

**BEFORE THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS**

**DIRECT TESTIMONY
OF
DIANE MUNNS
ON BEHALF OF
ENVIRONMENTAL DEFENSE FUND**

DOCKET NO. 15-WSEE-115-RTS

1 **I. INTRODUCTION**

2 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

3 A. My name is Diane Munns. My business address is 257 Park Avenue South, 17th
4 Floor, New York, NY 10010.

5 **Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

6 A. I am employed as Senior Director of Collaboration, Clean Energy Program by the
7 Environmental Defense Fund (“EDF”).

8 **Q. ON WHOSE BEHALF ARE YOU SUBMITTING TESTIMONY?**

9 A. I am testifying on behalf of EDF.

10 **Q. WHAT IS EDF’S ROLE IN THIS PROCEEDING?**

11 A. There is a clear connection between energy policy choices, such as those
12 proposed in this proceeding and continued reduction of greenhouse gas emissions.
13 EDF believes that the goals of Westar, its customers and the environmental
14 community can be aligned and implemented to provide adequate revenues to
15 Westar, more options for customers and environmental sustainability. To that
16 end, EDF supports cost-effective, structural solutions that permit scalable results
17 and favors solutions which generate accurate economic price signals without
18 cross-class subsidy. In other words, customers should pay for the value of the
19 services they receive from the electricity system and customers should receive
20 compensation for the value they contribute to the grid. In June 2015, EDF
21 received a ranking of 20 out of over 200, for its work on climate and energy by
22 the International Center for Climate Governance’s public ranking of the best think
23 tanks active in the field of climate economics and policy. The ICCG ranking

1 assesses the performance of a think tank in conducting high quality research and
2 its role in influencing climate-related and energy policy. It is this thinking and
3 expertise that EDF wishes to contribute to the discussion in Kansas.

4 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

5 A. My testimony is intended to oppose the residential rate design changes proposed
6 by Dr. Faruqui for Westar customers in his testimony. EDF does not support
7 fixed charge increases to address revenue erosion issues and particularly opposes
8 the fixed charge option proposed to be offered to solar distributed generation
9 customers. EDF is interested in Westar's attempt to design a three-part rate but
10 believes it falls far short in its execution and supporting analysis and should not
11 be adopted. My testimony offers the Commission reasons why it should not adopt
12 proposed changes in this docket and instead should offer an alternative forum for
13 discussing the issues raised by increasing distributed generation as well as broader
14 issues raised by the changing use of the grid. The results from information
15 learned in that forum could form the basis for rate design changes in future rate
16 cases.

17 **Q. PLEASE INTRODUCE ANY OTHER EDF WITNESSES AND DESCRIBE**
18 **THEIR TESTIMONY.**

19 A. Paul Alvarez is also testifying on behalf of EDF. Mr. Alvarez is President of
20 Wired Group, an electric utility industry consulting firm specializing in grid
21 modernization. Mr. Alvarez will testify on how data from smart meters and other
22 sources can be used to inform the process of developing residential tariffs. My
23 testimony will use Mr. Alvarez's testimony as one basis for my recommendation

1 that the Commission should require Westar to do further research and engage in a
2 stakeholder collaborative before implementing any new rate structures
3 purportedly designed to address the impacts of distributed resources.

4 **II. QUALIFICATIONS**

5 **Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND** 6 **WORK EXPERIENCE.**

7 A. I graduated with a B.A. from the University of Iowa in 1975 (cum laude, Phi Beta
8 Kappa). I graduated with a J.D. from Drake University in 1982 (Order of the
9 Coif). I worked at the Iowa Attorney General's office from 1982-1983. I worked
10 at the Iowa Utilities Board from 1983-2007, starting as Assistant Counsel and
11 later promoted to General Counsel. I was first appointed as a Board member (this
12 is the same as commissioner in other states) and later became the Chair and held
13 this position for four years. I also served as President of the National Association
14 of Regulatory Utility Commissioners ("NARUC") while a member of the Board.
15 During my term as president of NARUC, I also served as co-chair of the National
16 Action Plan for Energy Efficiency, with Jim Rogers of Duke Energy as my Co-
17 Chair. From 2007-2008, I was Executive Director of Retail Energy Services for
18 the Edison Electric Institute. From 2008-2014, I was Vice President for
19 Regulatory Relations and Energy Efficiency for MidAmerican Energy Company
20 ("MidAmerican"), until I assumed my present position with EDF.

