BEFORE

THE NEW YORK PUBLIC SERVICE COMMISSION

ON BEHALF OF

NATIONAL ENERGY MARKETERS ASSOCIATION (NEM)

TESTIMONY OF CHARLES J. CICCHETTI, Ph.D.

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INTRODUCTION AND QUALIFICATIONS

Q. Please state your name.

A. My name is Charles J. Cicchetti.

Q. On whose behalf are you testifying in these proceedings?

A. I am testifying on behalf of the National Energy Marketers Association (NEM).

Q. Please describe your background and relevant expertise.

A. I am a co-Founder of Pacific Economics Group, Inc. (PEG). I am an economist with nearly fifty of years of regulatory experience. Much of my experience has focused on energy and environmental regulation. I have studied and provided expert testimony before regulatory commissions and courts on matters related to, among other things, energy pricing, regulation, financing, and valuation.

I attended the United States Air Force Academy, earned a B.A. in economics in 1965 from The Colorado College, and a Ph.D. in economics in 1969 from Rutgers University. After earning my Ph.D., I spent three years engaged in post-doctoral research at Resources for the Future (RFF) in Washington, D.C.

I joined the faculty at the University of Wisconsin-Madison in 1972, ultimately earning a tenured full professorship in both Economics and Environmental Studies. In 1987, I became the Deputy Director of the Energy and Environmental Policy Center at the John F. Kennedy School of Government at Harvard University, where I co-directed the Harvard Utility Forum in the late 1980s. From 1998 until 2006, I held the Miller Chair in Government, Business and the Economy at the University of Southern California

(USC). I have also taught a series of on-line lectures and class discussions in the Electrical Engineering Department at USC.

Q. Please describe your other professional experience.

A. I was the principal economist for the Environmental Defense Fund (EDF) in the very important Madison Gas and Electric rate design proceeding before the Public Service Commission of Wisconsin (PSCW), as well as complementary proceedings in Michigan, California, and New York in the early 1970s. I also served as the Chair of the PSCW starting in 1977, and served as a Commissioner until 1980. During that time, the Commission addressed time-of-use (TOU) pricing, marginal cost pricing, and held the first statewide long-range planning proceeding. During my time on the Public Service Commission I was a member of the Executive Committee of the National Association of Regulatory Utility Commissioners (NARUC) and was appointed Chair of NARUC's Committee on Implementing the National Energy Act of 1978, which included the Public Utility Regulatory Policies Act (PURPA).

I co-founded Madison Consulting Group in 1980, which was sold and merged into National Economic Research Associates (NERA) in 1983, and became a Senior Vice President. I joined Putnam, Hayes & Bartlett (PHB) in 1988, where I was a Managing Director until 1991 when I became Co-Chair until I left the firm in 1992. From 1992 through 1996, I served as Managing Director and founder of Arthur Andersen Economics Consulting (AAEC).

In 1996, I co-founded Pacific Economics Group (PEG). I remain associated with PEG for legacy clients. Earlier this year I became Managing Director and a Member of Berkeley Research Group (BRG).

Q. What has been the focus of your research and consulting work?

A. I sometimes describe much of my consulting work and research in terms of providing economic, finance, and statistical work to "pipes and wires" companies and their customers. These include companies within the electricity, natural gas, telecommunications, cable, oil, and other related industries. I focus on regulation and competition, and the relationship between these two paradigms. I also have worked on a number of matters involving environmental benefit to cost analysis (BCA), and estimating environmental damages.

I have authored several books based on my work on topics such as utility rate design, marginal cost analysis, quantitative environmental studies, financial matters, energy conservation, renewable energy, and environmental damages analysis. I have written or co-authored seven books on electricity tariffs, marginal cost analyses, restructuring policy, regulation, and competition. My most recent major book is *Going Green and Getting Regulation Right.* I have attached my resume as Exhibit A. It lists my activities, publications, and testimonies before regulatory bodies and courts.

PURPOSE OF TESTIMONY AND OUTLINE

Q. What is the purpose of your testimony?

A. At a high level, I have been following two developments in the retail electricity markets in New York that correspond to two broad avenues of inquiry. First, New York, under Governor Cuomo's leadership and encouragement, has developed a new approach to energy regulation known as Reforming the Energy Vision (REV), which has been described as an effort to enable energy consumers to "make more-informed energy choices, develop new energy products and services, and protect the environment while creating new jobs and economic opportunity throughout the State." (See https://rev.ny.gov.) Competition and customer choice are major components of the REV strategy.

Second, there are a number of proceedings before the New York Public Service Commission (the "Commission" or "PSC") that address the regulation of energy service companies (ESCO) providers and products. These include:

(1) CASE 15-M-0180 (Regulation and Oversight of Distributed Energy Resource Providers and Products);

(2) CASE 15-M-0127 (Eligibility Criteria for Energy Service Companies (ESCOs));

(3) Case 98-M-1343 (Retail Access Business Rules);

(4) CASE 06-M-1017 (Policies, Practices and Procedures for Utility Commodity Supply Service to Residential and Small Commercial and Industrial Customers. PHASE I);

(5) CASE 15-M-0476 (Proceeding on Motion of the Commission to Assess Certain Aspects of the Residential and Small Non-Residential Retail Energy Markets in New York State - Moratorium on ESCO marketing to Low Income Consumers); and

(6) Supreme Court of the State of New York, County of Albany, INDEX Nos.: 05680-16 and 05693-16.

I collectively refer to these six matters as the "Proceedings." Common to all the Proceedings is a claim that ESCOs "overcharge." My testimony addresses, among other things, the unfounded nature of this erroneous claim of ESCO "overcharges."

I begin by discussing differences between the incumbent regulated investor-owned utilities (IOU) and competitive ESCO business models. I explain why any comparison must account for specific differences between these two very different types of entities. Next, I explain that any meaningful comparative analysis should consider data from ESCOs' energy sales to all New York customers, and the time period for this review should be longer than just the most recent several years.

I also introduce and analyze other factors that cause ESCO energy-supply prices to differ from IOU energy-supply prices. The combined effects, in my opinion, raise significant questions that challenge the credibility of any claims that ESCOs are overcharging (or have overcharged) New Yorkers. In fact, ESCOs have ushered in many benefits for New York, and the customers who freely choose and remain with ESCOs are able to distinguish the products they select and make informed decisions. They are also able freely to return to the incumbent IOU as their energy supplier.

Q. Can you summarize the key points of your testimony?

A. Yes. The Commission's effort to end competition in the residential energy market is premised on fundamentally flawed assumptions and erroneous analysis, and will likely end up hurting New Yorkers. Moreover, the Commission's efforts are inconsistent with the Governor's REV program, which is intended to allow consumers to benefit from more, not less competition, and make more informed energy choices. The REV program also is designed to develop new energy products and services, and protect the environment.

1. U.S. Energy Department (EIA) data shows that ESCO participation in the New York energy market has, over the last decade and half, saved New Yorkers over $10 billion. By eliminating local utilities' monopoly on energy supply and introducing competition into the marketplace, ESCOs have lowered energy costs for all New Yorkers and put billions of dollars back into the pockets of New Yorkers.

2. ESCOs offer New York customers fixed-price plans, which allow customers to lock in their future energy costs. These plans are offered exclusively by ESCOs. Such fixed-rate plans constitute important options through which New Yorkers across income levels can benefit. These plans are especially important to fixed- and low-income residents who would struggle to pay local utility energy prices that can fluctuate substantially and are impossible to predict.

3. ESCOs offer New York customers the ability to be environmentally conscientious and purchase renewable or green energy. Protecting the environment is one of the

Governor's Energy Vision goals and, like fixed-rate options is a service that only ESCOs can provide.

4. ESCOs also offer a variety energy efficiency programs, including smart thermostats and electric products, that result in significantly reduced energy consumption. By reducing consumption, these programs result in meaningful energy savings for customers who do not have to pay supply or delivery fees for the portion of energy consumption that these programs eliminate.

5. ESCOs also offer a variety of consumer incentives, discounts, and other benefits to attract and retain residential customers. These programs and incentives provide valuable benefits to ESCO customers that local utilities do not provide.

6. The Commission's claim that ESCOs overcharge customers is based on highly misleading comparisons and incorrect or cherry-picked data. The Commission's analysis fails to account for concrete savings and benefits that ESCO customers get and looks at only a limited sliver of time and market segment – 15% of the time period provided for by the Department of Energy data, and only subsets of New York's energy market. Once corrected, the Commission's own numbers would show that ESCOs have saved New Yorkers over $10 billion.

7. ESCOs have been able to provide customers with substantial savings even with the deck stacked against them. The Commission has allowed local utilities to charge ESCO customers a "delivery charge" that includes payment to the local utility for supply-side costs the utilities incur in servicing non-ESCO customers. This additional charge or tariff is anti-competitive, subsidizes the utilities, and

impedes customers from benefitting from the even greater savings that ESCO customers would otherwise be able to realize.

Overall, the Commission's effort to effectively eliminate ESCOs and competition will send the New York energy market back to the 20th century and likely result in higher energy bills, dirtier and more pollutant friendly energy sources, and greater power by the utility monopolies. Furthermore, to the extent these proceedings aim to identify and fix general problems that persist in New York's retail energy markets, I pinpoint and propose reforms that would fairly and effectively improve the market.

Q. How much money have ESCOs saved New York customers?

A. Given the limited data the Commission has made available, it is difficult to pinpoint an exact amount but I am confident that ESCOs have across the board saved and benefited New York customers in excess of $10 billion. I based this conclusion on several independent factors.

1. U.S. Energy Department data shows that ESCO participation in the New York energy market has provided New Yorkers over $10 billion of savings as compared to utility pricing. Those savings are separate and apart from the savings I outline below.

2. By providing green or renewable energy, ESCOs provide New Yorkers real value. Even a 25% penetration of renewables in the ESCOs' supply mix, including renewable energy credits, results in approximately $450 million in climate change benefits for ESCO electric customers every year. ESCOs provide an additional $55 million annually in climate change benefits that relate to residential natural

gas products that they serve assuming a similar penetration of carbon offsets for the natural gas that ESCOs supply,

3. By providing energy conservation benefits, ESCOs provide New Yorkers value in the form of both monetary savings as well as environmental benefits. If ESCO customers are able to reduce their usage by 20%, this would result in savings of over $550 million – (about $300 million per year for residential electricity customers and $270 million for residential natural gas customers).

4. By providing fixed-price programs, ESCOs provide New Yorkers value that I measure at approximately 2.5 cents per kWh of the supply-side charge, which would translate to a value of approximately $125 million in 2015 alone if only half the residential sales are fixed-rate products. Applying similar analysis and assumptions to all ESCO customers, the value realized would be almost $1 billion every year.

5. Finally, I estimate that local utilities are adding about 4% of their energy-supply costs to the distribution charges they collect from ESCO customers. I estimate this amount to be approximately $300 million over the 16-year EIA data period.

Q. Can you explain the main problems underlying the Commission's analysis to date?

Simply put, ESCO customers have not been overcharged, and claims to the contrary are wrong, for many reasons.

First, the existence of a vibrant ESCO market in New York over the last two decades has saved New York energy customers many billions of dollars. I conclude that ESCOs have helped lower market prices more efficiently and more quickly than would

have occurred in the absence of ESCO participation in the market, where buyers would have been limited to IOUs and a small number of very large business direct purchasers. My conclusions are supported by data from the United States Energy Information Administration (EIA), as detailed below.

Second, I explain that average price differences omit compounding factors that introduce specific biases that distort the differences between regulated IOU charges and competitive ESCO charges. Ignoring these facts causes misleading or flawed comparisons. I explain differences in the underlying business models and the effect of regulation. I also analyze a number of factors that distinguish the competitive products that ESCOs provide from IOU full-service products. These product differences, including fixed-price terms, renewable energy or green products, and energy efficiency, are particularly important for smaller volume residential customers. ESCOs obviously must collect fees for providing these value-added services to customers who choose to purchase them. Conversely, IOUs do not provide these services and therefore should not recover additional amounts through their supply charges. These differences must be considered when assessing the reasons that ESCO prices may be different from the prices regulated utilities are charging. Stated differently, price is not the only factor that smaller volume customers consider to be important – as is evidenced by the fact that such customers are often electing to purchase value-added services from an ESCO rather than the plain vanilla service offering that IOUs (or other ESCOs) offer. This analysis helps to expose the fallacies and inaccuracies underlying the relative price comparison data the Commission's Staff has touted in purporting to compare prices charged by regulated utilities and unregulated, competitive ESCOs. Turning a blind eye to these

considerations and the differences between products being purchased introduces obvious bias and leads to seriously flawed conclusions based on IOU data and obviously unhelpful apples-to-oranges comparisons.

