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June 11, 2019

VIA ELECTRONIC FILING
AND HAND DELIVERY

Ms. M. Lynn Jarvis
Chief Clerk
North Carolina Utilities Commission
4325 Mail Service Center
Raleigh, North Carolina 27699-4300

**Re: Duke Energy Progress, LLC's REPS Cost Recovery Rider and 2018
Compliance Report
Docket No. E-2, Sub 1205**

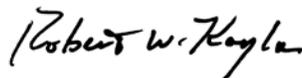
Dear Ms. Jarvis:

Enclosed for filing with the North Carolina Utilities Commission ("Commission") please find the Application of Duke Energy Progress, LLC ("DEP" or the "Company") pursuant to N.C. Gen. Stat. § 62-133.8 and Commission Rule R8-67 relating to incremental costs for compliance with the renewable energy and energy efficiency portfolio standard ("REPS") for electric utilities, together with the testimony and exhibits of Travis E. Payne and Veronica I. Williams containing the information required by Commission Rule R8-67. DEP's 2018 REPS Compliance Report, filed pursuant to N.C. Gen. Stat. § 62-133.8 and Commission Rule R8-67(c), is attached as Exhibit No. 1 to Mr. Payne's testimony in support of the Application. I will deliver fifteen (15) paper copies of the filing to the Clerk's Office by close of business on the following day.

Certain information contained in the exhibits of Ms. Williams and Mr. Payne is a trade secret, and confidential, proprietary, and commercially sensitive information. For that reason, it is being filed under seal pursuant to N.C. Gen. Stat. § 132-1.2 and should be protected from disclosure. Parties to the docket may contact the Company to obtain copies pursuant to an appropriate confidentiality agreement.

Please do not hesitate to contact me if you have any questions.

Sincerely,



Robert W. Kaylor

Enclosures

cc: David T. Drooz

OFFICIAL COPY

JUN 11 2019

CERTIFICATE OF SERVICE

I certify that a copy of Duke Energy Progress, LLC's REPS Cost Recovery Rider and 2018 Compliance Report, in Docket No. E-2, Sub 1205, has been served by electronic mail, hand delivery, or by depositing a copy in the United States Mail, 1st Class Postage Prepaid, properly addressed to parties of record.

This the 11th day of June, 2019.



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ATTORNEY FOR DUKE ENERGY
PROGRESS, LLC

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. E-2, SUB 1205

In the Matter of:)
)
Application of Duke Energy Progress, LLC) **APPLICATION FOR APPROVAL**
for Approval of Renewable Energy and) **OF REPS COST RECOVERY**
Energy Efficiency Portfolio Standard) **RIDER AND 2018 REPS**
(REPS) Compliance Report and Cost) **COMPLIANCE REPORT**
Recovery Rider Pursuant to N.C. Gen. Stat.)
62-133.8 and Commission Rule R8-67)

Duke Energy Progress, LLC (“DEP” or the “Company”), pursuant to N.C. Gen. Stat. § 62-133.8 and Rule R8-67 of the Rules and Regulations of the North Carolina Utilities Commission (“Commission”), hereby makes this Application (1) for approval of its 2018 Renewable Energy Portfolio Standard (“REPS”) Compliance Report, and (2) to implement a monthly charge to recover the incremental costs associated with compliance with the REPS. In support of this Application, the Company respectfully shows the following:

1. The Company is a public utility operating in the states of North Carolina and South Carolina where it is engaged in the generation, transmission, distribution, and sale of electricity for compensation. Its general offices are located at 410 South Wilmington Street, Raleigh, North Carolina, and its mailing address is Post Office Box 1551, Raleigh, North Carolina 27602.

2. The attorneys for the Company, to whom all communications and pleadings should be addressed, are:

Kendrick C. Fentress
Associate General Counsel
Duke Energy Corporation
P.O. Box 1551

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3. N.C. Gen. Stat. § 62-133.8 requires North Carolina’s electric power suppliers to supply six (6) percent of their North Carolina retail kilowatt hours (“kWh”) from “renewable resources,” as that term is defined by N.C. Gen. Stat. § 62-133.8(a)(8), for calendar year 2018. Further, N.C. Gen. Stat. § 62-133.8(d) requires that the electric power suppliers also obtain 0.14 percent of their North Carolina retail kWh from solar photovoltaic or thermal solar resources in 2017. Further, N.C. Gen. Stat. § 62-133.8(e) and (f) require that the electric power suppliers also obtain their allocated share of the state-wide requirement of 0.14 percent of the total North Carolina retail kWh sold from swine waste resources and 900,000 megawatt hours (“MWh”) of the total electric power sold to North Carolina retail customers from poultry waste resources, respectively, in 2017.¹

4. N.C. Gen. Stat. § 62-133.8(h) provides that the electric public utilities shall be allowed to recover the incremental costs² associated with complying with N.C.

