OFFICIAL
EXHIBITS

STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

VERIFIED PETITION OF DUKE ENERGY INDIANA, INC. FOR: (1) APPROVAL OF PETITIONER'S 7-YEAR PLAN FOR ELIGIBLE TRANSMISSION, DISTRIBUTION AND STORAGE SYSTEM IMPROVEMENTS, PURSUANT TO IND. CODE § 8-1-39-10; (2) APPROVAL OF A TRANSMISSION AND DISTRIBUTION INFRASTRUCTURE IMPROVEMENT COST RATE ADJUSTMENT AND DEFERRALS, PURSUANT TO IND. CODE § 8-1-39-9 (3) APPROVAL OF CERTAIN REGULATORY ASSETS; (4) APPROVAL OF VOLUNTARY DYNAMIC PRICING RIDERS; AND (5) APPROVAL OF A NEW DEPRECIATION RATE FOR ADVANCED METERS	)	CAUSE NO. 44720

IURC
INTERVENOR'S - EDF
EXHIBIT NO. 3
5-2-16 AT
DATE REPORTER

NOTICE OF FILING OF RONNY SANDOVAL TESTIMONY

Please take notice that the Environmental Defense Fund is filing the attached pre-filed direct testimony of Ronny Sandoval

Respectfully submitted,

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CERTIFICATE OF SERVICE

The undersigned counsel hereby certifies that a copy of the foregoing document was served via electronic mail, hard copies available upon request, this 19th day of February, 2016, upon the following:

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DIRECT TESTIMONY OF RONNY SANDOVAL ON BEHALF OF ENVIRONMENTAL DEFENSE FUND CAUSE NO. 44720 BEFORE THE INDIANA UTILITY REGULATORY COMMISSION

I INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Ronny Sandoval. My business address is 257 Park Avenue South, 17th Floor, New York, NY 10010.

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

A. I am employed by Environmental Defense Fund ("EDF") as Director, Grid Modernization. I am responsible for planning and implementing EDF's Clean Energy initiatives relating to grid modernization.

Q. WOULD YOU BRIEFLY DISCUSS YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND?

A. I hold a Bachelor of Science degree in Mathematics from New York University, a Bachelor of Engineering in Electrical Engineering from Stevens Institute of Technology, and a Master of Business Administration from New York University. I have over ten years of management experience in the utility business, including areas of transmission and distribution system planning and demand side management.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING?

A. I am testifying on behalf of EDF, an intervenor in this case.

Q. PLEASE BRIEFLY DESCRIBE YOUR DUTIES AND RESPONSIBILITIES AS DIRECTOR, GRID MODERNIZATION.

A. My primary responsibilities include developing strategies to modernize and increase the efficiency of the electricity grid, through cost-effective system investments and greater adoption of intelligent system operations.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to make recommendations relating to grid modernization for Duke Energy Indiana, Inc.'s proposed Transmission and Distribution Infrastructure Improvement Plan ("T&D Plan").

II. INTEGRATED VOLT/VAR CONTROL

Q. PLEASE EXPLAIN WHAT INTEGRATED VOLT/VAR CONTROL ("IVVC") IS.

A. IVVC involves the management of various electric distribution system assets and advanced control technologies to "right-size" the voltage delivered to end-use electric customers. IVVC can be used to reduce overall voltage levels, while ensuring these voltages remain within acceptable standards for electric distribution. Reductions in distribution system voltage have been demonstrated to result in reductions in energy consumption across the electric circuits on which this practice is applied. For example, in a September 2014 report published by the U.S. Department of Energy ("DOE") on Duke Energy's smart grid investments entitled "Integrated Smart Grid Provides Wide Range of Benefits in Ohio and the Carolinas," the DOE found that Duke Energy consistently achieved 2% voltage reduction on over 200 Ohio distribution circuits where IVVC was deployed, reducing system losses and fuel costs for its power generation. Electric customers across circuits with active IVVC management and lower voltage levels typically consume less energy without needing to make changes to their individual

consumption behavior. Investments in IVVC technology and grid modernization can result not only in energy reductions, but also may provide additional visibility and operational flexibility in responding to a variety of dynamic system conditions.

Q. HAVE YOU REVIEWED DUKE ENERGY INDIANA'S IVVC PROPOSAL IN ITS TRANSMISSION AND DISTRIBUTION PLAN?

A. Yes.

Q. DO YOU HAVE AN OPINION AS TO WHETHER DUKE'S IVVC PROPOSAL IS REASONABLE AND SHOULD BE APPROVED BY THE COMMISSION?

A. Yes. In my opinion, Duke Energy Indiana's IVVC proposal is generally reasonable and should be approved by the Commission, with consideration given to my recommendations discussed below. As a general matter, Duke Energy Indiana should be commended for developing a comprehensive IVVC proposal, and for its proposed efforts to communicate the benefits of grid modernization investments to its customers. Duke Energy Indiana has supported its IVVC proposal with a benefit /cost analysis, with consideration given to its long-range impacts, and demonstrated the investments to be cost-effective. Realizing reductions in energy consumption and carbon reduction as a result of these cost-effective investments, would allow Duke Energy Indiana to meet the future energy needs of its customers in a sustainable manner.

