium Burden

5. Qualifications and Compensation

As previously noted under the section entitled Basis for Opinion, I have separately provided my Curriculum Vitae as this report's Attachment A, which also includes a list of my publications and public presentations going back at least ten years and testimony experience going back at least four years. I receive compensation of \$176 per hour for the time that I have spent preparing this report, and for testimony would receive \$231 per hour.

I declare under the penalty of perjury that the statements in this report are true and accurate to the best of my knowledge.

Attachment A: Curriculum Vitae

JONATHAN S. SHEFFTZ

**d/b/a JShefftz Consulting
14 Moody Field Road
Amherst MA 01002**

Mr. Shefftz is an independent consultant who specializes in the application of financial economics to litigation disputes, regulatory enforcement, and public policy decisions. Previously he was a consultant with Industrial Economics, Incorporated (“IEc”) from 1992 until 2006 when he moved to western Massachusetts. Mr. Shefftz has extensive experience in settlement and litigation support, and has been qualified as an expert witness in U.S. District Court, a federal agency’s Administrative Court, and state courts.

Mr. Shefftz’s recent experience includes work in the following areas.

- Calculating the economic damages suffered by companies and individuals from alleged wrongful actions.
- Applying financial economics to civil penalty factors in regulatory enforcement actions.
- Analyzing financial economic issues related to public policy decisions.

Mr. Shefftz has performed this work in a variety of contexts, including expert witness testimony, computer model development, training course delivery, and regulatory review. He has supervised project teams comprising economists, accountants, paralegals, and software developers, as well as worked in parallel with engineers, scientists, lawyers, and lobbyists. His clients have included federal and state governmental agencies, private litigators, and other private-sector entities.

Mr. Shefftz holds a B.A. *magna cum laude* and *Phi Beta Kappa* in Economics and Political Economy from Amherst College, and an M.P.P. degree, with concentrations in Government & Business and Energy & Environmental Policy, from the John F. Kennedy School of Government at Harvard University.

Mr. Shefftz’s positions have included Eastern Vice President for the National Association of Forensic Economics, Chair for the Town of Amherst Planning Board, referee for the *Journal of Forensic Economics*, Course Liaison for the “Engineering Economic Decision Making” course at the University of Massachusetts Amherst, and Treasurer as well as Finance Committee member for the Jewish Community of Amherst. He is also a member of the Government Finance Officers Association, Western Economic Association International, and Amherst Area Chamber of Commerce.

JONATHAN S. SHEFFTZ

Economic Damages

Mr. Shefftz has experience with the following work on economic damages, including expert witness testimony both in deposition and at trial. He has also applied his expertise in unjust enrichment calculation, financial statement analysis, municipal financial assessment, and corporate control / ownership issues to private-party damages cases – this expertise is described in more detail in the “Financial Factors in Regulatory Enforcement” section.

Business Damages

Mr. Shefftz has modeled companies’ cash flows under hypothetical “but-for” states of the world versus actual states of the world to calculate business damages in numerous cases. Sample contexts include an engineering firm that lost business to a spin-off competitor, timber companies that alleged a contract breach from implementation of Congressional legislation, a furniture company whose relationship with a joint venture partner was interfered with by a key customer, a fixed base operator prohibited from selling jet fuel by a municipal airport commission, a brownfields remediation firm with an incapacitated key principal, a state-chartered joint underwriting association whose prior servicing carrier incorrectly determined premiums, a dealer who delivered contaminated fuel, a social networking website imperiled by a developer’s nondelivery, computer code discarded by a demolition crew, and a sports organization whose apparel licensee breached a contract.

Personal Damages

Mr. Shefftz has assessed lost earnings and household services along with incurred and anticipated medical costs in numerous cases involving wrongful death, personal injury, wrongful termination, estate disputes, and divorce. Sample contexts include alleged employment discrimination, medical malpractice, workplace injuries, vehicular accidents, retail store accidents, below-market earnings, lead poisoning, professional license revocation, and an arrest instigated by a former spouse.