21 **Q. WHAT ARE YOUR RESPONSIBILITIES AS SENIOR DIRECTOR OF** 22 **COLLABORATION, CLEAN ENERGY PROGRAM FOR** 23 **ENVIRONMENTAL DEFENSE FUND?**

1 A. I am responsible for defining the overall strategy for EDF Clean Energy Program’s
2 collaborative efforts, including identifying potential partners and nurturing shared
3 dialogue to maximize clean energy advances. I also develop opportunities to leverage
4 common work and implement tactical joint efforts to achieve effective collaborative
5 alliances. I serve as a key contact point with external partners, such as policymakers,
6 industry allies and other non-governmental organizations in the clean energy sector, and
7 act as a national thought leader and expert on topics including energy efficiency, smart
8 grid, renewables, and utility business models.

9 **Q. PLEASE DESCRIBE YOUR EXPERIENCE IN THE AREAS OF RATE**
10 **DESIGN AND VALUING DISTRIBUTED RESOURCES.**

11 A. I frequently worked on and decided rate design issues during my thirty years in
12 regulation with the Iowa Utilities Board, the Edison Electric Institute and
13 MidAmerican. As a former commissioner and general counsel, I analyzed the
14 impact of rate design in a number of rate cases. I have also worked on these
15 issues during my time with MidAmerican and with EDF. Most recently, I
16 testified as an expert witness in a North Carolina proceeding on valuing
17 distributed resources in an avoided cost case. I participated as a witness last year
18 in a Hawaii proceeding proposing new rate designs to accommodate increasing
19 penetration levels of distributed resources. I am actively participating in New
20 York’s Reforming Energy Vision (“REV”) case, which involves rate design and
21 valuing distributed resources issues. Earlier this year, I helped develop an all-day
22 meeting on pricing in cooperation with the New York Public Service
23 Commission.

24

1 **III. OVERVIEW AND SUMMARY OF TESTIMONY**

2 **Q. PLEASE EXPLAIN HOW YOUR TESTIMONY IS ORGANIZED.**

3 A. First, I discuss the rate proposals under consideration and why a change from the
4 status quo may be desirable at some point in the future. Second, I explain the rate
5 design principles which EDF has developed to apply in fairly allocating costs and
6 in managing the transition. Finally, I propose the creation of a stakeholder
7 process that would provide a sound basis for understanding changes and their
8 impact on customers prior to any implementation. My testimony addresses the
9 three-part rate being proposed as we believe it offers a place to start the discussion
10 of necessary components for the proper allocation of costs. We do not specifically
11 address the proposals for fixed charge increases as we do not believe they are
12 supported nor should they be considered as an adequate solution.

13 **Q. PLEASE SUMMARIZE YOUR TESTIMONY.**

14 A. Due to unprecedented technology change in the electric industry, the rapid growth
15 in deployment of distributed energy resources such as rooftop solar, batteries,
16 energy efficiency, and demand response programs, are resulting in flattening
17 electricity sales growth for the first time in utility history. All these activities at
18 the customers' homes reduce the amount of electricity that customers use, and the
19 utility's need to recover its costs invested to maintain the system on which these
20 customers rely remains relatively unchanged. Utilities are understandably
21 concerned about their ability to adequately and fairly recover the costs associated
22 with delivering electricity under the historic regulatory recovery system. The
23 status quo of most residential electricity pricing is a flat volumetric rate, charging

1 customers for the number of kWh consumed in each month. In a growing
2 economy and increasing usage, this simple method of pricing proved beneficial
3 for the utility and for the consumer: it provided both an increasing revenue stream
4 and a simple customer bill with a message of “use less, pay less/use more, pay
5 more.” Not only is the expansion of these distributed resources cutting into the
6 utility’s revenue stream, it is ever more clear that use of a volumetric rate to
7 recover the utility’s costs does not fairly reflect cost causation and allocate these
8 costs accordingly nor does it incent the type of customer response and behavior
9 that will be beneficial to all customers on the system. Westar offers a rate design
10 fix in response to these charges and to manage an anticipated increase in the
11 number of solar PV customers. My testimony will demonstrate that Westar’s
12 proposed fix is inadequate and unsupported and that the impact of the small, but
13 growing, customer segment that generates its own electricity, is a part, but not the
14 only part, to be considered in changing rate design. We will request the
15 Commission to initiate a stakeholder process, outside this rate case, to review all
16 the issues related to utility compensation and customer contribution in a broader
17 context, based on Westar data and best available national data.