¹ Both the Poultry Waste and Swine Waste Set-Aside requirements established by N.C. Gen. Stat. § 62-133.8 have been modified by Commission order pursuant to N.C. Gen. Stat. § 62-133.8(i)(2), as discussed herein.

² “Incremental costs” are defined as (1) all reasonable and prudent costs incurred by an electric utility to meet the solar and renewable generation requirements of the statute that are in excess of the utility’s avoided costs, and (2) costs associated with research that encourages the development of renewable energy, energy efficiency, or improved air quality, provided those research costs do not exceed one million dollars (\$1,000,000) per year.

Gen. Stat. § 62-133.8 through an annual rider not to exceed the following per-account charges:

<u>Customer Class</u>	<u>2008-2011</u>	<u>2012-2014</u>	<u>2015 and thereafter</u>
Residential per account	\$ 10.00	\$ 12.00	\$ 27.00
Commercial per account	\$ 50.00	\$ 150.00	\$ 150.00
Industrial per account	\$ 500.00	\$ 1,000.00	\$1,000.00

The statute provides that the Commission shall ensure that the incremental costs to be recovered from individual customers on a per-account basis are in the same proportion as the per-account annual charges for each customer class set out in the chart above.

5. Rule R8-67(c) requires the Commission to conduct an annual proceeding for each electric public utility to review the utility's costs to comply with N. C. Gen. Stat. § 62-133.8 and establish the electric public utility's annual rider to recover such costs in a timely manner. The Commission shall also establish an experience modification factor ("EMF") to collect the difference between the electric public utility's actual reasonable and prudent REPS costs incurred during the test period and the actual revenues incurred during the test period. Rule R8-67(c) further provides that the Commission shall consider each electric public utility's REPS compliance report at the hearing provided for in Rule R8-67(e) and shall determine whether the electric public utility has complied with N.C. Gen. Stat. § 62-133.8(b), (d), (e) and (f).

6. According to Rules R8-67(c) and (e), the electric public utility is to file its application for recovery of its REPS costs, as well as its REPS compliance report, at the same time it files the information required by Rule R8-55, and the Commission is to conduct an annual rider hearing as soon as practicable after the hearing required by Rule R8-55.

7. Pursuant to the provisions of N.C. Gen. Stat. § 62-133.8 and Commission Rule R8-67(e), DEP requests the Commission to establish a rider to recover its reasonable and prudent forecasted REPS compliance costs to be incurred during the rate period. As provided in Rule R8-67(e), the Company requests to credit to DEP’s retail customers, through the EMF, \$1,246,365 of REPS costs over-collected and other credits for the period April 1, 2018 through March 31, 2019 (“EMF Period”) and collect from DEP’s retail customers \$43,246,220 for REPS costs to be incurred during the rate period from December 1, 2019 through November 30, 2020 (“Billing Period”). The REPS rider and EMF will be in effect for the twelve-month period December 1, 2019 through November 30, 2020.

8. Pursuant to the provisions of N.C. Gen. Stat. § 62-133.8 and Rule R8-67, DEP requests Commission approval of the annual billing statements, including both the REPS monthly charge and the EMF monthly charge, for each customer class as follows:

Customer Class	REPS Monthly Charge (excl. regulatory fee)	Monthly EMF (excl. regulatory fee)	Total REPS Monthly Charge (excl. regulatory fee)	Total REPS Monthly Charge (incl. regulatory fee)
Residential	\$ 1.39	\$ 0.04	\$ 1.43	\$ 1.43
General ³	\$ 8.84	\$ (0.73)	\$ 8.11	\$ 8.12
Industrial	\$ 63.07	\$ (4.48)	\$ 58.59	\$ 58.67

The calculation of these rates is set forth in Exhibit No. 4 of the direct testimony of Veronica I. Williams filed with this Application.