Third, I explain that IOU supply prices have not been unbundled properly in a manner that achieves economic efficiency and fair competition. Recognizing this failure is critical for two reasons. One, it further helps to capture why purported comparisons between the improperly unbundled IOU rate and ESCO supply prices is both misleading and invalid. Like any business, ESCOs must account for the costs they incur (including overhead, rent, utilities, customer service, and labor) in running their businesses in their supply charges. Utilities incur similar costs to run their energy supply business, but collect those costs through delivery charges paid by all customers (as IOUs have a monopoly on such services) – allowing them to pretend that their supply charges are less than what they truly are. Two, this realization identifies the key piece that the Commission needs to address and fix in order to improve market conditions for New Yorkers, which is the purpose of these proceedings.

Fourth, I explain conceptually why ESCOs should not be subject to new and expanded regulation. In particular, I explain why ESCOs – already subject to the discipline and regulation of competition – should not be managed like comprehensively regulated utilities and the dangers of drawing false comparisons between these very different species. I also explain that ESCOs provide services and products that increase energy efficiency and conservation, as well as competition.

I find it noteworthy that Staff appears to ignore the positive effects that ESCOs' competition have had and will continue to have on the regulated IOUs in terms of

reducing retail energy prices in New York and expanding their relatively new efforts to increase energy efficiency and renewable energy in the State. Such impacts set the table for New York to join the nation's top-tier states in terms of comprehensive energy, environmental, and economic development commitments and reforms.

The market penetration of ESCOs into non-residential sectors, in which most of the State's electric usage occurs, is further proof that ESCOs, effectively acting as agents for many larger energy users, have significantly increased the number of competitive buyers. ESCOs carry with them knowledge and purchasing power, making competitive wholesale markets more efficient – an independent factor that contributes to reduced costs.

In sum, ESCOs sell different products, provide competition, and improve the market. Competition between ESCOs and incumbent IOUs, coupled with inter-ESCO competition itself, improves efficiency and contributes to lowering energy prices in New York. Eliminating, constraining, or severely impairing ESCO competition in New York, or subjecting ESCOs to comprehensive utility regulation would constitute a major step backward – in a direction that a fulsome consideration of facts and differences does not remotely support. Such efforts are also inconsistent with the explicit objectives of the Governor's REV strategy that seeks to ***expand*** the competitive market in New York to usher in a myriad of new retail energy products and services, particularly renewable resources and energy efficiency. The Commission must recognize that measures it has sought to impose, and appears to still be considering, would interfere with this sector at many different levels, adversely impacting multiple links in the chain of the energy market in New York, and ultimately walking back decades of progress.

Q. Can you provide an outline of how your testimony is organized?

A. My testimony is generally organized as follow:

1. I discuss the differences between the ESCO and IOU business models, as well as the relevant differences between competition and regulation.
2. I review the evidence and analysis found in the Affidavit of Bruce Alch, Chief of the Retail Access and Economic Development Section in the Office of Consumer Services at the New York State Department of Public Service (DPS), and on which the PSC has relied over the last many months in perpetuating a narrative about ESCO overcharges.[1]
3. I look at expanded customer categories and time periods relative to the ones considered in Mr. Alch's affidavit to assess more holistically, with more precision, and with better context the issues that are relevant to these proceedings.
4. I discuss the benefits across all rate categories that ESCO competition provides in New York and outline my conclusion that ESCOs have saved New Yorkers at least $10 billion over the last 16 years.
5. I review the utility data, including bill comparisons, that form the basis of the false and/or misleading claims, primarily based on omitted variables or missing

[1] New York Public Service Commission's Answers and Memorandum of Law dated October 26, 2016, National Energy Marketers Association et al. v. New York State Public Service Commission, Index No.: 05680-16 (Alb. Cnty. 2016). For almost a year, the Commission has touted the conclusions and "data" Mr. Alch includes in his affidavit testimony. I understand that Mr. Alch will be submitting his own testimony in these proceedings, which I will analyze in connection with my rebuttal report. To frame the issues for these proceedings, however, I reviewed the testimony and conclusions on which the Commission has been grounding its policy decisions to date.

factors on which the Commission grounds its erroneous conclusion that ESCOs "overcharge" retail customers.

6. I review evidence that quantifies the missing variables and demonstrates the extent of the potential biases reflected by the incomplete or inaccurate data as it relates to green products, fixed-price products, and other savings and value-adds that ESCO customers receive.

A. Introduction: Concepts and Differences

Q. What is your understanding of the evolution and current mix of regulation and competitive choice in the retail electric and natural gas industries in New York?

A. New York Energy markets were restructured and became operational in 1997 because policymakers recognized that electricity and natural gas commodities are not natural monopoly products. Put differently, no one company or small set of companies necessarily had to have a monopoly over electricity and natural gas. That utilities historically had enjoyed such a monopoly was the creation of policymakers who two decades ago determined that competition would encourage more competitive pricing through economically efficient supply-and-demand responses. The expectation was that increased efficiencies would reduce costs and prices over time.[2] The expectations that New York policymakers had with respect to the effect that ESCOs would have on energy

[2] See Case 94-E-0952—Competitive Opportunities Regarding Electric Service, Opinion No. 96-12, Opinion and Order Regarding Competitive Opportunities for Electric Service (Issued and Effective May 20, 1996), at 30-33.

pricing were correct, as evidenced by the EIA data and as further analyzed in my testimony.

Retail energy marketers like ESCOs buy electricity and natural gas in the wholesale market with the intention to resell the energy to retail customers. Delivery remains exclusively the province of utility companies, which are responsible for delivering electricity and gas into, for example, customers' homes even if the customers opted to have their energy supplied by an ESCO. ESCOs also provide fixed-price contracts over various time periods, which product offerings decrease New York customers' risks and exposure to volatility, but increase ESCO risks and costs further.

Periods of extreme volatility, such as during the Polar Vortex of 2013/2014,[3] highlight the differences between utilities and ESCOs. Such high-impact, low-probability (HILP) events are hard on all market participants, including consumers. HILP events cannot be reasonably anticipated and therefore responses to them cannot be readily planned or made in advance. The ESCO Fixed Price (or Fixed Rate Service, FRS) customers are protected from price volatility. However, to offer such products, ESCOs must and do accept the inherent risk of price volatility. This may require hedging

[3] The Polar Vortex has been used to describe the unusually cold winter of 2013-2014. In proceedings before the National Energy Board (NEB) in Canada, for example, the Polar Vortex has been applied to the entire winter of 2013-4. See NEB Reasons for Decision, TransCanada PipeLines Limited, RH-001-2014, Page 32 (December 2014) (The NEB stated "the first year of pricing discretion coincided with one of the coldest winters in 35 years…".) With respect to geographic area, the term Polar Vortex has been used to describe weather affecting a large area that stretches across the middle and northern states and Canada. The extended area and time period related to the Polar Vortex are very important. This is because the unexpected and extreme drop in winter temperature in much of North America also caused unexpected and wholly unanticipated price increases for natural gas that affected several states, including New York, for an extended time period. Since much of the nation, including New York, uses natural gas at the margin to set wholesale electricity prices, colder weather and higher natural gas prices caused electricity prices to surge unexpectedly.

in the competitive wholesale market and other forms of insurance to secure access to necessary liquidity. While HILP events provide the starkest examples of the disproportionate risks ESCOs bear as compared with local utilities, for the same reasons, and as explained herein, ESCOs also face disproportionate risks on a daily basis as compared with utilities.

Accordingly, because ESCOs and utilities face fundamentally different risks on a daily basis, it is unreasonable to explicitly, or through biased or misleading comparisons, seek to hold ESCOs to a standard that expects them to guarantee to "beat" or "anticipate" utilities' pricing in competitive energy commodity markets. This difference alone makes it unreasonable to compare prices for products where the retail tariffs, duration of fixed-price contract terms, and business models are very different. The ability of ESCOs to offer fixed-rate products, which have the ability to save customers significant amounts of money in addition to providing them with more economic certainty. This is itself a significant benefit that ESCOs provide New York customers, separate and apart from the more than $10 billion ESCOs have saved New Yorkers and other matters discussed below. The idea of asking a company providing insurance against volatility to *guarantee* that, in retrospect, a purchaser will necessarily come out ahead of where he would otherwise be had he not purchased the insurance is nonsensical and antithetical to the very concept of hedging or insuring against risk.

Although ESCOs may be able to reduce costs in other ways, anticipating or insuring against HILP events is not one of them. If consumers prefer not to pay for insurance against such risks, they are free to purchase variable-rate products from IOUs or ESCOs; but if they prefer not to pay not to have the exposure, there is no reason to

eliminate that option for New Yorkers. Regulating competition and the prices of the services ESCOs provide is not necessary because customers are free to choose their energy supplier. I have not seen any evidence that competition is not working in New York. The Commission, and perhaps other agencies, should take actions against "bad actors." This is akin to enforcing speed limits, but not eliminating automobiles. I cannot imagine any benefits from attempting to regulate competitive retailers that follow the rules and compete with each other and the IOUs.

Q. Can you summarize the conceptual difference between the two paradigms?

A. At a high level, regulation emphasizes the cost of providing service in determining regulated prices. This focuses mostly on measuring historical data, and comparing expectations (forecasts) to actual results. Competition embraces the discipline of market forces, which push suppliers to base their prices on cost causality and user pays principles.

Regulation provides opportunities to earn and some supplier protection against uncertainty. In competitive markets, there are no guarantees. Suppliers can lose money and be forced out of the market. Other suppliers may stay, but they may be forced to absorb wholesale price increases. Regulated IOUs do not function in a similar manner or operate under the same business models or face similar risks.

It is these different models that also allow ESCOs to offer the many different, often innovative products that IOUs simply cannot and do not offer. Ignoring the difference in models and treating ESCOs as regulated utilities thus would eliminate the

many benefits that the competition model carries, including ESCOs' ability to offer these different options to New York energy customers.

Q. Can you discuss how these differences affect the business models that IOUs and ESCOs typically use?

A. The Full-Service IOUs earn a return on their invested capital, or current undepreciated Rate Base. They also pass through operating expenses, including energy supply costs and depreciation to recover their prior investment costs. Regulation authorizes a rate of return based on just and reasonable assessments of relative risks. Regulated IOUs are effectively granted a reasonable opportunity to earn their authorized return or income net of the costs they pass-through to their customers.

New York bifurcated the IOU's businesses into two functions. Delivery services are subject to comprehensive regulation as described herein. Energy supplies are acquired in competitive wholesale markets that the New York Independent System Operator (ISO) organizes. These energy supply costs are purportedly passed on without mark-ups to the retail consumers who select the IOU to provide Full Service. In other proceedings, I have estimated that regulated energy suppliers of last resort, which are similar to the IOUs in New York, would need to recover a margin of about 5% as a mark-up over their cost of goods sold, or electricity and natural gas supply costs. Instead, IOUs in New York recover their return on their pipes and wires' investments, along with other costs related to supplying energy, in their distribution charges that both IOU and ESCO customers pay for energy delivery.

ESCOs are competitive retailers. Their business is focused on customers and customer service. ESCOs do not have an authorized return with a reasonable opportunity to achieve it. ESCOs succeed or fail based on their ability to offer products and services customers want and to retain those customers. Under competitive market regulation, if ESCOs lose money, they may be forced to exit the market. If they are operating profitably, this could signal new entry and ESCO prices would likely decline.

ESCOs do not deliver energy to the retail customer. They use the IOUs' pipes and wires to deliver the wholesale energy they secure for their retail customers. ESCOs' retail customers pay the incumbent regulated IOU for the delivery service, which typically includes meter reading and billing. The amount ESCO customers pay for these IOU-provided distribution services is mostly the same as they would pay for delivery from the IOU if the IOU (instead of the ESCO) provides that customer with their energy supply. I examine below some bill comparisons that some utilities provide.