Water Contamination

For a real estate development, Mr. Shefftz analyzed the diminution in value by projecting the groundwater contamination-induced delayed schedule versus the original schedule. On a claim to have developed groundwater assets but for contamination, he testified on the municipality’s impaired financial condition at the time. On a class action lawsuit by property owners, he evaluated the defense economist’s statistical analysis of property values. On other water contamination lawsuits, he has calculated the damages from the need to switch to alternative sources of water, including a desalination plant, whole-house drinking water systems, and a neighboring utility.

Intellectual Property

For defense counsel in a copyright infringement lawsuit, Mr. Shefftz assessed declarations from the plaintiff’s expert economist who asserted that a “companion” book would damage the author of the original series of novels. He also assisted counsel with preparation for trial cross examination.

Computer Model Development

For the U.S. Department of Justice Commercial Litigation Branch, Mr. Shefftz developed a standalone computer model for statutorily determined interest under the Contract Disputes Act.

JONATHAN S. SHEFFTZ

Financial Factors in Regulatory Enforcement

Mr. Shefftz has experience with the following work on regulatory enforcement actions brought under the Asbestos Hazard Emergency Response Act (AHERA), Clean Air Act (CAA), Clean Water Act (CWA), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Emergency Planning and Community Right-to-Know Act (EPCRA), Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), Oil Pollution Act (OPA), Resource Conservation and Recovery Act (RCRA), Safe Drinking Water Act (SDWA), Spill Prevention, Control and Countermeasure (SPCC) rule, Toxic Substances Control Act (TSCA), Underground Storage Tank (UST) program, as well as various state statutes. Mr. Shefftz has been qualified as an expert witness on numerous occasions in federal, administrative, and state courts. His clients for this work have included the U.S. Environmental Protection Agency (EPA), U.S. Department of Justice (DOJ), private litigators, state Attorneys General, and defense counsel.

Financial Statement Analysis/Ability-to-Pay/Economic Impact/Corporate Control & Ownership
Mr. Shefftz has examined the tax returns, financial statements, and other financial documentation for individuals, businesses, not-for-profits, municipalities, and all four unincorporated organized U.S. territories, to assess the ability to pay for – and/or economic impact of – sought environmental expenditures, e.g., compliance costs, penalty demands, and cleanup/remediation costs. He has reviewed discovery documents and conducted research in many cases to assess the extent to which subsidiaries can rely on their corporate parents for financial support and the extent to which corporate control of subsidiaries goes beyond that exercised by mere ownership.

Financial Gain / Economic Benefit / Unjust Enrichment

Mr. Shefftz has modeled companies' and municipalities' cash flows under hypothetical full and timely compliance states of the world versus actual delayed compliance states of the world to calculate the economic benefit (i.e., financial gain or unjust enrichment) on numerous enforcement actions. As part of this work, he has estimated the weighted-average cost of capital for a wide variety of companies and industries.

Other Financial Factors in Regulatory Enforcement Actions

Mr. Shefftz has performed work on other financial factors in regulatory enforcement actions: the “size of violator” penalty element; the relative weight of different financial indicators for establishing deterrence; and, the adequacy of financing plans to ensure environmental compliance.

Computer Model Development, Training, and Support

Mr. Shefftz has managed the development of the current versions of the BEN, PROJECT, ABEL, INDIPAY, and MUNIPAY computer models that U.S. EPA's Office of Enforcement and Compliance Assurance applies to financial economics issues in enforcement actions. He has prepared the models' help systems and training materials, as well as presented training courses and provided related support for federal and state enforcement staff. Mr. Shefftz has also assisted in several U.S. EPA academic peer reviews and public comment processes for the BEN computer model and related economic benefit recapture issues. Finally, he has created versions of the models for other nations: Canada (BEN), Chile (BEN and ABEL), and El Salvador (BEN).