18 **Q. AT PAGE 7 OF HIS DIRECT TESTIMONY, MR. FARUQUI DISCUSSES**
19 **SEVERAL CHANGES OCCURRING TO THE ELECTRIC UTILITY**
20 **INDUSTRY. DO YOU AGREE WITH HIS DESCRIPTION OF THESE**
21 **CHANGES?**

22 **A.** While I agree with his description of changes occurring within the industry I
23 disagree with his conclusion that these changes justify residential rate design

1 changes for Westar customers at this time. Mr. Faruqui accurately points out that
2 distributed resources, demand response, digital metering and energy efficiency are
3 playing a growing role, and that utilities are experiencing flat sales across the
4 country as a result of these new technologies and customer interaction. These
5 changes have led public utility commissions in a number of other states to begin
6 review of whether to revamp their existing residential rate structure to provide
7 utilities with a better opportunity to recover their costs and to allocate costs
8 among customers more fairly. EDF has been involved in a number of these cases,
9 as I discussed earlier in my testimony. The approaches taken by different utilities
10 and commissions differ, from simply moving collection from volumetric charges
11 to larger fixed charges, which EDF opposes, to the comprehensive stakeholder
12 process undertaken in New York's REV proceeding, which is considering
13 fundamental changes to the basic roles, rights and obligations of utilities,
14 customers and new market participants in light of industry changes. The
15 imperative to change also differs from state to state, with Hawaii, California, and
16 Arizona at the forefront due to faster solar adoption in those states than in most
17 other states.

18 **Q. IF WE KNOW THESE CHANGES ARE OCCURRING, WHY DOESN'T**
19 **IT MAKE SENSE TO RESPOND NOW?**

20 A. Westar is wise to raise this issue to the Commission as these issues will not go
21 away with time, but its proposals to increase fixed charges to stem revenue
22 erosion and its solution to limit rate options for solar customers, in anticipation of
23 additional solar adoption, are premature and could lead to unintended

1 consequences. Press reports state there are fewer than 300 Westar customers that
2 have interconnected their home solar systems with Westar to date.¹ There is time
3 to consider this issue more thoroughly, in a forum outside this general rate case, to
4 properly consider the full range of issues and options associated with the
5 increasing adoption of distributed resources and other factors that impact system
6 costs. It also gives an opportunity to include the voices of a growing number of
7 stakeholders interested in the outcome. These stakeholders include environmental
8 groups interested in continued greenhouse gas emission reductions as well as
9 consumer groups, Commission staff and new businesses eager to engage with
10 Westar and its customers.

11 **IV. THREE-PART RATES**

12 **Q. PLEASE EXPLAIN WHAT A THREE-PART RATE DESIGN IS AND**
13 **WHERE IT HAS BEEN APPLIED.**

14 A. A three-part rate design consists of three components: (1) a fixed charge; (2) a
15 demand charge; and (3) a volumetric charge. The fixed charge is a monthly set
16 amount designed to collect utility costs that are constant, like the costs of
17 metering and billing. The addition of a demand charge recognizes that the system
18 is engineered to meet peak demand and those customers who drive that peak
19 should receive a price signal for the additional costs they impose. Volumetric
20 charges are appropriate for collection of costs that vary with usage, like the cost
21 of generation.

22 Three-part rates have traditionally been used for larger commercial and
23 industrial customers to more accurately allocate costs according to cost causation

¹ Springe, David. Interview with Andy Marso, KHI News Service. June 11, 2015. Posted at www.kcur.org.

1 principles. Commercial and industrial customers have long had access to demand
2 meters and therefore the ability to more accurately assign costs to the different
3 load shapes and system demands associated with the myriad of uses in these
4 sectors. For example, a steel plant with its very large electric arc furnaces has a
5 very different load shape, or impact on the system, than a data center, with a fairly
6 constant, predictable usage. In addition, many of these customers have energy
7 managers and the ability to manage and respond to a more complex rate.