9. Pursuant to Commission Rule R8-67(e)(8), DEP requests approval to defer the difference between actual reasonable and prudently incurred incremental costs and

³ Duke Energy Progress’ General Service rate schedule generally covers the class of customers intended to be captured by the “Commercial” class included within N.C. Gen. Stat. § 62-133.8. The Company does not have a rate schedule for “Commercial” customers.

the related revenues realized under rates in effect. FERC account 182.3, "Other Regulatory Assets," will be used to defer these costs until recovered.

10. Further, pursuant to the provisions of N.C. Gen. Stat. § 62-133.8 and Commission Rule R8-67(c), the Company requests Commission approval of its 2018 REPS Compliance Report, attached as an exhibit to the direct testimony of Travis E. Payne filed in support of this Application. As described by Mr. Payne's testimony, and illustrated in DEP's 2018 REPS Compliance Report, the Company has complied with the requirements of N.C. Gen. Stat. § 62-133.8(b) and (d) for 2018. In its October 8, 2018 *Order Modifying the Swine and Poultry Waste Set-Aside Requirements and Providing Other Relief*, in Docket No. E-100, Sub 113, the Commission lowered the 2018 Poultry Waste Set-Aside Requirement (N.C. Gen. Stat. § 62-133.8(f)) to 300,000 MWh and delayed by one year the scheduled increases in that requirement. The Commission also lowered the Swine Waste Set-Aside Requirement for DEP, Duke Energy Carolinas, LLC and Dominion Energy North Carolina to 0.02% of prior-year retail sales, delaying the scheduled increase to 0.07% of prior-year retail sales to begin in calendar year 2019, and delaying future increases by one year.⁴ The Company has complied with these modified Poultry Waste and Swine Waste Set-Aside Requirements.

⁴ In its *Order Modifying the Poultry and Swine Waste Set-Aside and Granting Other Relief* issued in Docket No. E-100, Sub 113 (November 29, 2012), the Commission eliminated the Swine Waste Set-Aside Requirement for 2012 and delayed for one year the Poultry Waste Set-Aside Requirement. In its March 26, 2014, *Final Order Modifying the Poultry and Swine Waste Set-Aside Requirements and Providing Other Relief*, the Commission delayed the Swine and Poultry Waste Set-Aside Requirements for an additional year. In its November 13, 2014 *Order Modifying the Swine Waste Set-Aside Requirement and Providing Other Relief*, the Commission directed that Swine Waste Set-Aside Requirement remain at 0.07 percent for the years 2015-2016. Subsequently, in its December 1, 2015 *Order Modifying the Swine and Poultry Waste Set-Aside Requirements and Providing Other Relief*, the Commission directed that the Swine Waste Set-Aside Requirement for 2015 be delayed an additional year and that the 2015 Poultry Waste Set-Aside Requirement would be the same as the 2014 level. In its October 17, 2016 *Order Modifying the Swine and Poultry Waste Set-Aside Requirements and Providing Other Relief*, the Commission directed that the 2016

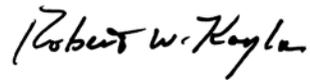
11. The information and data required to be filed under Commission Rule R8-67 is contained in the direct testimony and exhibits of witnesses Payne and Williams, which are being filed simultaneously with this Application and incorporated herein by reference.

WHEREFORE, the Company respectfully requests:

That consistent with this Application, the Commission approve the Company's 2018 REPS Compliance Report and allow the Company to implement the rate riders as set forth above.

Swine Waste Set-Aside Requirement be delayed an additional year and that the 2016 Poultry Waste Set-Aside Requirement remain at the same level as the 2015 requirement and delayed by one year the scheduled increases in that requirement. In its October 16, 2017 *Order Modifying the Swine and Poultry Waste Set-Aside Requirements and Providing Other Relief*, in Docket No. E-100, Sub 113, the Commission directed that the 2017 Swine Waste Set-Aside Requirement be delayed an additional year and that the 2017 Poultry Waste Set-Aside Requirement (N.C. Gen. Stat. § 62-133.8(f)) remain at the same level as the 2016 requirement, which the Commission had previously approved at 170,000 MWh, and delayed by one year the scheduled increases in that requirement. In its October 8, 2018 *Order Modifying the Swine and Poultry Waste Set-Aside Requirements And Providing Other Relief* in Docket No. E-100, Sub 113, the Commission modified the 2018 Swine Waste Set-Aside Requirement for electric public utilities to 0.02% and delayed by one year the scheduled increases to the requirement. The Commission also modified the 2018 Poultry Waste Set-Aside Requirement to 300,000 MWh, and delayed by one year the scheduled increases in the requirement.