JONATHAN S. SHEFFTZ

Public Policy

Cost of Capital Estimation

Mr. Shefftz assessed peer reviewer comments and then revised a draft report on cost of capital estimation for water systems. His work included applying the capital asset pricing model to the commercial drinking water industry and correcting for the earlier draft's assumptions regarding capital structure and industry-level business risk.

Financial Assurance

For a state agency, Mr. Shefftz proposed appropriate inflation forecasts and discount rates, drafted a guidance document, and then developed a stand-alone computer model to calculate the net present value of future remediation costs. For EPA's Office of Solid Waste, he provided recommendations on discounting future cleanup costs; for the Office of Site Remediation and Enforcement, he created a computer model to assess the combined affordability of financial assurance and cleanup costs; for another EPA office, he created a spreadsheet model to calculate the insurance and/or trust fund amounts necessary to provide for post-closure care. For the U.S. Department of the Interior's Office of Surface Mining Reclamation and Enforcement, he reviewed other agencies' approaches and developed a spreadsheet model to calculate initial trust fund amounts and then recalculate subsequent years' annual rebalancings to reflect actual returns and additional future costs. For a not-for-profit, he reviewed draft reports on the potential role of financial assurance in the regulation of hydraulic fracturing (i.e., "fracking").

Joint Cost Allocation

For a study of Bureau of Reclamation rate setting for California's Central Valley Project, Mr. Shefftz researched economically efficient methods for allocating water project costs to user classes.

Proposed Legislation

For an industry association, Mr. Shefftz designed and implemented a survey and analyzed its results to predict the impacts of a proposed national lead tax upon lead consumption and dependent industrial sectors. For a national waste management firm, he analyzed the financial impacts of a proposed state tax on hazardous waste land disposal.

Superfund Impacts

Mr. Shefftz examined the Department of Energy SURE model's predictions of economic impacts from Superfund liability and cost allocation reform. At a Superfund site, he critiqued a small city's claims that a proposed contaminated soil cleanup would lead to widespread economic disruptions.

Legislative Review

For the 1990 Clean Air Act amendments, Mr. Shefftz investigated the potential of fuel oxygenation requirements to cause petroleum refinery closures. For the Safe Drinking Water Act, he reviewed EPA's national-level drinking water affordability criteria, assessed their implications for small water systems' finances, proposed alternative criteria, created databases to predict how many systems would be judged unable to afford drinking water rules, evaluated public comments, and drafted report text to respond to a Congressional charge.

JONATHAN S. SHEFFTZ

Representative Clients

Mr. Shefftz has been retained by the following clients, whether directly as an independent consultant, during his prior employment at Industrial Economics, Incorporated (“IEc”), and/or as an independent consultant via subcontract with IEc.

State Agencies:

California
Illinois
Massachusetts
New Hampshire
Ohio
Texas
Wisconsin

Connecticut
Indiana
Michigan
New Mexico
Pennsylvania
Virginia

Citizen Groups and Industry:

Advocates for the West
Biodiversity Conservation Alliance
Bouncing Cranberries LLC
CWM Chemical Services, Incorporated
Environment America Research & Policy
Frontier Group
Gulf Restoration Network
Inland Empire Waterkeeper
Kinder Morgan
Louisiana Bucket Brigade
Musco Family Olive
National Parks Conservation Association
Northwest Environmental Defense Center
Our Children's Earth Foundation
Puget Soundkeeper Alliance
Respiratory Health Association
San Antonio Bay Estuarine Waterkeeper
Suncoast Waterkeeper
Texas Rio Grande Legal Aid, Inc.
Univ. of Denver Environmental Law Clinic
WildEarth Guardians

Alabama Environmental Council
Black Warrior Riverkeeper
Center for Justice
Ecological Rights Foundation
Environmental Law and Policy Center
Grand Canyon Trust
Idaho Conservation League
Inst. for Governance & Sustainable Develop.
Lead Industries Association
Louisiana Environmental Action Network
National Environmental Law Center
Natural Resources Defense Council
Orange County Coastkeeper
Pacific Environmental Advocacy Center
RE Sources for Sustainable Communities
St. Bernard Citizens for Environ. Quality
Sierra Club
Taotao USA, Inc.
Tulane Environmental Law Clinic
Waste Action Project