ESCOs also compete against each other. ESCOs seek new customers and retain existing customers by determining the services and products retail customers want and cannot get from IOUs or some other ESCOs. Some ESCOs seek to acquire and retain retail customers through economic inducements, *e.g.* discounts, prepaid debit cards, or loyalty rewards points. These marketing efforts and associated costs become part of the costs of business that ESCOs must recover in the margins they must seek to cover in the retail prices they charge for energy supplies. ESCOs also have overhead costs, business formation costs, and other on-going costs.

Competitive businesses are formed and sustained by the income or margins they earn. Most competitive product businesses apply a simple model where they measure the

cost-of-goods sold and add a per unit mark-up. This is quite different than the IOU regulated model.

In New York, the IOUs' delivery service includes the overhead for energy supply. The utilities continue to bundle in their delivery charges certain aspects of "energy supply" under their costs for maintaining and conducting their utility business – i.e., wholesale, operational, storage, and other costs – under the theory that these energy supply functions are system reliability costs and all delivery customers, including ESCOs' customers, should pay for these costs. The IOUs also continue to bundle some aspects of the merchant function (services provided solely to sales customers) in their delivery costs under the theory that shopping customers cannot avoid doing business with the utility.

Further, the IOUs effectively recover all their authorized earnings from distribution customers, including ESCOs' customers, that were previously applied to the bundled delivery and energy supply utility. For clarity, the IOU's business, operating, and fixed costs associated with the IOU's procurement of supply are included in the IOU's "delivery" charge. This is an important difference between ESCO supply prices and IOU supply prices, which highlights one reason why IOU supply prices are not the appropriate benchmark for comparison. This captures a fundamental flaw in IOU pricing: All customers (including ESCO customers) pay delivery charges, which include certain IOU supply related costs, such as labor, building rent, customer service, and other overhead charges. IOUs spread these costs and returns across all customers through their inflated distribution charges, effectively forcing ESCO retail customers to pay for the

IOUs' costs related to providing energy supply, including margins or necessary mark-ups that competitive firms would add to the cost of the energy they sell.

ESCOs must also pay for their own costs of business and margins. ESCO customers must pay for the ESCO's and a share of the IOUs' energy-supply business and margin-related costs. The regulatory allocation of costs and authorized returns between IOU delivery and energy supply should be considered when comparing the amounts that IOUs and ESCOs charge. Indeed, the Commission's focus should be on restructuring the market to address this problem.

Q. What are the relevant consequences of the differences you outlined above?

A. The regulatory decisions that effectively assign to ESCOs and their customers some of the costs for the energy that IOUs supply have significant consequences on the market. The delivery charges for energy in New York are inflated because the IOU energy supply function is not properly assigned, nor does it recover the IOUs' cost of operating in the retail energy supply business. There are several consequences.

(1) This tends to increase the amount that low-volume, often low-income, consumers must pay for the assigned fixed costs or non-variable costs for delivery.

(2) There is a significant competitive disadvantage for ESCOs that must compete while attempting to collect their own energy-supply business costs and margins from customers who are being forced to subsidize the IOUs' energy supply business costs and margins through the IOUs' delivery charges.

(3) Some ESCOs could be forced to exit the energy-supply market. Other potential entrants would not enter. Both these outcomes reduce competition in a way that could increase market prices.

(4) In addition to the cost of wires and pipes, the regulated delivery-service prices include various utility costs for supply procurement and metering, billing, and customer services. These services are not all natural monopolies that require comprehensive cost-of-service regulation. All customers, including ESCO customers, are effectively contributing to the maintenance of an inefficient regulated IOU that does more than deliver energy. Competition would also lower retail electricity and natural gas prices if IOUs unbundle some of the functions IOUs currently perform, *e.g.* metering, billing, and natural gas balancing service.

Competition achieves what regulators seek to emulate; to wit: prices based on cost causality and users-pay principles to more efficiently guide investments and consumption decisions, and market discipline to lower prices. The existence of the current regulated cost and earnings assignments impedes competition in New York and causes all-in energy prices to be greater than they would otherwise be.

Q. Are you proposing a change in regulation to fix the *status quo*?

A. Yes. I conclude that there would be increased efficiency, more vibrant competition, and significantly lower total (or delivered) energy prices if ESCO customers were not being required to pay for IOU energy-supply business and margin-related costs through IOU delivery charges. I think that competition would come closer to being on a level playing

field, and therefore economically efficient, if the Commission were to add a margin to the IOUs' energy supply costs, while subtracting a corresponding amount from the regulated delivery or distribution utility's cost of service.

At a minimum, it is important to recognize that any analysis of the IOUs' average prices for energy-supply should take into account that there are no return or other business related cost adders included in these average IOUs' prices. In contrast, these costs are included in the average energy supply prices that ESCOs charge. Any comparison that ignores this difference is biased and flawed.

Q. How does the current regulatory scheme affect ESCO customers?

A. The margin on the IOUs' energy supply business in New York is effectively fully recovered through inflated distribution charges. This means that, in addition to their own additional costs related to energy supply, ESCOs' customers pay fees to cover some of the utilities' energy-supply costs, even though they are not purchasing supply from the utilities. This impairs competition and the ability to accurately compare retail prices for energy supply.

The data I discuss below includes delivery charges in the IOUs' Full-Service charges. I want to compare similar things. Therefore, I include delivery and energy supply in the ESCOs' charges. That said, the comparison of what ESCO customers pay for delivery should be understood to include the IOUs' or Full-Service providers' costs and margins for energy supply.

B. The Erroneous Claim that ESCOs "Overcharge"

Q. What is your understanding of the Commission's claims to date of ESCO "overcharges"?

A. Mr. Alch's affidavit concludes that for a self-selected thirty-month period, ESCOs' residential customers were overcharged by more than $800 million.

I examine what I find to be significant selection biases in his analysis that result in very biased and plainly erroneous conclusions. First, Mr. Alch decided artificially to limit his analysis to a self-selected 30-month period, even though ESCOs have been in business for more than twenty years. We have more data to use to draw more accurate and complete conclusions about the relevant issues, and ignoring that data undermines the accuracy of conclusions that are drawn from that data. This is particularly true where the limited slice of data that Mr. Alch selected includes unique and impactful HILP events and their aftermath.

Second, Mr. Alch omitted from his analysis the larger volume rate categories, which are comprised of mostly quite savvy energy buyers. This omission is significant because these larger customers have saved significant amounts by switching from IOUs to ESCOs, and from ESCOs competing with IOUs and each other.

Third, the lower volume customer categories he elected to include are very likely to select providers based on a broader set of reasons than just retail energy prices – a factor that he entirely ignores. The smaller volume users often take fixed-rate service, as well as electing for green energy choices, energy efficiency, and other ESCO services. The data listing "prices paid" and nothing else – including basic information like product types being purchased – simply ignore the portion of the fees paid for these services.

Instead, the costs for these services are bundled into the ESCOs' average energy supply prices, along with mark-ups for any returns the ESCOs seek.

Fourth, as explained above, there are differences in the products, services, and relevant business models – all of which help account for additional differences in prices and all of which his analysis simply disregards. Accordingly, any comparative analysis of relative prices that omitted confounding factors would be biased and flawed.

Q. What is your understanding of Mr. Alch's claim that ESCOs "overcharge" retail customers in New York?

A. In his affidavit, Mr. Alch claims that, from January 2014 through June 2016, residential customers in New York "who chose to take service from an ESCO paid nearly $820 million more than if they instead elected to take commodity supply from their incumbent utility."[4] He went on to claim that low-income residential customers paid "almost $96 million more."[5]

Q. How did Mr. Alch account for the different products or services that ESCO customers purchased and paid for, relative to the products and services that IOU customers were receiving?

A. He totally ignored those differences. Mr. Alch's analysis did not even recognize, let alone account for, the variety of products, services, terms, and prices that individual

[4] Alch Affidavit ¶ 11, INDEX NO.: 05680-16.

[5] Id.

ESCOs provide to the market. He also limited his analysis almost entirely to residential customers (with a few exceptions I identify below). Those flaws in his analysis yielded totally unreliable, and meaningless conclusions that unfortunately have been used to fuel, or justify, Commission decisions to date.

Unsurprisingly, the figures that emerge from such a fundamentally flawed, restricted analysis are useless. It is not unlike comparing the "average price per car" charged by different car dealerships, without breaking down the car sales by car type. No one could credibly claim that Dealership A, whose sales data indicated an average price of $50,000 per car, is "overcharging" customers relative to Dealership B, whose sales data indicated an average price of $40,000 per car – where 50% of Dealership A's sales are electric cars manufactured by Tesla, and 100% of Dealership B's sales are gas-guzzling vehicles manufactured by Kia.

Q. What are some of the more important biases or omitted facts that you find should be included in any comparison of ESCO and IOU prices?

A. A fair comparison of prices should consider all, or at least the dominant, rate categories. In addition, the head-to-head price comparison analysis should not be artificially limited to a self-selected 30-month period that Mr. Alch narrowly decided to consider. It must also account for the premium products that are being purchased. In addition, the analysis must account for the true IOU pricing – which often is not revealed until months or years after the bill data is generated. That is because IOUs can and do retroactively seek effectively to change the prices they charged in given months. Obviously if an IOU charges an artificially low price for electricity or gas in a given month but later uses the

"loss" it sustained on commodity sales during those months to justify an application to recover those amounts, any comparison of prices charged by ESCOs (who cannot benefit from such retroactive recoveries) during those months must be compared with the cumulative price charged by the IOU. And, even this would not reflect the higher risks and hedging costs that ESCOs bear.

Q. How much have ESCOs increased their market shares, and what do those changes reflect?

A. New Yorkers have increasingly turned to ESCOs to purchase their energy supplies. Competitive markets work, and consumers are able to make rational choices. These are fundamental principles that operate across industries and on which our economy is based. Accordingly, the impressive growth in the amount of energy supplied by ESCOs in New York is a strong indicator that ESCOs are meeting significant retail consumers' needs.

The share of competitive suppliers that the EIA designates as Energy Only Providers (EOPs) increased steadily relative to Full Service Providers (FSPs). The term EOP is somewhat misleading because EOPs provide their customers with more than just energy. For example, EOPs often provide fixed-price hedging alternatives, energy-efficiency and conservation services and products, renewable or "green" energy products and services, and other value add benefits.

In New York, Full Service Providers include the Investor Owned Utilities (IOUs) under the Commission's jurisdiction, in addition to others like municipal utilities including LIPA, currently operated by PSEG Long Island. The Energy Only Providers include ESCOs and other direct sellers to facilities. The EOPs are selling many more

MWhs in recent years in all rate categories. Table 1 shows the market penetration for electricity. Since 2012, ESCOs actually have been selling more MWhs than IOUs. (I do not have similar data for natural gas.)

TABLE 1
TOTAL MWHs OVER TIME
TOTAL INDUSTRY

Year	*EOPs*	*FSPs*	*Total MWh*	*ESCO Market Share*
2000	17,518,891	124,507,669	142,026,560	12.33%
2001	18,585,611	125,595,149	144,180,760	12.89%
2002	23,508,144	123,931,972	147,440,116	15.94%
2003	43,657,193	100,387,510	144,044,703	30.31%
2004	48,731,118	96,350,591	145,081,709	33.59%
2005	56,673,120	93,474,451	150,147,571	37.74%
2006	55,136,108	87,101,911	142,238,019	38.76%
2007	61,621,768	86,555,755	148,177,523	41.59%
2008	62,120,469	81,932,467	144,052,936	43.12%
2009	62,432,480	77,601,917	140,034,397	44.58%
2010	65,503,804	79,119,769	144,623,573	45.29%
2011	68,259,408	75,787,201	144,046,609	47.39%
2012	71,154,545	72,008,123	143,162,668	49.70%
2013	77,091,758	70,803,369	147,895,127	52.13%
2014	77,495,913	69,876,000	147,371,913	52.59%
2015	78,512,623	70,401,032	148,913,655	52.72%
Source: https://www.eia.gov/electricity/data/state/				

Understandably, Mr. Alch restricted his analysis to IOUs under the Commission's jurisdiction. The greatest difference is likely the inclusion of PSEG Long Island in the EIA data, which supplies nearly as much electricity as the largest IOU, Con Edison, and charges nearly as much for full retail service as Con Edison. Other smaller utilities and cooperatives not fully under Commission jurisdiction could lead to other differences in comparisons based on EOPs and FSPs in the EIA data when comparing ESCOs and IOUs. Below, I will make some comparisons intended to show the size and significance of the biases related to Mr. Alch's narrow selection of data.