Respectfully submitted, this the 11th day of June, 2019.



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COUNSEL FOR DUKE ENERGY PROGRESS, LLC

VERIFICATION

STATE OF NORTH CAROLINA)	
)	DOCKET NO. E-2, SUB 1205
COUNTY OF MECKLENBURG)	

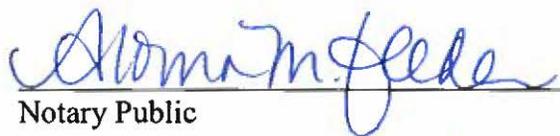
Veronica I. Williams, being first duly sworn, deposes and says:

That she is Rates and Regulatory Strategy Manager for Duke Energy Carolinas, LLC; that she has read the foregoing Application for Duke Energy Progress, LLC and knows the contents thereof; that the same is true except as to those matters stated on information and belief; and as to those matters, she believes them to be true.



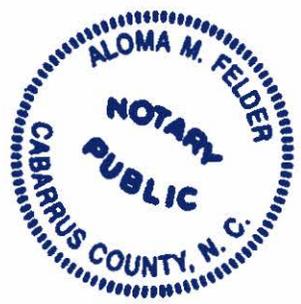
 Veronica I. Williams

Sworn to and subscribed before me
this the 6th day of June, 2019.



 Notary Public

My Commission Expires: July 21, 2020



BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. E-2, SUB 1205

In the Matter of)
)
Application of Duke Energy Progress, LLC)
for Approval of Renewable Energy and)
Energy Efficiency Portfolio Standard (REPS))
Compliance Report and Cost Recovery Rider)
Pursuant to N.C. Gen. Stat. 62-133.8 and)
Commission Rule R8-67)

**DIRECT TESTIMONY OF
TRAVIS E. PAYNE**

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

2 A. My name is Travis E. Payne, and my business address is 410 South
3 Wilmington Street, Raleigh, North Carolina.

4 **Q. PLEASE STATE YOUR POSITION WITH DUKE ENERGY AND**
5 **DESCRIBE YOUR CURRENT RESPONSIBILITIES.**

6 A. In my capacity as Business Development Manager III, I am responsible for
7 the origination and execution of wholesale and renewable energy
8 compliance transactions for Duke Energy Carolinas, LLC (“Duke Energy
9 Carolinas” or “DEC”), Duke Energy Progress, LLC (“Duke Energy
10 Progress,” “DEP” or “the Company”) and other Duke Energy Corporation
11 (“Duke Energy”) jurisdictions as the need arises. My responsibilities
12 include projects related to compliance with the renewable energy portfolio
13 standard requirements and renewable generation coordination for Duke
14 Energy’s Wholesale customers.

15 **Q. PLEASE BRIEFLY SUMMARIZE YOUR EDUCATIONAL**
16 **BACKGROUND.**

17 A. I received a Bachelor of Science degree in Financial Management from the
18 University of North Carolina at Charlotte and a Masters of Business
19 Administration from the University of Florida.

20 **Q. PLEASE DESCRIBE YOUR BUSINESS BACKGROUND AND**
21 **EXPERIENCE.**

22 A. I joined Progress Energy, Inc. in 2007, where I held positions in the Fuels
23 and System Operations department. Following the merger of Progress

1 Energy, Inc. with Duke Energy Corporation, I worked in the same
2 organization as a Natural Gas Trader until September of 2013, when I
3 moved to the Renewables and Distributed Energy Technology organization.
4 Since the move, I have held roles as a Renewable Analytics Manager, the
5 Renewable Compliance Manager and my current position as a Business
6 Development Manager III.

7 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE NORTH**
8 **CAROLINA UTILITIES COMMISSION?**

9 A. Yes, I most recently provided testimony in Docket No. E-7, Sub 1131 on
10 DEC's 2016 REPS compliance report and application for approval of its
11 REPS cost recovery rider.