JONATHAN S. SHEFFTZ

Representative Clients (continued)

Federal / National Agencies:

U.S. Department of Justice (Civil Division – Commercial Litigation Branch; Environment and Natural Resources Division – Environmental Enforcement Section, Environmental Defense Section)
U.S. Environmental Protection Agency (various Headquarters Offices and Regional Counsels)
U.S. Fish and Wildlife Service (within U.S. Department of Interior)
National Oceanic and Atmospheric Administration (within U.S. Department of Commerce)
Office of Surface Mining Reclamation and Enforcement (within U.S. Department of Interior)
Superintendencia del Medio Ambiente (Chile)
Ministerio de Medio Ambiente y Recursos Naturales (El Salvador)

Private Law Firms:

Adler, Cohen, Harvey, Wakeman & Guekguezian Allyn & Ball, P.C.	Law Office of Jacqueline L. Allen Arnold & Porter LLP
Bayh, Connaughton and Malone	Bricklin & Newman, LLP
The Collins Law Firm, P.C.	D'Ambrosio Law Offices
DeCotiis, FitzPatrick & Cole, LLP	Law Offices of John K. Dema, P.C.
DLA Piper	Doherty, Wallace, Pillsbury & Murphy
Donovan Hatem LLP	Downey Brand LLP
Dreyer Boyajian LLP	The Garcia Law Firm
David S. Hammer, Esq.	Hanson Curran LLP
George E. Hays, Esq.	Henrichsen Siegel Moore, PLLC
Hunsucker Goodstein PC	Kampmeier & Knutsen PLLC
Kaplan, Massamillo & Andrews, LLC	Kasowitz, Benson, Torres & Friedman LLP
Law Office of David E. Keller	James E. Kolenich
Meryl A. Kukura, Esq.	Kenneth Lieberman, Esq.
Lucentini & Lucentini LLP	Mackie Shea O'Brien, PC
Marr Law Offices	Meyers Nave
Meyner and Landis LLP	MFI Law Group PLLC
Morrison Mahoney LLP	Motley Rice LLC
Law Office of Jennifer F. Novak	Law Office of Michael D. Parker
Patton Boggs LLC	Edward M. Pikula, Esq.
Reed Smith LLP	Richard Schwartz & Associates, P.A.
Ryan & Kuehler PLLC	Ryan, Ryan, Johnson & Deluca, LLP
Ryan Whaley Coldiron Shandy PLLC	Sasson, Turnbull, Ryan & Hoose
Silverstein, Silverstein & Silverstein P.A.	Simonds, Winslow, Willis & Abbott
Smith & Lowney, PLLC	Stoel Rives LLP
Law Offices of Charles G. Walker	Waltzer Wiygul & Garside LLC
The Law Offices of William Chu	Wilson Elser Moskowitz Edelman & Dicker
Reed Zars, Esq.	

JONATHAN S. SHEFFTZ

Publications and Presentations

Social Security Losses in Personal Injury, paper discussant at Western Economic Association International Annual Conference (Portland OR), 7/1/16.

The “Loss of Chance” Rule in the Various States, paper discussant at Allied Social Sciences Association Annual Conference (Philadelphia PA), 1/4/14.

Foreign Net Discount Rates: The Case of Undocumented Mexican Workers, paper discussant at Western Economic Association International Annual Conference (Seattle WA), 6/30/13.

Evolving Transition Probabilities and Worklives, paper discussant at Allied Social Sciences Association Annual Conference (San Diego CA), 1/5/13.

Commercial Damages Calculations, panelist at Eastern Economic Association Annual Conference (Boston MA), 3/10/12.

Medical Net Discount Rates: 1980 - 2011, paper discussant at Eastern Economic Association Annual Conference (Boston MA), 3/10/12.