8 There has been neither the ability, nor the general desire, to use a three-
9 part rate to assign costs to residential customers. Most residential customers have
10 had similar patterns in their usage and did not have the meters to apply a more
11 individualized rate. Moreover, the utility was without the means to communicate
12 with the residential customer to give them the information necessary to manage
13 their behavior and respond to prices. The load in homes has been primarily
14 related to heating and cooling, appliances and lighting. Differences in usage
15 justifying change began to emerge with the advent of air conditioning and electric
16 heat. In addition, prosperity has allowed the size of homes to vary significantly
17 and some people to install higher use equipment, like hot tubs and swimming
18 pools. Now we are seeing the addition of distributed generation, like solar, and
19 the opportunity for grid interaction, like demand response. These changes in use
20 of the system support the need for a more granular approach to the residential
21 sector as the present methodology supports cross-subsidy within the class. With
22 the advent of two-way communications through smart meters and the opportunity
23 presented through the proliferation of the internet, utilities, commissions and

1 | other stakeholders are starting to consider different approaches, including
2 | consideration of the three-part rates for residential customers proposed in this
3 | case.

4 | **Q. WHAT ARE THE BENEFITS OF IMPLEMENTING A DEMAND**
5 | **CHARGE FOR RESIDENTIAL CUSTOMERS?**

6 | A. Demand charges are one of the options to consider in moving towards better
7 | alignment of cost causation: charging customers based on their maximum
8 | coincident demand sends a more targeted signal of “demand less, pay less/demand
9 | more, pay more,” thus helping utilities to better recover their costs. And, any
10 | action by a customer that truly reduces peak demand will help reduce costs for all
11 | customers in the long run. Implementing a demand charge ultimately may be part
12 | of the solution for better allocating costs among Westar’s residential customers.
13 | But, as suggested by Dr. Faruqui in his evaluation of Salt River Project’s electric
14 | rates proposal for residential customers with distributed generation (e.g., rooftop
15 | solar) “if these proposed changes are indeed cost-based and represent an overall
16 | improvement upon the existing rate structure according to sound principles of rate
17 | design, then it could be argued that only making these changes for DG customers
18 | is a missed opportunity to improve rate design of the entire residential class.”²
19 | We are in agreement, the Commission should not change the utility rate structure
20 | in this case for owners of distributed generation, without further review.

2 | ² Faruqui, Ahmad; Hledik, Ryan “An Evaluation of SRP’s Electric Proposal for Residential Customers with Distributed Generation”, Prepared for Salt River Project (The Brattle Group 2014).

1 There are a number of choices to be explored in designing a demand
2 charge. To give a flavor, these choices include making informed decisions on the
3 following questions:

- 4 • What is the appropriate billing demand measurement: the
5 Commission can measure demand during specific hours of the year
6 (i.e., peak hours) or simply use the maximum amount of demand
7 over the entire billing period.
- 8
- 9 • What is the appropriate time interval of demand: instantaneous
10 demand is unlikely to be measured, so the Commission must decide
11 over how long of an interval to measure the demand. Commonly
12 used measurements are 15, 30, and 60 minutes.
- 13
- 14 • How should the on-peak hours be defined: if the Commission
15 decides to measure demand only during certain hours of the day, it
16 needs to choose when the on-peak hours occur, trading off covering
17 most peak demand vs incentivizing shifting behavior.
- 18
- 19 • Should the charge vary by seasons: the Commission must decide
20 whether to vary the demand charge or the on-peak hours by season.
- 21
- 22 • What is the relationship to other charges: demand charges will not
23 stand alone in a tariff; they are generally paired with charges such
24 as fixed charges or minimum bill requirements. These can
25 complement the demand charges.
- 26

27 The choices have different outcomes and impacts and choices should be
28 evaluated and aligned with the policy objective desired to see if this is a
29 direction the Commission wants to proceed.