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

13 A. The purpose of my testimony is to describe Duke Energy Progress'
14 activities and the costs it has incurred, or will incur, in support of
15 compliance with North Carolina's Renewable Energy and Energy
16 Efficiency Portfolio Standard ("REPS") under N.C. Gen. Stat. ("G.S.") §
17 62-133.8 during the twelve months beginning on April 1, 2018 and ending
18 on March 31, 2019 ("Test Period"), as well as during the twelve months
19 beginning on December 1, 2019 and ending on November 30, 2020
20 ("Billing Period").

21 **Q. PLEASE DESCRIBE THE EXHIBITS TO YOUR TESTIMONY.**

22 A. My testimony includes eighteen exhibits: Payne Confidential Exhibit No. 1
23 is the Company's 2018 REPS Compliance Report, and Payne Confidential

1 Exhibit No. 2 provides actual and forecasted REPS compliance costs, by
2 resource, that the Company has incurred during the Test Period and projects
3 to incur during the Billing Period in support of compliance with REPS.
4 Payne Confidential Exhibit No. 3 is a worksheet detailing the other
5 incremental costs included in this filing, listing separately labor and non-
6 labor costs, as directed by the Commission in its January 17, 2017 *Order*
7 *Approving REPS and REPS EMF Rider and REPS Compliance Report*
8 (“2017 Order”) in Docket No. E-2, Sub 1109 . This exhibit does not include
9 specific costs related to interconnection activities; they have been omitted
10 per the 2017 Order. Payne Exhibit Nos. 4-18 are the results of studies the
11 costs of which the Company is recovering via the REPS Rider.

12 **Q. WERE THESE EXHIBITS PREPARED BY YOU OR AT YOUR**
13 **DIRECTION AND UNDER YOUR SUPERVISION?**

14 A. Payne Confidential Exhibit Nos. 1-3 were prepared by me or under my
15 supervision. Payne Exhibit Nos. 4-18 include the results of studies not
16 prepared under my supervision. However, in my role at Duke Energy, I am
17 familiar with the studies.

18 **Compliance with REPS Requirements**

19 **Q. WHAT ARE DUKE ENERGY PROGRESS’ REPS**
20 **REQUIREMENTS UNDER G.S. § 62-133.8?**

1 A. Pursuant to G.S. § 62-133.8,¹ as an electric power supplier, Duke Energy
2 Progress is required to comply with the overall REPS requirement (“Total
3 Requirement”) by submitting for retirement a total volume of renewable
4 energy certificates (“RECs”) equivalent to the following percentages of its
5 North Carolina retail sales in the prior year:

- 6 ▪ Beginning in 2012, three percent (3%);
- 7 ▪ In 2015, six percent (6%);
- 8 ▪ In 2018, ten percent (10%); and
- 9 ▪ In 2021 and thereafter, twelve point five percent (12.5%).

10 Furthermore, each electric power supplier must comply with the
11 requirements of G.S. §§ 62-133.8 (d), (e), and (f) (individually referred to
12 as the “Solar Set-Aside,” “Swine Waste Set-Aside,” and “Poultry Waste
13 Set-Aside,” respectively). That is, within the Total Requirement described
14 above, each electric power supplier is to ensure that specific quantities of
15 qualifying solar RECs, swine waste RECs, and poultry waste RECs are also
16 submitted for retirement. The Company generally refers to its Total
17 Requirement net of the three set-asides as its “General Requirement.”

18 Specifically, each electric power supplier is to comply with the Solar
19 Set-Aside by submitting for retirement a volume of qualifying solar RECs
20 equivalent to the following percentages of its North Carolina retail sales in
21 the prior year:

¹ In its *Order Clarifying Electric Power Suppliers’ Annual REPS Requirements*, Docket No. E-100, Sub 113 (November 26, 2008), the Commission clarified that the calculation of these requirements for each year shall be based upon the electric utility’s North Carolina retail sales for the prior year.

- 1 ▪ Beginning in 2010, two-hundredths of one percent (0.02%);
- 2 ▪ In 2012, seven-hundredths of one percent (0.07%);
- 3 ▪ In 2015, fourteen-hundredths of one percent (0.14%); and
- 4 ▪ In 2018 and thereafter, two-tenths of one percent (0.2%).