Q. Why did you analyze the time period that starts in 2000?

A. This recent sixteen-year period corresponds to the most recent EIA published data that reports information on revenues and quantities on a consistent basis for FSPs and EOPs. The reported data bundles both energy supply and delivery for the bundled FSPs. Therefore, I select the same type of bundled data, which sums for EOPs' customers their delivery payments and energy supply. Limiting my analysis to a self-selected subset of that period would prevent me from properly considering the comprehensive effects that ESCOs have had on the energy market in New York.

Q. What do you do to show the effect of Mr. Alch's decision to focus on just residential customers, where IOUs dominate the market, and to restrict his analysis to a relatively recent time-period?

A. First, I estimate the savings or benefits that EOPs have brought to New Yorkers in all rate categories. My analysis is shown in Appendix A for electricity. I have only limited data for natural gas, which is limited to average delivered price comparisons for Residential and Commercial customers included in Appendix B. However, like electricity there are similar important differences related to other services and the lack of a margin in the IOUs' average natural gas supply prices. These confounding differences are important and each increases the ESCOs' average prices compared to the IOUs' average prices.

I analyze the savings New Yorkers have realized in all electricity rate categories without limiting the data to one particular subset of New York customers. Second, I compare the all-in, *i.e.* supply and distribution, retail prices for non-residential customer

categories that Mr. Alch did not include. I use the same extended 16-year period across the State using weighted average inflation adjust price comparisons.

Q. What do these estimated savings mean?

A. Mr. Alch claims ESCOs "overcharge" New Yorkers based on his analysis of a much shorter time period, his willingness to disregard other customer categories, and his willingness to pretend that all ESCO products are identical to the plain vanilla energy product that customers purchase from IOUs. I think most energy experts would conclude that EOPs and the competition they provide have achieved significant benefits for all New York customers. Most of the savings that ESCOs achieved would be in the service territories of IOUs under the Commission's jurisdiction, although some occur in other service territories, such as the former LILCO. The analysis attached in Appendix A shows that ESCOs actually helped New Yorkers save at least $10 billion for electricity.

For natural gas, Mr. Alch simply excluded all commercial users. The EIA data attached shows that this generated tremendously biased conclusions because the commercial customers that selected ESCOs as their supply providers paid much lower prices on average than the corresponding commercial customers that selected LDCs, or regulated utilities, for their natural gas supply in 6 of the 7 years reported in Appendix B.

Mr. Alch's analyses and findings also disregard entirely the other savings New Yorkers have realized from ESCO competition. The exceptional growth in ESCO market penetration in these two categories reduced wholesale market prices as competition increased and more buyers entered the wholesale markets. Furthermore, some customers who remained with regulated utilities likely saved money because utilities likely

responded to ESCO competitors and took steps to lower the prices, on average, that they charged for electricity and natural gas.

Mr. Alch also compared specific IOU prices to the average price all the competing ESCOs charged in a service area. This is not a reasonable comparison because each ESCO offers a variety of very different products and different prices, terms, and other service bundles. ESCOs also vary considerably in what they sell and how much they charge. He ignored these important differences within the ESCO category, over time, across the State, and in his average ESCO price comparison, particularly in the residential category, where these differences across ESCOs is greater.

ESCOs do not offer the same product packaging as IOUs. ESCOs offer fixed and variable price terms, and ESCOs compete using a combination of price and other service offerings to distinguish their products and compete against both the IOU and each other. Mr. Alch's comparison omits confounding factors and distinct product differences. This makes his analysis and conclusions highly flawed and biased.

My additional evidence highlights some of the flaws in Mr. Alch's biased selection of the data to consider. It also demonstrates why his analysis is unreliable and should not be given any weight. Mr. Alch has also not presented his analysis in sufficient detail to determine the various components of his analysis, and the PSC has opposed my efforts to investigate other possible problems in his analysis.[6] The market works because

[6] NEM requested but was denied the opportunity to see all of the data that was provided to Staff in these proceedings. (See Appendix F.) Staff's refusal to provide to NEM and the ESCO parties in these proceedings access to the same data Staff was able to review in connection with these proceedings impairs my ability to identify with even more precision how much of Mr. Alch's "overcharge" figure is directly attributable to each of these flawed comparisons, or even to break out natural gas from electricity.

competing firms and products satisfy varying needs. If ESCOs do not continue to serve changing consumer tastes and preferences, some will lose market share and/or be forced to exit the market. This is the strength of competitive markets. It is far superior to alternative approaches where someone picks winners and losers, or decides what customers need.

Q. Did the utilities provide any data that compares ESCOs' bills to their own?

A. Yes, in a very limited and self-selected manner, some IOUs make public a comparison of their bills and a particular ESCO's bill. I review these because this eliminates the problem of comparing average ESCO prices to a single IOU.

Q. Have you reviewed the utility response to the Information Requests related to actual bill comparisons for an ESCO customer and the amount that the utility would have charged the same customer?

A. Yes. I have information for several utilities that provide limited utility-selected comparisons. As a threshold matter, the responses provide no information about the type of ESCO service or products the utility selected for such comparisons. There is also no evidence on the face of the utilities' data that shows that the selections were genuinely random. As a result, I have no basis for concluding that the comparisons are reliable and that the utility selection is not skewed or biased.

To facilitate a side-by-side comparison, I prepared Appendix C, which shows the utility responses (with some attempt to make it easier to follow). Appendix C shows that Con Ed and Central Hudson provided residential bill comparisons that show the utility

winning both comparisons. There were three commercial electricity customer comparisons where Con Ed and Niagara Mohawk came up short of the ESCO and charged more, and Central Hudson beat the ESCO selected.

There were three bill comparisons for residential natural gas from Con Ed, KEDLI, and Central Hudson. The utilities beat the selected ESCO price for the billing period selected three times.

There were also five commercial bill comparisons for natural gas from Central Hudson, ConEd, KEDLI, KEDNY, and Niagara Mohawk. After removing the effect of a Fixed Cost Credit from previous periods, the ESCO selected would beat KEDLI's corresponding bill. The other four times, the utilities beat the selected ESCO in the billing time period they selected.

None of these comparisons that the regulated utilities provided in their self-selected choices are statistically random in any recognized or accepted way. Nevertheless, even the utilities' self-selection of bills to compare shows that ESCOs sometimes beat the IOU in terms of just energy pricing differences – without accounting for the many other flaws and premiums that would increase those savings, as further explain throughout my testimony.

Q. What is your overall reaction to Mr. Alch's claims of overcharging and higher prices?

A. Mr. Alch's analysis is both wrong and entirely misleading. He selected the most recent years and gave no consideration to the overwhelming majority of the available data. He ignored larger volume consumption categories where customers likely care mostly, if not exclusively, about relative prices. He ignored differences in products or services, and

thus omits many obvious factors that would cause prices to differ. He used a period very favorable to utilities. There were declining energy prices that particularly benefit residential customers with variable pricing and even more so if there are effectively true-ups like the IOUs are authorized to have. Mr. Alch's choices and omissions introduce severe bias and render his conclusions useless. He also lumped together electricity and natural gas, which means he did not give any recognition to differences in the natural gas and electric industries, or their organizational and regulatory differences.

At least one major utility seems to agree with my more general conclusion concerning the near folly associated with any average price comparison that reads too much into average utility and ESCO prices. In a recent PowerPoint presentation, National Grid stated: "A comparison of a bill that includes ESCO charges with a utility bill in any single period may be affected by the utility's or the ESCO's monthly adjustments for prior periods, one-time charges of very short-term changes in energy and natural gas prices."[7] Mr. Alch's efforts to downplay these obvious limitations on the accuracy and meaningfulness of his analysis lead to totally unreliable conclusions.

Q. What is the significance of Mr. Alch's omission of other major customer categories and restricting his analysis to a limited period of time?

A. Table 2 shows that, with inflation adjustments, on average over the last sixteen years, competitive EOPs' average statewide electricity prices were about 2 cents per kWh ($0.0207) less than the vertically integrated FSPs' prices, adjusted for inflation. This is a

[7] National Grid USA New York Companies KEDNY, KEDLI and NMPC, Case 12-M-0476, Attachment 3 to DPS-NG-1, page 24 of 25 (November 2014).

competitive EOP savings of about 12% in real electricity prices over a 16-year period in New York.

TABLE 2 **New York Total Real Electricity Prices** **CPI 2015 = 100**		
Year	**Full-Service Providers (FSP)**	**Restructured Retail Service Providers (EOP)**
2000	16.03	17.68
2001	15.72	18.52
2002	14.79	17.05
2003	17.40	14.06
2004	17.23	13.49
2005	18.60	14.59
2006	18.98	16.52
2007	18.55	15.97
2008	19.29	16.76
2009	17.88	15.89
2010	19.00	16.26
2011	18.06	15.22
2012	16.85	14.39
2013	17.65	13.84
2014	18.47	14.29
2015	16.88	13.83
Sum of Real Prices 2000-2015	**281.38**	**248.34**
Average of Real Prices 2000-2015	**17.59**	**15.52**
Source: EIA, Average Price (Cents /kilowatthour) by State by Provider, 1990-2015. EIA provides these prices in nominal terms. https://www.eia.gov/electricity/data/state/.		

Q. Provide your insights on what these comparisons mean and how the Commission should use them.

A. The price comparisons in the previous table are aggregated and averaged across the State. These differences are one metric. It is also important to introduce and consider differences in the premium products and services provided by ESCOs, which were not included or reflected in the EIA data analyzed and would increase the savings numbers substantially. That said, the data already supports several important conclusions, including: (i) retail choice caused consumer prices to decline compared to prior years; (ii) when all categories of electric customers are included, EOPs' electric prices were less than FSPs' prices Statewide; and, (iii) EOPs provided products, credits and discounts, and other valuable services, which resulted in additional benefits and savings for the customers that chose to take the additional non-electricity supply services that ESCOs or EOPs offer.

It is also important to understand that competitive market prices are volatile. This data shows that there is no predictable certainty as to whether ESCOs will, on average, beat utility prices, or *vice versa.* It would not be reasonable for the Commission to hold ESCOs to a standard or to require ESCOs to guarantee that they prospectively will meet or beat utility prices – the market does not allow for that sort of certainty.

More fundamentally, it is illogical to assume that reducing the number of choices in the marketplace will make the market more competitive. Furthermore, for the foregoing reasons, it is illogical to assume that a policy that would force ESCOs out of the New York energy market (by allowing them to operate only if they can commit to do so under economically unreasonable conditions) will somehow benefit consumers, or

increase competition. It is also wrong to assume that consumers will somehow benefit from the forced removal of and/or comprehensive regulation of ESCOs – a sector whose addition to the marketplace has historically (and viewed over an appropriately broad period of time) resulted in lower prices for customers as described herein.

To the extent the Commission is engaged in a comprehensive review of the New York retail energy market and considering the requisite improvements that would most benefit New Yorkers, I propose that the Commission complete the unbundling process properly by requiring the IOUs to account for their commodity-related costs, expenses and margins in their energy-supply charge and then reducing the IOUs' regulated delivery charges (that apply to all customers) to reflect the collection of IOUs' margins in their energy-supply charges. Such a reform would pose major benefits to New Yorkers and help further facilitate the desired effects of the competitive market.

Q. Can you explain how factors like geographic dispersion could affect price comparisons between IOUs and ESCOs?

A. Yes. I do not think this analysis of EIA data should be over-interpreted. I reach the same conclusion about Mr. Alch's analysis. My purpose for analyzing average price differences is to demonstrate the biases related to a limited 30-month time period and ignoring other rate categories. I think a simple example demonstrates how things like geographic differences could affect such price comparisons when prices vary across the State or utility service territory.

Suppose there were three distinct geographic regions that could be characterized as having High, Medium, and Low electricity prices. It does not matter if I draw a

distinction between FSPs and IOUs in this example. Table 3 shows how this might be represented when the only customers that chose to purchase supply from ESCOs do so if the ESCO's prices were less than the corresponding incumbent IOU's prices. This circumstance is consistent with the reasonable notion that customers who were free to choose would do so if they could pay less, other things the same.

TABLE 3

Region	***IOU***	***ESCO***	***Delta (Savings)***
	$ per kWh		
High	$0.20	$0.19	$0.01
Medium	$0.15	$0.14	$0.01
Low	$0.11	$0.10	$0.01
Simple Average	$0.1533	$0.1433	$0.01

I now introduce a concept of different relative ESCO penetration rates across the State. I further introduce the reasonable possibility that consumers would be more likely to choose an alternative retailer that was less expensive when their underlying electricity bills were more expensive. In other words, if bills are relatively high, retail customers would shop for the best deals. One of the important reasons for higher utility bills would be higher prices.