The Value of Future Earnings in Perfect Foresight Equilibrium, paper discussant at Allied Social Sciences Association Annual Conference (Denver CO), 1/8/11.

The Role of the Economic Expert in Litigation Directed at Piercing the Corporate Veil, presentation at Fall Forensic Economics Workshop (Durango CO), 10/8/10.

Alternative Perspectives for Breach-Nonbreach Scenario Specifications in Commercial Litigation, paper presentation at Western Economic Association International Annual Conference (Portland OR), 7/1/10.

Sampling Issues in Commercial Damages Cases, paper discussant at Western Economic Association International Annual Conference (Vancouver BC), 7/1/09.

Net Discount Rates: Does Duration Matter?, paper discussant at Eastern Economic Association Annual Conference (Boston MA), 3/7/08

Enforcement Economics: Deterrence, Economic Benefit, & Ability to Pay, presentation at California Environmental Protection Agency State Water Resources Control Board “Enforeconomics” Workshop (Berkeley CA), 1/11/08.

Alternative Focuses for “But-For” Scenario Specification in Commercial Litigation, paper presentation at Western Economic Association International Annual Conference (Seattle WA), 6/30/07

Expert Witness Role Play, presentation at U.S. EPA 9th Financial Analyst Workshop (Atlanta GA), 5/3/07.

JONATHAN S. SHEFFTZ

Publications and Presentations (continued)

Working with Experts in Environmental Cases: An Expert Economist's Perspective on Expert Testimony, presentation at Public Interest Environmental Law Conference (Eugene OR), 3/2/07.

Alternative Measures and Focuses for Economic Damages Calculations, paper presentation at Eastern Economic Association Annual Conference (New York NY), 2/23/07.

Lost Profit as a Measure of Lost Earning Capacity, panelist at Western Economic Association International Annual Conference (San Francisco CA), 7/7/05

“EPA’s Economic Benefit Analysis Policy and Practice,” *Natural Resources and Environment*, Fall 2004.

“Taxation Considerations in Economic Damages Calculations,” *Litigation Economics Review*, Summer 2004.

Economic Benefit and Wrongful Profits in the Calculation of Penalties for Environmental Violations, presentation to Boston Bar Association Environmental Litigation Committee, 9/23/04.

Business Valuation/Commercial Damages, panelist at Western Economic Association International Annual Conference (Vancouver BC), 7/1/04.

“Wrongful Profits: Setting the Record, and the Concept, Straight,” *Environment Reporter*, 1/2/04.

Present Value Sensitivity to Ex Ante vs. Ex Post Perspective, paper presentation at Western Economic Association International Annual Conference (Denver CO), 7/12/03.

Taxation Considerations in Economic Damages Calculations, paper presentation at Eastern Economic Association Annual Conference (New York NY), 2/22/03.

Economic Benefit from Illegal Competitive Advantage and Complex Economic Benefit Scenarios, presentation at U.S. EPA 5th Financial Analyst Workshop (Boston MA), 7/26/00.

Economic Benefit in Wetlands Cases: Financial Analysis Issues, presentation at U.S. EPA Wetlands Enforcement Conference (Alexandria VA), 3/22/00.

Economic Benefit, presentation at U.S. EPA 4th Analyst Workshop (Denver CO), 3/10/99.

JONATHAN S. SHEFFTZ

Testimony History

Natural Resources Defense Council, Respiratory Health Association, and Sierra Club, Inc. v. Illinois Power Resources, LLC and Illinois Power Resources Generating, LLC (USDC CD Illinois), deposition 06/12/18 (scheduled).

Louisiana Environmental Action Network and Stephanie Anthony v. Exxon Mobil Corp. d/b/a/ ExxonMobil Chemical Co. (USDC MD Louisiana), deposition 10/26/17.