Q. WHAT RECOMMENDATIONS DO YOU HAVE REGARDING DUKE ENERGY INDIANA'S IVVC PROPOSAL?

A. Duke Energy Indiana's IVVC investment plan proposes to deploy IVVC across "Transmission-to-Distribution and Distribution-to-Distribution substation rated 7.5 mVA

or higher." This would result in an installation of IVVC at "179 distribution substation and 543 distribution circuits, representing approximately 50% of the total quantity of Duke Energy Indiana-owned substations and circuits, respectively" covering "6,800 MW of peak retail load." The business case associated with this deployment, as presented in the petitioner's testimony (Petitioner's Exhibit 2-G), shows that the benefits outweigh the costs over a 20-year period, given the benefit components of the business case that were selected.

Though the proposed number of IVVC installations is significant, Duke should also continue to periodically examine the cost-effectiveness of potential IVVC deployments across circuits that have been excluded from the existing selection criteria. Duke has indicated that "new standards and rules, technology, load and system changes, and reliability can change over a seven-year period" and "any long-term plan will need to be updated as time proceeds." Duke Energy Indiana has indicated in its testimony that it plans to make annual updates to its 7-year T&D Plan. As system conditions change, some circuits that have been excluded from the existing selection criteria may become sound, cost-effective investments to the benefit of customers. The Company appears to have already embraced this forward-looking approach in the current T&D Plan, stating that "for the Declared Circuit projects, we have included 213 additional circuits that could likely move into the plan if a need arises."

Though all customers will experience some of the benefits from the proposed IVVC deployment, such as savings through fuel adjustments, customers supplied by the circuits where this technology is deployed can also benefit directly from lower energy use

due to the optimized voltage profile. Expanding the deployment, where cost-effective and practical, can enhance the full benefits of this deployment to a greater number of customers. Duke should also assess its benefit/cost calculations to ensure all benefits streams are current and accounted for.

Q. SHOULD THE COMMISSION REQUIRE DUKE TO DO ANY REPORTING REGARDING IVVC?

A. Yes. The Commission should require Duke to file periodic reports on the voltage reductions achieved by the IVVC, and the resulting energy usage reductions. The updates should also include the carbon reduction and greenhouse gas impact of its IVVC deployment, which would further help Duke Energy Indiana communicate to its customers and stakeholders the environmental impact of its investments. This will also allow the Commission to monitor whether Duke is achieving the customer benefits that IVVC is projected to produce. The Indiana Utility Regulatory Commission could consider any reporting mechanisms Duke may have developed for the Ohio Public Utilities Commission in Ohio, where the Company has made significant investments in IVVC.

I will now discuss the role of IVVC with respect to integrated resource planning.

III. INTEGRATED RESOURCE PLANNING

Q. PLEASE EXPLAIN INTEGRATED RESOURCE PLANNING ("IRP").

A. The Regulatory Assistance Project ("RAP") defines an integrated resource plan as a "utility plan for meeting forecasted annual peak and energy demand, plus some established reserve margin, through a combination of supply-side and demand-side

resources over a specified future period." In a June 2013 report entitled "Best Practices in Electric Utility Integrated Resource Planning" RAP further explores this concept. In essence, integrated resource planning explores the business case of a broad portfolio of supply and demand side resources in meeting long-range energy needs, while ensuring that the selection of these resources is in alignment with desired policy outcomes.

Indiana Administrative Code (170 IAC 4-7) has set guidelines for integrated resource planning by an electric utility. In addition, Duke Energy Indiana has previously filed Integrated Resource Plans (IRPs) with the Indiana Utility Regulatory Commission to identify the long-range planning requirements associated with meeting its customers' future energy needs through supply and demand side resources.

Q. DO YOU HAVE ANY RECOMMENDATIONS RELATING TO INTEGRATED RESOURCE PLANNING?

A. Yes. The IRPs should be used to inform and quantify the potential benefits that may be realized through IVVC and distribution automation deployment. If the investments identified in the proposed T&D Plan can defer investments or reduce operational costs identified in the IRPs or other capital investment plans, those benefits should be recognized and accounted for in the T&D Plan.

Section 5 of the Indiana Administrative Code (170 IAC 4-7-5) pertaining to integrated resource planning requires utilities to determine the impact of "behavioral factors affecting customer consumption" and "changes in technology" in energy and demand forecasts, among other factors. The Duke Energy Indiana 2013 Integrated Resource Plan accounted for the impacts that energy efficiency and demand-side

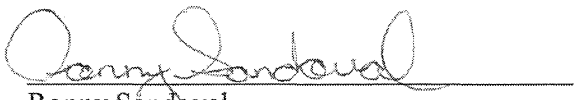
management had on the forecast of future energy and peak demand requirements. To the extent that IVVC and other components of the proposed T&D Plan can reduce the requirements associated with serving future demand, those impacts should be quantified and included in future IRPs. Doing so may also help identify where additional demand-side management strategies may be able to cost effectively meet the future energy needs of electric customers.

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

A. Yes.

VERIFICATION

I, Ronny Sandoval, hereby affirm under the penalties of perjury that the foregoing representations are true to the best of my knowledge, information and belief.



Ronny Sandoval

VERIFICATION

I hereby verify under the penalties of perjury that the foregoing representations are true to the best of my knowledge, information and belief.

Signed: Ronny Sandoval Dated: April 28, 2016

Ronny Sandoval