Suppose this translated into ESCOs having market shares of: 75% in the High price region; 50% in the Medium price region; and 25% in the Low-price region. This would also mean the incumbent IOU would have respective shares of 25%, 50%, and 75% in these regions.

For simplicity, I will also assume the respective sales in the three regions were equal. Table 4 shows the comparison and a calculation of the weighted-average prices and their difference.

TABLE 4			
Region	***IOU/ESCO Split***	***IOU***	***ESCO***
	$ per kWh		
High	25/75	$0.20	$0.19
Medium	50/50	$0.15	$0.14
Low	75/25	$0.11	$0.10
Weighted Average*		$0.1383	$0.1583
Delta (ESCO-IOU) = -$0.02			
*Note: Respective share weights multiplied times respective price divided by sum of the share weights (1.5)			

Table 4 shows that when there were relatively more ESCO sales in markets across New York with higher underlying electricity or natural gas prices, the weighted average price comparison would falsely make it seem that ESCOs had higher prices than IOUs. ESCO prices remain $0.01 per kWh less and are simply not $0.02 per kWh more. In fact, ignoring the effect of higher ESCO penetration when prices are relatively high, the comparison shows ESCOs always beat IOUs.

It is wrong and counter-intuitive to think or suggest that customers who shopped for prices simply made bad choices even if in some circumstances an IOU's prices were less. ESCOs sell different products, *e.g.* Fixed Rate, Green, etc., which can be more expensive. Comparisons based on just cents per kWh or dollars per MMBTU are false

and misleading because they omit very significant confounding factors. Each omitted factor discussed works in the same direction and increases the average price of ESCOs compared to utilities.

Q. What does this discussion of the use of price comparisons mean?

A. Most important, this discussion shows the risks and dangers associated with relying on average price comparisons like Mr. Alch uses and the misleading and incorrect results such comparisons can generate. Omitting confounding factors also results in false conclusions related to alleged "overcharges."

Table 3 shows ESCOs beating IOUs in all regions. Table 4 shows that when ESCO market shares were greater in relatively high-price markets, a false conclusion could be reached. More important, it could appear that consumers made the wrong choice. If there were relatively more ESCO sales in higher priced parts of New York compared to IOUs, this would account for some of the roughly one penny difference reported for the residential customers over the 16-year period.

This price comparison and discussion also omits two other important confounding factors discussed elsewhere in this testimony. First, IOUs' prices would eventually reflect any lower wholesale cost of energy when energy prices decline. Second, ESCOs often provide other services bundled with their retail energy sales. Those services would cause ESCO prices to increase relative to corresponding IOU prices.

To summarize, any comparison of relative ESCO and IOU prices needs to consider both how the averages were determined and the omitted confounding factors that affect the prices being compared differently. Moreover, recent comparisons, which

also did not unbundle and consider other confounding distinctions, notably Fixed and Variable tariff differences, should never be relied upon to conclude that ESCOs were "overcharging" energy customers in New York.

Most analysts prefer more data. In this discussion, I do not claim to have quantified savings or made price comparisons that provide the perfect answers for the Commission. One of my objectives, however, is to demonstrate the biases from considering a single rate class and restricting the comparisons to a self-selected, limited time period.

Q. What is the policy significance of this comparison based on statewide data?

A. Competition from ESCOs has greatly benefited New York consumers who chose to purchase their energy from ESCOs rather than the incumbent regulated utility. Utility prices have declined, and utilities operate more efficiently, in part, because ESCOs are competing with them. ESCOs provided other valuable services that benefit their customers, which may increase the amount paid. Prices are mostly less than they were and less than they would have been. New York is becoming much more energy efficient, doing more with less end-use electricity and natural gas. New York is adding distributed renewable energy. I have no doubt that ESCOs have done much to achieve these very significant benefits for New Yorkers, whether or not they switch to ESCOs for electricity and natural gas supply.

Typically, ESCOs would provide additional services and things of value in addition to energy supply. The prices shown in the previous comparisons include the price of electricity supplies, and also any higher costs for the other valuable services and

benefits ESCOs provide. This is particularly true in the case of smaller volume customers that prefer fixed prices, green products, debit cards, energy-conservation services and other benefits. Larger volume customers are likely motivated mostly by underlying price differences. Many simply want ESCOs to serve as their energy supply broker.

New York has benefitted from energy price savings because ESCOs accepted risk and entered the competitive market. These benefits are measured in at least $10 billion of savings across all rate categories and over time. Despite any questions about how comparisons are made and what confounding factors are included, the very size of this difference leads me to believe that New Yorkers have paid significantly less because ESCOs are competing in the market.

Q. What conclusions have you reached regarding the benefits that ESCOs provide their customers in the form of the differences in the distinct products they supply compared to IOUs?

A. Smaller volume customers look to ESCOs to provide variable and fixed pricing terms. IOUs offer energy prices with adjustment mechanisms and catch-up terms. Smaller volume customers receive flexibility, switching rights, and can select other services, such as renewable or green energy options, and energy efficiency products, when they choose to purchase energy from an ESCO.

Q. What conclusions have you reached regarding the benefits that ESCOs provide all New York energy customers?

A. On aggregate, the net effect over 16 years is that ESCOs have captured more than half the State's market share for electricity. Competition has also yielded IOU responses that have caused IOUs to take steps to lower their energy prices. ESCOs' successes have likely helped to encourage New York to move more rapidly to re-structuring the State's energy industries, culminating in the very significant REV program and its implementation.

I now turn to some specifics of the "other" things that ESCOs provide their customers and that yield benefits for New York and New Yorkers.

C. Green Products and Services

Q. How does a green product-offering affect prices that some customers pay when they choose to purchase such products from ESCOs?

A. There are several reasons why some customers would (and do) pay a premium for electricity that comes from renewable energy or "green" sources, such as solar and wind generation, or that reduces their energy use without affecting the quality of their end uses. These reasons include: (i) climate change; (ii) local and regional environmental conditions particularly related to air pollution, such as NO_X, ozone, and particulates; (iii) preserving natural resources; and (iv) economic and national security.

Energy providers that supply green options could use Renewable Energy Credits (RECs). These are particularly applicable for climate change because the location of substitutes like wind, small hydro, solar, etc. do not need to be local resources.

Regardless, some customers value green energy and agree to pay a premium to ESCOs for providing a green option. The average prices of the ESCOs' energy supplied would be higher for ESCOs that provide green products, other things the same.

Q. How can you quantify the value of such services, or the amount customers would pay for environmental improvements such as Climate Change?

A. The Commission has already quantified the social cost of carbon (SCC) in connection with its setting a Zero Emissions Credit (ZEC) in New York. The Commission adopted Staff's proposal to use the SCC established by the U.S. Interagency Working Group (USIWG) for the period April 2017 through March 2019 of $42.87/short ton less a fixed baseline portion of that cost already captured in the market revenues received by eligible facilities due to the RGGI program. That would reduce the net cost of carbon to $32.47 (nominal $/short ton).[8]

There are a number of scientific studies that place a value on CO_2 reduction to reduce the costs and consequences from severe global climate change. An Inter-Agency Task Force of the U.S. Government issued a Revised Report on August 2016 and determined the central value of climate change benefits translates into a value $36 per tonne (Metric or 2,204,662 lbs per tonne).[9] This is the basis for how the federal government values climate change benefits for federal rulemaking, regulation and investments. Table 5 summarizes some additional support.

[8] New York Public Service Commission, Order Adopting a Clean Energy Standard, Case 15-E-0302 and Case 16-E-0270, pages 130-134 (August 1, 2016).

[9] Interagency Working Group on Social Cost of Greenhouse Gases, United States Government, *Technical Support Document – Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis – Under Executive Order 12866 (August 2016)*, page 4.

Table 5 **Why $36 per Tonne for CO_2**
August 2016, the 7th U.S. Circuit Court of Appeals upheld the use of $36 per tonne to set new regulatory standards.
March, 2015 Synapse Energy Economics determines the medium levelized value of carbon reduction is $45.19 per tonne.
The central value in 2015 using a discount rate of 3% of the U.S. Interagency Working Group is $36 per tonne using 2007$.
On December 14, 2013 the Economist Magazine reported that major oil companies plan on using between $34 per tonne and and $60 per tonne for carbon off-set costs

The Commission's $36 per metric tonne quantification equals $0.0163 per pound. The EIA estimates that CO_2 emissions from burning natural gas are 117 lbs/MMBTU.[10] Using an average EIA estimated Heat Rate of 10,408 BTU/kWh for steam generators in 2014, burning natural gas equates to CO_2 emissions of 1.2177 lbs/kWh (10,408 BTU/kWh x 117 lbs/MMBTU/1,000,000).[11] The climate benefits of $0.0163/lb and emissions of 1.2177 lbs/kWh equate to $0.0199 per kWh (0.0163 x 1.2177) in climate benefits from displacing natural gas-fired generation with renewable energy or energy efficiency that reduces use.

I use the widely-accepted value of $36 per metric tonne to represent the Climate Change value of ESCO Green Products and Services for reducing CO_2. This would equal

[10] EIA, Frequently Asked Questions" How Much Carbon Dioxide is Produced When Different Fuels are Burned? https://www.eia.gov/tools/faqs/faq.php?id=73&t=11. See also, NaturalGas.org/environment/natural gas/ page 1 of 6.

[11] EIA, Table 8.2. Average Tested Heat Rates by Prime Mover and Energy Source, 2008-2015, https://www.eia.gov/electricity/annual/html/epa_08_02.html

a price differential of about $0.02 per kWh more that customers may be willing to pay to reduce the negative effects of Climate Change. For natural gas sales that include carbon offsets, the U.S. Environmental Protection Agency uses a greenhouse gas emission rate of 0.005302 metric tons per therm of natural gas. This would equal a value differential of about $1.90 per MMBTU ($0.191 per therm) for natural gas a customer may be willing to pay.

Q. What would the corresponding Climate Change price differential be if coal fired generation was displaced with Green Products and Services?

A. The EIA estimates that CO_2 emissions from burning coal are 208 lbs/MMBTU.[12] Using an average EIA estimated Heat Rate of 11,099 BTU/kWh for steam generators in 2014 for New York burning coal equates to CO_2 emissions of 2.3086 lbs/kWh (11,109 BTU/kWh x 208 lbs/MMBTU/1,000,000).[13] The climate benefits of $0.0163/lb and emissions of 2.3086 lbs/kWh equate to $0.0376 per kWh (0.0163 x 2.3086) in climate benefits from displacing coal-fired generation in New York with renewable energy or energy efficiency that reduces use from coal-fired generation.

Q. What are the values you would assign for other environmental factors?

A. The primary air pollutants associated with electricity production have been internalized to a significant extent. This means that the savings related to reduced SO_2, NO_X, ozone, and

[12] U.S. EIA Frequently Asked Questions "How much carbon dioxide is produced per kilowatt-hour when generating electricity with fossil fuels?" See also, NaturalGas.org/environment/natural gas/ page 1 of 6.

[13] Table 6, U.S. EIA Forms EIA-423 and FERC Form 423, "Electric Power Delivered Fuel Prices and Quality for Coal, Petroleum, natural gas 1990 through 2014."

particulates are less than in the past when air pollution caused more local and regional problems. I have studied these matters and published a book, *Going Green and Getting Regulation Right,* and I wrote three monographs: *The True Cost of Harmful Pollution to Downwind Families and Business,* November 2010; *Expensive Neighbors: The Hidden Cost of Harmful Pollution to Downwind Employers and Businesses*, January 2011; and *Why EPA's Mercury and Air Toxics Rule is Good for the Economy and America's Workforce*, July 2011, all of which consider these environmental factors.

I concluded there were significant benefits from reducing these other air pollutants that cause health-related damages, particularly particulates ($PM_{2.5}$) and NO_X. These air pollutants represent very significant health concerns and economic damages. However, when natural gas is used for electricity generation, the damages are much less than when coal is used. Renewable electricity is more likely to replace natural gas in New York. This significantly reduces the air pollution benefits for renewable generation compared to climate change discussed. Nevertheless, I show in Appendix D that NO_X and $PM_{2.5}$ benefits would add about 11% to the climate change benefits for Green Products and Services. This is an increase of $0.00214/kWh. The combined air quality benefits would be $0.02204/kWh for CO_2, NO_X and $PM_{2.5}$. These are localized values and where the substitution of renewable generation takes place likely would matter to some customers.