Jeffrey Palmer v. Inn Serve Corporation d/b/a Hampton Inn & Suites, Inn of Daphne, Inc. d/b/a Hampton Inn, and John Does 1-5 (Court of Lauderdale County, Mississippi), affidavits 6/2/17 and 10/23/17.

In the Matter of Taotao USA, Inc., Taotao Group Co., Ltd., and Jinyun County Xiangyuan Industry Co., Ltd. (U.S. EPA Administrative Court), deposition 9/26/17, courtroom testimony 10/19/17.

Puget Soundkeeper Alliance v. Louis Dreyfus Commodities LLC; Louis Dreyfus Commodities NA LLC; Louis Dreyfus LLC; LDC Washington LLC; LD Commodities Seattle Export Elevator LLC (USDC WD Wash.), deposition 3/2/16.

Gulf Restoration Network, Louisiana Environmental Action Network, and Sierra Club v. United Bulk Terminals Davant, L.L.C. (USDC ED Louisiana), deposition 5/5/15.

Village of Stillwater, Town of Stillwater, Town of Waterford, Water Commissioners of the Town of Waterford, Village of Waterford, Town of Halfmoon, and County of Saratoga v. General Electric Company et al.; and Saratoga County Water Authority v. General Electric Company (USDC ND New York), deposition 4/2/14.

Environment Texas Citizen Lobby, Inc. and Sierra Club v. ExxonMobil Corporation, et al. (USDC, SD Tex.), deposition 6/1/12, courtroom testimony 2/14/14.

Waste Action Project v. Draper Valley Holdings LLC dba Draper Valley Farms (USDC, WD Wash.), deposition 1/21/14.

RE Sources for Sustainable Communities v. Pacific International Terminals, Inc. (USDC, WD Wash.), deposition 4/11/13.

WildEarth Guardians v. Lamar Utilities Board doing business as Lamar Light and Power, and Arkansas Power Authority (USDC, Colo.), deposition 3/22/13.

Tina A. Rhodes, Individually and as Administratrix of David C. Rhodes, et al. v. Tyrone Gadsen and GP&T Transport, Inc. (Massachusetts Superior Court), deposition 12/11/12, courtroom testimony 1/23/13.

Waste Action Project v. Sierra Pacific Industries dba Sierra Junction City Sawmills (USDC, WD Wash.), deposition 12/28/12.

JONATHAN S. SHEFFTZ

Testimony History (continued)

People of the State of California and The City of San Diego v. Kinder Morgan Energy Partners, L.P., et al. (USDC, SD Cal.), deposition 4/26/12.

Marvin Evans v. Certain Underwriters at Lloyd's London, KMS Associates, Inc., Greenwich Insurance Company, W. Brown & Associates, Inc. and Hub International Gulf South Limited f/k/a Hibernia Rosenthal Insurance Agency, LLC d/b/a Hibernia Rosenthal (Florida Circuit Court), depositions 9/15/11 and 11/15/10.

Bouncing Cranberries LLC v. CommonPlaces eSolutions, LLC, testimony at binding arbitration hearing 8/18/11.

Puget Soundkeeper Alliance v. BNSF Railway Company (USDC, WD Wash.), deposition 7/7/11.

State of Texas v. BP Products North America Inc. (Texas District Court), deposition 6/7/11.

Chevron Corporation v. Jonathan S. Sheftz (USDC, Mass.) and *Maria Aguinda et al. v. Chevron Corporation* (Court of Justice of Nueva Loja, Ecuador), deposition 12/16/10.

Elizabeth Russell and Katherine Gates v. Joseph Reilly and James Georges, Executors of the Estate of K. Mildred Dooling, a/k/a Mildred K. Dooling, and Patrick Curtin, Individually and as Trustee of the M.D. Realty Trust (Massachusetts Superior Court), courtroom testimony 7/21/10.

Hildagarde Bartling, et al. v. Country Villa Bay Vista Healthcare Center, et al. (California State Court), deposition 1/29/10.

Joseph J. Zajac III v. Pamela J. Trueblood, et al. (USDC, MD Fla.), affidavit 9/16/09.