30 **Q. MR. FARUQUI STATES IN HIS TESTIMONY THAT WESTAR SHOULD**
31 **FOLLOW THE FIVE UPDATED PRINCIPLES OF RATE DESIGN**
32 **ORIGINALLY INTRODUCED BY PROFESSOR JAMES C.**
33 **BONBRIGHT. DO YOU AGREE WITH USING THESE PRINCIPLES TO**
34 **GUIDE WESTAR’S RATE DESIGN?**

1 A. Yes, to a point. I agree with the five updated Bonbright principles which Mr.
2 Faruqui describes: (1) economic efficiency, (2) equity, (3) revenue adequacy and
3 stability, (4) bill stability and (5) customer satisfaction. Unfortunately there is no
4 single ultimate/optimal policy solution embodying all these principles. Good
5 policy requires a balancing of these factors in light of circumstances and goals
6 that vary by utility or regulatory jurisdiction. This requires a commission to
7 understand the trade-offs being made and make its decisions accordingly.

8 In addition to considering these principles, the timing of the transition to a
9 new design should minimize disrupting existing business models that are
10 successfully delivering value to customers and greenhouse gas reductions.

11 Westar appropriately gives a nod to this concept with its proposal to “grandfather”
12 the rate design for existing rooftop solar customers who have made a long-term
13 investment under the existing set of rules. However, more consideration should
14 be given to the potential that premature adoption of a new tariff structure may
15 slow or stop development of a young industry, like solar PV, which has the
16 potential to provide additional customer satisfaction and local economic
17 development opportunities. Finally, the special needs of economically and
18 environmentally vulnerable populations should always be top of mind in the
19 discussion and affirmatively evaluated for impact.

20 **Q. PLEASE DISCUSS HOW THESE PRINCIPLES SHOULD BE APPLIED**
21 **TO THIS CASE.**

22 A. First, EDF recognizes that the levels of distributed resources and energy
23 efficiency are increasing, and that now is an appropriate time to begin discussing

1 new rate structures which would not only better allow utilities to recover their
2 costs and more fairly allocate those costs among customers but enable the utility
3 to tap these resources for a more resilient and reliable grid using far less fossil
4 fuels. Westar has taken a first step in proposing a solution, the three-part rate,
5 which has some features that merit further investigation. My main point of
6 concern is that Westar should develop more information before changing its rate
7 structure and that any transition to a new rate structure should consider optimizing
8 the rate structure for all residential customers, not just solar customers. But
9 Westar should be commended for acknowledging the changing needs of the grid
10 and enlisting the services of such a renowned rate design expert as Mr. Faruqui.

11 Second, any new rate design should address the changing use of the grid
12 by all customers, including the impact of air conditioning and electric heat
13 customers on the grid. It should include all forms of distributed resources –
14 including not only solar generation but also energy efficiency, demand response
15 and energy storage. As I noted earlier, Mr. Faruqui references the growing use of
16 all forms of distributed resources and has in other proceedings acknowledged that
17 making changes only for the owners of solar generation is a missed opportunity.
18 Yet Westar’s proposal would limit the options available for customers with
19 distributed generation.

20 Third, in addition to costs, EDF recommends that when the Commission
21 considers changing residential rate structures, it should also develop a process for
22 fully valuing these distributed resources. Distributed resources provide benefits
23 that can reduce resource and transmission costs for all customers. Fair valuation

1 for distributed energy resources must be accomplished in parallel to solution(s) to
2 utility fixed cost recovery. Solving one without solving the other places either the
3 utility or the customer at a disadvantage that will undermine optimal development
4 of the needed system. This has not yet occurred in Kansas, which is another
5 reason Westar should not change its residential rate structure at this time.

6 Finally, EDF recommends that any transition to new rates be done in a
7 thoughtful manner. A recent study by Lawrence Berkeley National Laboratory
8 concluded that low penetration levels of distributed resources have no significant
9 impact on customer rates.³ In this case, fewer than 300 of Westar's 700,000
10 customers have installed distributed resources. This penetration level is much
11 lower than the penetration level involved in that study. Accordingly, the Westar's
12 present low level of distributed resources would appear to have no significant
13 impact on customer rates or utility revenues and allows time for a more thoughtful
14 approach.