Q. What would be the corresponding increase related to NO_x and $PM_{2.5}$ for coal-fired electricity generation?

A. Coal is particularly harmful in urban parts of New York. It is being phased out. Nevertheless, to the extent that some coal generation was used in New York, the avoided costs per kWh, *i.e.* the benefits from displacing coal, would range between approximately $0.16 per kWh and $0.31 per kWh. I show the source of these estimates in Appendix D.

Therefore, the major reason for replacing and/or reducing electricity supplied using natural gas is climate change, while the primary reason for eliminating any coal generation in New York is concerns about local air quality.

Q. Can you provide an example of how energy providers might offer products that provide green options?

A. Yes. An energy provider might offer an option with a premium of $0.025 per kWh for 100% wind generation, or perhaps $0.015 per kWh for 100% small hydro. The energy provider might also offer mixed or green blended options, such as 50/50 wind and small hydro, or for a 75/25 wind to small hydro choice. Further progress can be expected from moving towards more renewable generation, energy efficiency, and conservation under the Governor's REV plan that the Commission is helping to implement. Localized options may emerge and become popular when energy suppliers increase their investments in green generation and storage.

Q Can you estimate savings in annual terms related to how much ESCOs would achieve to reduce climate change?

A. Yes. ESCOs sell approximately 75 billion kWhs annually. The current penetration of renewables in New York is about 25%. If ESCOs sold this same proportion of green energy, that would mean that approximately 18.75 billion kWhs of the energy ESCOs sell New Yorkers annually are green. If I use a conservative value, like the one the Commission itself has used for measuring the value of the carbon reduction, of $0.024 per kWh, this would represent about $450 million per year in benefits that ESCOs provide their customers.

ESCOs sell approximately 112,500,000 MCF to residential customers each year, or 116,662,500 MMBTUs. Using $1.90 per MMBTU for natural gas based on a $36 per metric tonne value for climate change benefits, and assuming 25% in carbon offsets, ESCOs that supply natural gas in New York would achieve benefits of $55,400,000 each year.[14]

D. Fixed-Price Products

Q. How do ESCO customers benefit from Fixed-Price products?

A. Wholesale market prices are inherently volatile and thus can and do constantly rise and fall. Competitive markets use the forces of demand and supply to determine market-clearing prices and quantities. Competitive markets are said to be in equilibrium when the quantity of demand and supply are equal. This would result in prices equal or close to

[14] See Appendix E, Comments for Center for Resource Solutions (CRS) for the NU Public Service Commission, Proposed Rulemaking I.D. No. PSC-13-16-00008-P Resetting Retail Markets for ESCO Mass Market Customers dated May 12, 2016.

marginal cost, which the Commission observes in its Memorandum of Law.[15] Nevertheless, competitive markets are not always in equilibrium due to variations in demand and supply over time. The stubborn fact is electricity markets, like many other markets, have inherent uncertainty. ESCOs provide New York energy consumers the opportunity to select a service where the price of utility service is fixed for particular periods of time.

When demand surges relative to supply, market prices can increase relative to the short-term marginal cost to clear the market. In effect, the higher cost arising from shortages is factored into the increased price that clears the market. This results in the addition of a concept called marginal opportunity cost to short-run marginal cost, and *vice versa* if there were excess supply. ESCOs operate in both the wholesale and retail markets. By provide Fixed Price services, ESCOs insulate their customers from uncertainty by assuming for those customers the risk of price volatility.

Q. Does the Commission accept the fact that energy markets are volatile and uncertain?

A. The Commission expressed doubt and/or some misunderstanding about how competitive markets respond to unexpected surges in demand. A recent filing implies the use of a false conceptual definition of the term "workably competitive" market. The Commission seemed to define workably competitive solely with reference to results and the introduction of innovative products. For example, the Commission argued that it

[15] Memorandum of Law of Respondent New York State Public Service Commission at 46.

concluded that the "market was not workably competitive because, *inter alia*, most mass market customers participating in the market did not receive savings, energy-related value-added services, or indeed any benefit comparable to the rate charged."[16] This interpretation and conclusion is incorrect. It reflects a seriously flawed understanding of what competitive markets do and ought to do. Competitive markets do not guarantee lower prices – wholesale prices in competitive markets move up and down. An ESCO that provides Fixed Rate Service (FRS) choices must pay a bit more in order to avoid risk and volatility emanating from the uncertain wholesale energy markets.

In order to assess any claims of "overcharging," particularly for Fixed-Price ESCO products, it is critical to understand that a workably competitive market is one that (i) provides for participants to freely enter and exit, and (ii) allows those participants to compete (even in the face of potential monopoly power). Those conditions are "workably competitive" because they advance economic efficiency over time. More specifically, a workably competitive market has the following characteristics:

- The market clearing price and quantity of a good or service exchanged are determined by the interaction between buyers' demand and sellers' supply, along with relatively free access to information.
- An ESCO's net income or loss is a function of the relationship between the competitive market price and the individual ESCO's average total costs per unit.
- If net income is positive, the ESCO would be incentivized to expand (and *vice versa*). This is called a price signal.
- If consumers find that market prices are too high, they would attempt to purchase alternative or substitute products.

[16] See Memorandum of Law of Respondent New York State Public Service Commission, page 43 (citing February 2014 Order (R. 3343-44)).

- No individual seller or buyer, of group of sellers or buyers, unilaterally would determine market prices by limiting market information or controlling the quantity sold.

It would not be reasonable for any regulator to adopt a goal or purpose of a workably competitive market that ignores the above criteria and focuses almost exclusively on price results for ESCO customers. Such an approach reflects a fundamentally flawed definition of what a workably competitive market is – one in which all customers were mandated or even expected to always benefit greatly from retail choice. Despite the evidence above that ESCOs have generally outperformed utilities when all customer categories are compared, there are no guarantees this will always occur. And, there should be no such expectation.

Q. Do you think retail customers that agree to pay more to gain energy price certainty need Commission protection, or that the ESCOs should be penalized or regulated because they market and sell Fixed-Price options?

A. No. Fixed-Price energy contracts should charge prices that reflect and account for the greater risks that wholesale prices can and typically will increase (or the cost for an ESCO to hedge such risk), which risk the ESCO suppliers are taking off consumer hands and bearing themselves when offering such products. I also strongly believe that consumers are intelligent, and they discern the difference between fixed-price energy contract protection and uncertain (albeit regulated – or even pass-through without margin), impossible-to-predict energy supply prices.

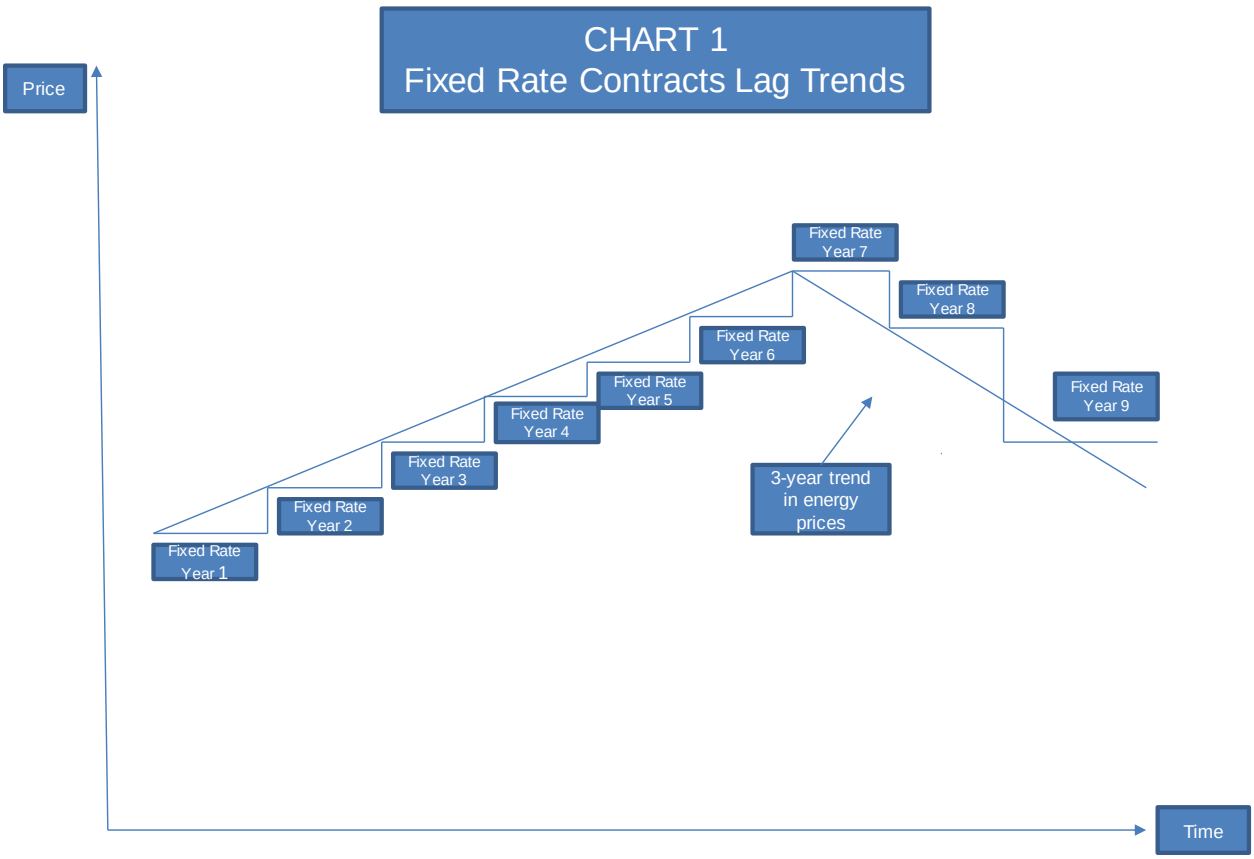
I conclude that there is value and increased economic efficiency when customers are afforded the right freely to choose their energy provider and the specific services they purchase. Ignoring why customers decide to purchase the products they decide to

purchase, and disregarding those choices themselves, reflects severely faulty reasoning. Relying on such reasoning to regulate, punish, or ban ESCOs is even more misguided. The Commission would have to conclude, and lay out evidence to support the conclusion, that consumers are acting illogically or do not care or think about the decisions they are making. None of these assumptions have been established, and most of them are patronizing or grossly insulting.

Q. Do trends in prices affect whether consumers on Fixed-Price Products gain or lose?

A. Definitely. Mr. Alch appears to miss this point when he compares ESCO and IOU prices during a period when energy prices for the 30-month post-Polar Vortex period were declining, but he ignores prior periods when they were on the rise. His selection of a narrow 30-month window when prices were declining introduces serious bias, particularly for ESCOs' Fixed-Rate Customers.

Chart 1 demonstrates in a simplified manner this important point that trends in pricing affect whether a customer's fixed-price contract is above or below the market price at any given period.



This Chart shows that Fixed Rate Service (FRS) customers gain (often tremendously) in periods of rising prices, but lose due to similar contractual lags when energy prices decline. This is yet another problem with Mr. Alch's decision to focus on a narrow-self-selected period of time and ignore the rest of the available data from prior years.

Q. Do regulated utilities offer Fixed Price Service (FRS)?

A. No. Utilities cannot and do not offer FRS to small volume customers. Only ESCOs can offer such options to retail customers who prefer to pay for fixed-price certainty. This critical distinction between product offerings explains some of the differences in relative prices, particularly during the months that Mr. Alch selected in his analysis.

Fixed-Price products especially benefit retail customers concerned about maintaining a budget or prudently managing commodity risk, such as low-income customers and small businesses. Utilities have energy-adjustment clauses that reflect price changes in wholesale markets due to changes in market demand and supply. Therefore, utility energy supply prices vary with changes in the market.

The ESCO's FRS offerings are very different products because customers can secure price certainty over a period of time. It would be unreasonable, unfair, and inefficient to require ESCOs' FRS offerings to beat utility prices. It would be worse to regulate ESCOs in order to require ESCOs to provide retroactive refunds. That, in effect, would punish ESCOs for providing a valuable choice and service to retail customers in the form of rate certainty.