In the matter of 99 Cents Only Stores (U.S. EPA Administrative Court), courtroom testimony 6/24/09.

U.S. v. Government of Guam (USDC, Guam), courtroom testimony 12/9/08 and 4/13/09.

U.S. v. James and Nancy Oliver d/b/a Safety Waste Incineration (USDC, Alaska), courtroom testimony 3/25/09 and 3/27/09.

In the matter of Valimet, Inc. (U.S. EPA Administrative Court), courtroom testimony 12/10/08.

Rectrix Aerodome Centers, Inc. v. Barnstable Municipal Airport Commission, et al. (USDC, Mass.), deposition 12/2/08.

State of Ohio v. The Shelly Holding Company et al. (Franklin County Municipal Court), depositions 7/30/08 and 9/19/08, courtroom testimony 10/16/08 and 10/17/08.

In the matter of Lowell Vos Feedlot (U.S. EPA Administrative Court), courtroom testimony 9/17/08.

French Heritage, Inc. v. Ethan Allen, Inc. (Connecticut State Court), deposition 6/28/06 and 6/29/06.

JONATHAN S. SHEFFTZ

Testimony History (continued)

Oregon Public Interest Research Group, Diane Heintz, and Rena Taylor v. Pacific Coast Seafoods Company, Pacific Surimi Joint Venture, LLC, Pacific Surimi Co., Inc., and Dulcich Inc. d/b/a Pacific Seafood Group (USDC, Oregon), deposition 4/18/06.

In the matter of Rizing Sun LLC (U.S. EPA Administrative Court), courtroom testimony 2/7/06.

State of Ohio v. Container Recyclers, Inc. (Franklin County Municipal Court), deposition 4/1/05.

In the matter of Vico Construction Corporation and Smith Farm Enterprises (U.S. EPA Administrative Court), courtroom testimony 6/20/02 and 10/8/03.

U.S. v. The New Portland Meadows, Inc. (USDC, Oregon), courtroom testimony 5/20/03.

In the matter of Vico Construction Corporation and Amelia Venture Properties (U.S. EPA Administrative Court), courtroom testimony 1/14/03.

United States Public Interest Research Group, Stephen E. Crawford, and Charles Fitzgerald v. Heritage Salmon, Inc.; U.S. PIRG et al. v. Stolt Sea Farm, Inc.; U.S. PIRG et al. v. Atlantic Salmon of Maine LLC (USDC, Maine), deposition 6/5/01, courtroom testimony 10/15/02.

U.S. v. Murphy Oil USA, Inc. (USDC, WD Wis.), deposition 4/24/01.

U.S. v. Royal Oak Enterprises, Inc. (USDC, ED Va.), depositions 3/22/00 and 5/19/00.

In the matter of Titan Wheel Corporation of Iowa (U.S. EPA Administrative Court), affidavit 11/24/99.

U.S. v. Gulf States Steel, Inc. (USDC, ND Ala.), affidavit 12/30/98, deposition 10/22/99.

U.S. v. Koch Industries, Inc. (USDC, ND Okla. and SD Tex.), depositions 5/24/99 and 6/1/99.

State of Wisconsin v. I-K-I Manufacturing Company, Inc., deposition 4/13/99.

U.S. v. Borden Chemicals & Plastics (USDC, MD La.), deposition 2/5/98.

State of New Hampshire v. Johnson Products, Incorporated, deposition 2/3/98.

In the matter of EK Associates, L.P., d/b/a EKCO/GLACO, and EK Management Corporation (U.S. EPA Administrative Court), courtroom testimony 8/14/97.

U.S. v. Smithfield Foods, Inc., et al. (USDC, ED Va.), deposition 7/9/97.

U.S. v. Nucor Corporation (USDC, ND Ala.), deposition 6/12/97.

U.S. v. U.S. Metallics, Inc., and Town of Onalaska, Wis. (USDC, WD Wis.), affidavit 10/21/96.