15 **Q. ARE THERE ANY OTHER CONSIDERATIONS WHICH SUPPORT**
16 **YOUR RECOMMENDATION THAT WESTAR SHOULD NOT CHANGE**
17 **ITS RESIDENTIAL RATE STRUCTURE IN THIS CASE?**

18 A. Yes. As more fully explained in Mr. Alvarez's testimony, Westar has deployed
19 smart meters for a portion of its service territory and Westar should use the
20 resulting data to develop additional information on customer energy usage
21 patterns before changing its residential rate structure. If a quick fix rate structure

³ Ernest Orlando Lawrence Berkeley National Laboratory, *Financial Impacts of Net-Metered PV on Utilities and Ratepayers: A Scoping Study of Two Prototypical U.S. Utilities* (Sept. 2014) at ix (available at: [http://emp.lbl.gov/sites/all/files/LBNL%20PV%20Business%20Models%20Report_no%20report%20number%20\(Sep%2025%20revision\).pdf](http://emp.lbl.gov/sites/all/files/LBNL%20PV%20Business%20Models%20Report_no%20report%20number%20(Sep%2025%20revision).pdf)) (last viewed June 29, 2015).

1 is adopted now based on incomplete information, customers could be discouraged
2 from investing in distributed resources and lead to economically inefficient
3 outcomes. For example, more complete information may show that a different
4 rate structure should be adopted for distributed resources customers with central
5 air conditioning as compared to distributed resources customers with no central
6 air conditioning, as a recent Brattle report, co-authored by Mr. Faruqui, on
7 Australia' electric utility industry concluded:

8 A related point, though not strictly concerning the recovery
9 of residual costs, is that uptake of central air conditioning
10 and rooftop PV in particular is causing significant
11 divergences among customer load shapes. Consider four
12 customers. The first one has central air conditioning, the
13 second one has rooftop PV, the third customer has both
14 central air conditioning and PV, and the fourth one has
15 neither. The four customers will have different load shapes
16 and load factors (ratio of average kW to peak kW) and will
17 therefore impose different costs on the network. It is
18 inequitable and inefficient to charge them the same
19 volumetric tariff. The calculation of LRMC (long run
20 marginal costs) based variable charges depends on an
21 assumed load factor. This may be a reason to shift to
22 demand charges rather than kWh charges for recovering
23 LRMC (if smart meters are available) or a reason to divide
24 customers into multiple classes with different tariffs if
25 smart meters are not available.⁴

26
27 As Dr. Faruqui acknowledges, there is a need to develop more information about
28 customer load profiles before changing rate structures based on incomplete
29 information.

⁴ The Brattle Group, *Structure of Electricity Distribution Network Tariff: Recovery of Residual Costs* (Aug. 2014) at 43. Available at: http://www.brattle.com/system/publications/pdfs/000/005/076/original/The_Structure_of_Electricity_Distribution_Network_Tariffs_and_Residual_Costs.pdf?1422374425 (last viewed June 29, 2015).

1 **Q. DO YOU HAVE ANY OTHER RECOMMENDATIONS REGARDING**
2 **WESTAR’S PROPOSAL?**

3 A. Yes. I recommend the Commission take the discussion of rate design related to
4 distributed resources out of the rate case to a broader, less formal proceeding
5 where more stakeholders can participate. At Westar’s present low level of
6 distributed generation penetration, my recommendation presents no real risk to
7 Westar. This could be a statewide forum, with time parameters, where the issue
8 can be addressed for all utilities. This would provide a ‘no regrets’ course for
9 Westar and the Commission. A recent report from the GridWise Alliance shows
10 that Kansas has the potential to do more work in the areas of grid policy and
11 customer engagement.⁵ This forum could be used to work on these areas. This
12 type of measured approach accords with Mr. Faruqui’s recommendation at page
13 39 of the Brattle report, which I discussed earlier, where he states that demand
14 charges for residential customers should be implemented deliberately.

15 **VII. CONCLUSION**

16 **Q. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?**

17 A. Yes.
18

⁵ Gridwise Alliance & Smart Grid Policy Center, *2014 Grid Modernization Index* (Nov. 17, 2014) at 12. Available at: https://www.illinois.gov/dceo/Documents/GWA_14_GridModernizationIndex_11_17_14Final.pdf (last viewed June 29, 2015).

STATE OF IOWA

COUNTY OF Polk

VERIFICATION

Diane Munns, being duly sworn upon his oath, deposes and says that she is a designated expert witness for the intervenor Environmental Defense Fund, that she has read and is familiar with the foregoing direct testimony, and that the statements contained therein are true and correct to the best of her knowledge, information and belief.

Diane Munns

Diane Munns

Subscribed and sworn to before me this 6th day of July, 2015.

P. Shoemaker
Notary Public



My appointment expires: 9-26-2016