Competitive wholesale markets, like NYISO, experience price increases and decreases. The future is uncertain and FRS thus shifts risks from customers to ESCOs. If wholesale market prices increase, customers benefit because the customer pays the same lower fixed rate. ESCOs must spend more to hedge to cover the fixed-rate products they are providing customers who elect to purchase such certainty. ESCOs would need to recover any higher costs as well as an adjusted return or margin for any increased risks inherent in the fixed-rate offerings they provide customers.

The cost per kWh for energy would be greater for customers that select fixed-rate products when hedging costs are added to energy supply costs. I reviewed utility hedging data. I found that the reporting utilities had an approximately $0.025 per kWh residential energy supply-price difference for hedging.[17] I would expect ESCOs that offer fixed-rate

[17] See Quarterly Reports of the IOUs to the Commission.

products would pay similar hedging premiums and would also expect to incur some additional risks, which could increase the margin ESCOs would seek compared to these values based on utility reporting. In recent years ESCOs sold about 10 billion kWhs per year. Using a conservative $0.025 per kWh, even if only half of ESCOs' residential sales were fixed-rate products, I estimate that ESCOs residential customers valued fixed-rate service at approximately $125 million per year, and, applying similar analysis and assumptions to all ESCO customers, the value realized would be approximately $1 billion ($937,500,000) annually.

Further, the energy-supply price comparison is misleading because utilities have energy and other adjustment clauses that can lower utility prices, and the ESCOs' FRS prices include a price premium to cover the costs and risks related to the retail customers' price certainty.

E. Consumer Savings: Energy Efficiency, and Demand Side Services and Products

Q. Why are energy efficiency and demand-side services and products important?

A. There are two primary types of benefits that result from programs, investments, and choices that reduce electricity and natural gas use: (i) consumer savings and (ii) societal benefits.

First, consumers who choose energy efficiency, demand-side management, and/or conservation, reduce the size of their utility bills regardless of their supplier. The savings are significant because the reduced consumption saves that customer from paying supply or delivery charges for the energy the customer no longer needs to purchase. Their

savings may also cause others to consider doing similar things on their own, resulting in more energy use savings. For example, if someone replaces light bulbs with more efficient lighting, less-efficient hot water heaters with more efficient ones, or standard thermostats with smart ones, neighbors often learn of these improvements and savings and purchase similar things inside or outside of an ESCO's program. This is called a "warm glow" effect.

Second, like renewable energy that displaces fossil fuel use, actions that reduce or eliminate energy consumption yield important societal benefits, which were discussed above. To recap, reducing electricity produced using natural gas will result in a societal cost savings per kWh avoided of about $0.02 related to climate change and about $0.022 when NO_X and $PM_{2.5}$ reductions are included.

The societal benefits for displacing coal are greater and are about $0.038 per kWh avoided in climate change benefits. When NO_X benefits are included, the societal benefits per kWh avoided increase to about $0.045 per kWh. The biggest increase in societal benefits from replacing coal comes from avoiding $PM_{2.5}$. This would result in additional societal benefits of more than $0.15 per kWh replaced.

Q. Why is it important for New York consumers to conserve energy?

A. New York ranks third in state per capita Gross State Product (GSP), and New York has the highest state per capita GSP of the 48 contiguous or lower-48 states.[18] At the same time in 2014, according to EIA, New York had the lowest per capita energy use of all the

[18] Bureau of Economic Analysis (BEA), Broad Growth Across States in 2014, Table 4. https://www.bea.gov/newsreleases/regional/gdp_state/gsp_newsrelease.htm.

states and District of Columbia.[19] These two outcomes combine to mean that New York produces more economic activity with less energy use than any other state. One of the reasons for New York's very desirable economic and energy efficient performance is that New York now ranks fifth in energy efficiency according to the most recent, widely-followed and accepted ACEEE (American Council for an Energy-Efficient Economy) scorecard.[20]

Q. Why is this relevant to these proceedings?

A. New York earned its favorable energy efficiency ranking and result in part because the utility bills in New York collect Social Benefit Charges (SBC), which help to finance energy efficiency in the State. These charges are added to each utility bill regardless of the type of supplier, competitive ESCO or regulated utility.

ESCOs spend additional money to provide information and counseling, improved metering equipment, and energy-saving devices (like smart thermostats) to their customers. These competitively supplied ESCO products and services are an example of how some ESCOs choose to compete for and retain customers. The programs increase ESCO prices for two reasons: (1) The programs add costs to ESCOs that provide free or subsidized products and services to their customers that help them consume less energy; and (2) selling less because customers conserve and become more energy efficient would increase the average price per unit of energy sold because some fixed costs are spread over fewer units of energy sold. In my book, *Going Green and Getting Regulation*

[19] EIA, Rankings: Total Energy Consumed Per Capita, 2015 (million Btu), https://www.eia.gov/state/rankings/,

[20] American Council for an Energy-Efficient Economy (ACEEE), State and Local Policy Database for State Energy Efficiency Scorecard, http://database.aceee.org/state-scorecard-rank.

Right,[21] I provide several different perspectives for determining the cost per kWh saved through energy efficiency programs. I conclude the costs are about $0.05 per kWh avoided or saved.

Residential users purchase about 10 billion kWh from ESCOs each year. If as a result of ESCO conservation services and programs, these customers conserve only 20% of the electricity they use, this would be annual saving of 2 billion kWhs. If these customers pay $0.20 per kWh and the cost per kWh saved was $0.05 regardless of who pays, the residential benefits would be $300 million annually ($0.15 per kWh times 2 billion kWhs). ESCO customers across all rate categories use about 75 billion kWhs per year. If they save a similar 20%, and using a full-service price of about $0.14 per kWh, the annual savings would be about $1,350,000,000 ($0.09 per kWh times 15 billion kWhs).

I do not have precise values for natural gas. Recent estimates from EIA put residential use in New York at about 450,000,000 MCF per year. If ESCOs supply about 25% of residential use, as they did previously, they would be selling approximately 112,500,000 MCF annually. With a price, including delivery, of about $12 per MCF, the annual revenues would be about $1,350,000,000. If ESCO induced savings were 20%, ESCOs' residential customers would save about $270 million per year before factoring in any costs these customers might contribute to achieve such savings. I do not have sufficient data to estimate similar natural gas savings for all ESCOs' rate categories.

[21] Cicchetti, Charles J., *Going Green and Getting Regulation Right: A Primer for Energy Efficiency*, Public Utilities Reports, Inc. Vienna, Virginia (2009).

F. Loyalty Programs, Discounts, Gifts, Debit Cards, and Other Rewards

Q. Do ESCOs provide other competitive incentives to attract and keep retail customers?

A. Competitive ESCOs compete to attract and retain retail energy customers in New York. The individual ESCOs typically offer many choices that can vary by the length of the service term, fixed and variable pricing, the inclusion of green supplies, and many other factors. Some ESCOs provide financial inducements in the form of discounts that reduce the amount paid annually or over the term of the agreement. Other ESCOs offer such savings in the form of gift or debit cards that ESCO customers can use to purchase goods. Some ESCOs provide energy-saving goods and services. ESCOs sometimes do not pass through their actual energy commodity costs as a marketing decision because they in effect "eat" amounts that they freely choose to retain customers.

Q. Can you quantify how these various marketing efforts and incentives affect the retail prices that some ESCOs charge?

A. I have reviewed certain information some ESCOs provided to estimate the value of such added services that they provide. Table 6 shows the relationship between discounts and bill credits to the amount certain selected ESCOs bill for energy through utilities. These are aggregated for both electricity and natural gas if both were sold, residential and small commercial, and fixed and variable products.

I will not include the names of the actual ESCOs to protect proprietary information that might adversely affect individual ESCO's competitive outcomes. Given the nature of these responses, the most important values are the percentage of bills that

these ESCOs reduce because they provide discounts and credits. These percentages seem to be greater for the larger ESCOs in terms of the number of customers.

TABLE 6
Some Examples of ESCO Value Added in Retail Goods And Services

Customers - Annual Average	*Ratio of Credits and Costs/Amount Billed Through Utility (In Millions$*	*Percent of Bill*
About 2,000,000	$95/$547	17.4%
Commercial - About 90,000	$5.8/$33,7	17.1%
Resdential - About 25,000	$0.268/$5.84	4.6%
About 400,000	$11.4/$91.5	12.5%
About 100,000	$0.439/$18.15	2.4%

Q. What is the significance of the results in Table 6?

A. It underscores yet another way in which Mr. Alch's "overcharge" claims are mistaken and rooted in a basic failure to compare "apples to apples." Mr. Alch does not include all of the goods and services ESCOs provide their customers when undertaking his comparison to IOU prices. Indeed, Table 6 alone shows that some of the services and discounts Mr. Alch fails even to account for exceed the entire percent "overcharge" he claims to observe. The larger ESCOs on average in this small sample use these types of marketing incentives to a greater extent. I believe ESCOs have an approximately 10% marketing expense based on the limited information reflected in this table. However, I recognize that there would be differences across ESCOs and the life-cycle of residential customers. Regardless, the Commission should not ignore this difference between IOUs that retain residential customers and ESCOs that must compete for retail customers against each other and the incumbent utility.

Finally, I should observe that the values in Table 6 do not include (i) the costs ESCOs incur to provide hedging for either Fixed or Variable Rate Services, (ii) various premiums for Green Services that ESCOs provide; or (iii) the amount of value added for energy-efficiency counseling, information, and products.

G. Other Differences and Reasons Why Some Consumers Freely Choose ESCO Suppliers

Q. What are some of the significant differences between competitive ESCOs and regulated utilities?

A. There are some significant differences between ESCOs and utilities. Accordingly, comparisons are more complicated than simply focusing on average prices. Some energy consumers may recognize these differences and decide that they prefer ESCOs over the regulated utilities that they perceive to have too much advantage, can be pushy or provide poor customer service, or are quick to seek protection from regulators rather than to compete.

The Commission often allows utilities to increase rates at a later date to make-up for any short-term losses. This is, in effect, what happened in the case of Niagara Mohawk. Due to cold weather and the resulting high wholesale market prices, Niagara Mohawk was faced with the prospect of raising prices for its mass-market customers in February 2014, which it asserted would cause a financial hardship for its customers. The Commission issued an Order granting Niagara Mohawk's request for a waiver of Rule 46.3.2 of its tariff and froze Niagara Mohawk's mass market price for February 2014 at

January 2014 price levels.[22] In a subsequent Order, the Commission adopted its Emergency Rule as a Permanent Rule and allowed Niagara Mohawk to recover the $33.258 million of deferred costs, plus carrying charges, over a six-month period commencing in June 2014.[23]

The Commission does not provide ESCOs with the same consideration. Indeed, ESCOs have no recourse through the Commission when they provide Fixed-Rate services that are subject to the vagaries of wholesale energy markets.

ESCOs buy at wholesale and resell at retail without regulatory protection. ESCOs must accept the risks related to reselling energy in the competitive retail markets. Some of the measures the Commission contemplated would deny ESCOs the possibility of charging variable ESCO prices that exceed corresponding utility prices, and suggest that the Commission is willing to force ESCOs asymmetrically to undertake losses without the built-in advantages and safety nets that utilities enjoy, which the Niagara Mohawk rate relief order exemplifies.

While the Commission would take steps to ease a local utility's pain if the utility comes up short – as it did in the case of Niagara Mohawk – the Commission offers no such protective measures to ESCOs. In effect, the Commission would treat ESCOs as competitive firms without regulatory relief if earnings drop significantly. This captures the other side of the proposed asymmetry. The different existing light-handed regulatory

[22] State of New York Public Service Commission, Order Granting Request for Waiver, Case 14-E-0026, January 28, 2014.

[23] State of New York Public Service Commission, Order Adopting Emergency Rule as a Permanent Rule and Allowing Recovery of Deferral Costs, Case 14-E-0026, April 25, 2014.

treatment of ESCOs means the Commission does not regulate ESCOs' earnings and determine appropriate tariffs. Competitive markets regulate ESCOs.

Any rules or regulations governing ESCOs should be symmetric and come with the recognition that the Commission should neither cap ESCOs' upside gains nor seek to curtail and perhaps eliminate ESCOs' earnings through unrealistic and unsustainable guarantees. To act otherwise would adversely impact consumers because it would likely result in reduced choices, higher energy prices, and decreased product offerings.

Any claim that "restructuring" was done solely to lower prices, is wrong.[24] Competition and customers' choices provide price signals that reflect marginal costs of energy supply in markets with future price uncertainty. Competition is about achieving economic efficiency, which is not the same thing as "lower prices."

When ESCOs enter the market, the resulting competition reduced the ability of regulated monopolies to collect energy prices that include utility inefficiencies and mistakes. While economists understand the efficiency that competition imposes on incumbent utilities and the inherent benefits of retail choice for consumers, no economist would ignore that commodity prices can both increase and decrease in competitive markets.

When competitive wholesale energy market prices move, price volatility emerges. This does not mean there has been a market failure or that markets are not workably competitive. Critically, if the wholesale markets become more volatile and/or marginal energy costs change, incumbent utility providers are positioned to benefit because they

[24] Memorandum of Law of Respondent New York State Public Service Commission, pages 6.

have energy price adjustment clauses and decupling mechanisms. ESCOs providing FRS products do not have any true-up relief mechanisms.

There are also differences in how regulation affects the ways in which ESCOs establish their own energy-supply margins, while paying a portion of the IOUs' energy supply costs and margins in their delivery charges. These differences, along with the myriad of other factors discussed above related to why ESCO customers may sometimes pay more willingly, are some of the important reasons I conclude that simplistic "price comparisons" between IOUs and ESCOs are not remotely reliably mechanisms for assessing the value ESCOs offer New Yorkers, and claims of "overcharges" based on such incomplete, narrowly focused analyses with inherent biases are simply spurious and misleading.

In other proceedings,[25] I estimated the margins for regulated "suppliers of last resort." Based on this prior work, I think IOUs would need to add at least 4% to their electricity and natural gas supply costs. In New York the margins or returns related to the IOUs' energy supply costs are added to the amount ESCOs pay for delivery.

Over the 16-year period analyzed in Appendix A, the average utility price for residential users was $0.1656 per kWh. Delivery charges were approximately half the full-service price over this time period. I apply a 4% margin for the utilities' energy supply (.04 * $0.1656 /2) and determine the per kWh amount that ESCOs pay to provide

[25] See the Expert Evidence filed by Charles J. Cicchetti in various Alberta Electric Utility Board (AEUB) and Alberta Utility Board (AUB) proceedings, including: (1) Direct Energy Regulated Services Default Rate Tariff and Regulated Rate Tariff Application 2007-2008; (2) Enmax Energy Corporation Application for Approval of a Regulated Rate Tariff (RRT) for the period January 2006 to June 2006; (3) ATCO Electric Alberta, Inc. Review Hearing on AEUB Decision 2008-031; 2008-2009 Regulated Rate Tariff Non-Energy Return; and (4) ATCO Gas 2011-2012 General Rate Application.

an energy supply margin to IOUs. This is $0.0033 per kWh, which I multiply by the approximate 90.425 billion kWhs that ESCOs sold to residential customers over the 16-year period. This would amount to $299.5 million in utility energy-supply margins that were transferred to ESCOs in their distribution charges for residential customers.

Q. Can you explain how the recent decrease in energy prices related to the expansion in natural gas production benefits utilities relative to ESCOs?

A. There is relatively little data and information for natural gas in Mr. Alch's evidence or my discussion. Nevertheless, it is important to consider that ESCOs provide Fixed Rate Service and utilities offer variable-priced services with monthly and other adjustment clauses. Table 7 provides an overview of the recent history of energy prices in New York.

TABLE 7
STATE OF NEW YORK HISTORIC AVERAGE ELECTRICITY AND NATURAL GAS PRICES (IN NOMINAL $)

Year	Average Electricity Prices (Cents per kWh)[1]	Average Residential Natural Gas Prices (Dollars per Thousand Cubic Feet)[2]	Average Commercial Natural Gas Prices (Dollars per thousand cubic feet)[2]
2008	$16.47	$16.78	$12.86
2009	$15.44	$15.05	$10.72
2010	$16.41	$14.04	$10.88
2011	$15.89	$13.71	$9.32
2012	$15.15	$12.97	$7.84
2013	$15.44	$12.49	$8.00
2014	$16.25	$12.54	$8.31
2015	$15.28	$11.20	$6.85
2016	Not Available	$10.83	$6.09

[1] Source: EIA, Average Price per kWh by State, https://www.eia.gov/electricity/data/state/.
[2] Source: EIA, New York Natural Gas Prices, http://www.eia.gov/dnav/ng/ng_pri_sum_dcu_sny_a.htm.

Electricity prices are down about 7.8%, and natural gas prices are down about 35% for residential customers.

In periods of declining wholesale energy prices, where customers nationwide (and in New York) benefit, utilities will virtually immediately pass on the lower prices to their retail customers. ESCOs that provide Fixed Rate Service provide energy for terms typically 12 months or longer at a fixed price. These prices do not respond quickly to downward (or upward) movements in the wholesale market prices. This makes it likely that the Fixed Rate Service prices will exceed utility prices in periods of declining wholesale prices because they are not adjusted on a monthly basis as the utility prices are. Of course, for these same reasons, during periods of rising wholesale prices, fixed-rate services are likely to be lower than utility prices.

Since Mr. Alch did not break out or separate his claims sufficiently between electricity and natural gas, I am limited in what I can say about natural gas. The EIA also

does not publish similar data about natural gas utility and competitive retail natural gas prices as it does for electricity prices. Nevertheless, the same omitted variable and confounding factors would apply for natural gas price comparisons.

SUMMARY AND CONCLUSIONS

Q. Please summarize your conclusions.

A. ESCOs provided, and continue to provide, benefits to New York and its energy consumers. Choice expands opportunities and encourages innovation. Regulation is a well-intended effort that gets things right in broad terms, but regulation means lost opportunities. Competitive markets dispense price signals to producers and consumers. Some win and some lose. Regulation works best when a natural monopoly exists and states determine that the benefits of a single supplier outweigh the advantages of choice and competition.

The predicate of this proceeding is a biased and false analysis that is based on unjustified filters that focus attention on almost exclusively residential, not all, customers, over two and one-half years, not sixteen years, and reaches a biased and misleading false conclusion that wrongly suggests something needs to be done about ESCO "overcharging." The flawed comparison ignores the growth of ESCOs' market shares, the reduction in electricity and natural gas prices, and the other benefits and services that are not reflected in energy supply, but ignore their cost in the false price comparisons.

Mr. Alch's analysis also ignores how energy supply margins alone would effectively increase residential prices by the average price differences of about a penny per kWh. He relies on flawed comparisons that omit confounding factors that affect the relative prices and amounts charged. He ignores the fact that there are different business

models and, in effect, ESCOs are paying to deliver the energy they supply, while also paying part of the utility supply costs that are erroneously included in the IOUs' delivery charges. He does not consider that IOUs do not add a margin or mark-up to recover overhead, business costs, risks, and returns to their energy supply fees.

ESCOs have proven there is a market for greener energy and energy efficiency in New York. Competition to deliver more environmental quality has benefited New York in terms of a cleaner and healthier environment, as well as lowering the amount end users pay. ESCOs provide fixed price hedging alternatives to the IOUs' variable pricing, where the ESCOs take the risk of market fluctuations. ESCOs prove the acceptance of choice, competition, and alternative energy supplies. It is very likely that these successes have helped to pave the way for the REV program that Governor Cuomo supports and leads.

It is also noteworthy that smaller volume customers look to ESCOs to provide both variable and fixed pricing terms. IOUs offer variable energy prices with adjustment mechanisms and catch-up terms. Smaller volume customers receive flexibility, have switching rights, and can select other services, such as Green Electricity options and energy efficiency products. On a pure price comparison, over 16 years, ESCOs' residential customers on average paid about a penny more per kWh than IOUs' customers. However, more are switching to ESCOs over this 16-year period and ESCOs' customers benefit from the other services and products they consume.

The net savings for the customers that selected ESCOs over 16 years is that ESCOs' customers on average paid at least $10 billion less across all service categories than they would have paid using the average Statewide IOUs' prices. ESCOs have

captured more than half the State's market share for electricity. Larger volume customers, who rely on ESCOs to be their wholesale energy brokers, have saved the most. They have also switched to ESCOs to a much greater extent -- more than 2/3 of commercial electricity use and more than 4/5 of industrial use.

Competition has also encouraged IOUs to respond to take steps to lower their energy prices and change their focus. ESCOs have helped the wholesale market to become more efficient. It is not a particular stretch to conclude that ESCOs have likely helped to encourage New York to move more rapidly to restructuring the State's energy industries, culminating in the very significant REV program and its implementation.

Q. Does this conclude your testimony?

A. Yes.

EXHIBIT 1

EXHIBIT A

CURRICULUM VITAE FOR CHARLES J. CICCHETTI

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Curriculum Vitae

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EDUCATION

Ph.D., Economics	Rutgers University, 1969
B.A.	Colorado College, 1965
	US Air Force Academy, 1961 to 1964

PRESENT EMPLOYMENT

Managing Director, Berkeley Research Group (BRG) 2017

Adjunct Instructor, Department of Electrical Engineering, USC Viterbi School of Engineering 2016 to present

PREVIOUS ACADEMIC POSITIONS

1991-2008	Adjunct Professor, University of Southern California
1998-2006	Jeffrey J. Miller Professor in Government, Business, and the Economy, University of Southern California
1987-1990	Deputy Director, Energy and Environmental Policy Center, John F. Kennedy School of Government, Harvard University
1979-1986	Professor of Economics and Environmental Studies, University of Wisconsin-Madison
1974-1979	Associate Professor, Economics and Environmental Studies, University of Wisconsin-Madison
1972-1974	Visiting Associate Professor, Economics and Environmental Studies, University of Wisconsin-Madison
1972	Associate Lecturer, School of Natural Resources of the University of Michigan
1969-1972	Post-Doctoral Research Resources for the Future, Washington, D.C.
1968-1969	Instructor, Rutgers University

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PROFESSIONAL AWARDS, RECOGNITION, AND PRIZES

1965 Leo Mohl Award for Best Senior Thesis in Economics, Colorado College
1965 Kaye Prize for Outstanding Student in Economics, Colorado College

EXTERNAL GRANTS

1966 to 1969 US Department of the Interior (DOI), Bureau of Outdoor Recreation, financed PhD Thesis.
1972 to 1975 Environmental Defense Fund (EDF)
1972 to 1975 National Science Foundation and Upper Great Lakes Regional Commission
1973 to 1974 Ford Foundation Energy Policy Project and Public Interest Economic Foundation
1975 to 1977 National Science Foundation and Planning and Conservation Foundation

PROFESSIONAL AFFILIATIONS

PRIOR EDITORIAL BOARDS

Journal of Environmental Economics and Management, Former Member;

Energy Systems and Policy, Former Member

Land Economics, Former Editor

BUSINESS AND NOT-FOR-PROFIT AFFILIATIONS

2013-2017	Co-Founder and Board Member, Sally's Rescue Inc., dog rescue 501 3(c) Foundation
1996-2016	Co-Founder, Pacific Economics Group, a California LLC
2008-2016	Senior Advisor to Navigant Consulting, Inc.
1992-1996	Managing Director, Arthur Andersen Economic Consulting
1991-1992	Co-Chairman, Putnam, Hayes & Bartlett, Inc.
1988-1991	Managing Director, Putnam, Hayes & Bartlett, Inc.
1984-1987	Senior Vice President, National Economic Research Associates
1980-1984	Co-Founder and Partner, Madison Consulting Group
1977-1979	Chairman, Public Service Commission of Wisconsin, Appointed by Governor Patrick J. Lucey (member until 1980)
1975-1976	Director, Wisconsin Energy Office and Special Energy Counselor for Governor Patrick J. Lucey, State of Wisconsin

PUBLICATIONS

Pacific Economics Group
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BOOKS AND MONOGRAPHS

Amicus Curiae Brief of Charles J. Cicchetti (sole author) before the Supreme Court of the United States related to including Demand Side Bidding in wholesale electricity markets on behalf of Petitioners in *Federal Energy Regulatory Commission v. Elec. Power Supply Association*, 135 S. Ct. 2049 (2015).

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"Economic Models and Planning Outdoor Recreation," with A.C. Fisher & V.K. Smith, *Operations Research*, Vol. 21, No. 5, September/October 1973.

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"The Political Economy of the Energy Crisis," with R. Haveman, *Carrol Business Review*, Winter 1974.

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