5 Each electric power supplier is also to comply with the Swine Waste
6 Set-Aside by submitting for retirement a volume of qualifying swine waste
7 RECs equivalent to its pro-rata share of total retail electric power sold in
8 North Carolina multiplied by the statewide, aggregate swine waste set-aside
9 requirement.² Duke Energy Progress' Swine Waste Set-Aside
10 requirements, as modified by the Commission,³ are as follows:

- 11 ▪ In 2018, its pro-rata share of two-hundredths of one percent (0.02%)
12 of the total retail electric power sold in North Carolina in the year
13 prior;
- 14 ▪ In 2019, its pro-rata share of seven-hundredths of one percent
15 (0.07%) of the total retail electric power sold in North Carolina in
16 the year prior;

² In its *Order on Pro Rata Allocation of Aggregate Swine and Poultry Waste Set-Aside Requirements and Motion for Clarification* in Docket No. E-100, Sub 113 (March 31, 2010), the Commission approved the electric power suppliers' proposed pro-rata allocation of the statewide aggregate swine and poultry waste set-aside requirements, such that the aggregate requirements will be allocated among the electric power suppliers based on the ratio of each electric power supplier's prior year retail sales to the total statewide retail sales.

³ In its *Order Modifying the Swine and Poultry Waste Set-Aside Requirements And Providing Other Relief* (October 8, 2018), Docket No. E-100, Sub 113, the Commission modified the 2018 Swine Waste Set-Aside Requirement for electric public utilities to 0.02% and delayed by one year the scheduled increases to the requirement. The Commission also modified the 2018 Poultry Waste Set-Aside requirement to 300,000 MWh, and delayed by one year the scheduled increases in the requirement.

1 counts for two poultry waste and one general REC, to meet its Total
2 Requirement of 3,682,990 RECs. Within this total, the Company submitted
3 for retirement 73,660 RECs to meet the Solar Set-Aside requirement,
4 66,987 RECs, along with 8,789 SB 886 RECs (which count as 17,578
5 Poultry Waste Set-Aside RECs), to meet the Poultry Waste Set-Aside
6 requirement of 84,565 RECS, and 7,366 RECs to meet the Swine Waste
7 Set-Aside Requirement. During the prospective Billing Period, which
8 spans two calendar years, with different requirements in each year, the
9 Company's estimated requirements are as follows⁴:

10 In 2019, the Company estimates that it will be required to submit for
11 retirement 3,868,727 RECs to meet its Total Requirement. Within this total,
12 the Company is also required to retire the following: 77,375 solar RECs,
13 27,082 swine waste RECs and 197,319 poultry waste RECs.

14 In 2020, the Company estimates that it will be required to submit for
15 retirement 3,796,477 RECs to meet its Total Requirement. Within this total,
16 the Company estimates that it will be required to retire approximately
17 75,930 solar RECs, 26,576 swine waste RECs and 253,695 poultry waste
18 RECs.

19 **Q. HAS THE COMPANY COMPLIED WITH ITS GENERAL**
20 **REQUIREMENT FOR 2018?**

21 A. Yes, the Company has met its 2018 General Requirement of 3,517,399
22 RECs. Specifically, the RECs to be used for 2018 compliance have been

⁴ The Company's projected requirements are based upon retail sales estimates and will be subject to change based upon actual prior year North Carolina retail sales data.

1 transferred from the North Carolina Renewable Energy Tracking System
2 (“NC-RETS”) Progress Energy Electric Power Supplier account to the
3 Progress Energy Compliance Sub-Account. Upon completion of this
4 regulatory proceeding, the Commission will finalize retirement of the
5 RECs.

6 **Q. WILL THE COMPANY COMPLY WITH ITS GENERAL REPS**
7 **REQUIREMENT IN 2019?**

8 A. Yes, the Company is well positioned to comply with its General REPS
9 Requirements in 2019.

10 **Q. WHAT ACTIONS HAS THE COMPANY TAKEN DURING THE**
11 **TEST PERIOD TO SATISFY ITS CURRENT AND FUTURE REPS**
12 **REQUIREMENTS?**

13 A. During the Test Period, Duke Energy Progress has continued to produce
14 and procure RECs to satisfy its REPS requirements. Specifically, the
15 Company has taken the following actions: (1) executed and continued
16 negotiations for additional REC purchase agreements with renewable
17 facilities; (2) solicited renewable energy proposals of various types; (3)
18 continued operations of its solar facilities; (4) continued to fully utilize
19 energy savings generated by its energy efficiency programs, that can be
20 counted towards the Company’s REPS requirement; (5) performed research
21 studies, both directly and through strategic partnerships, to enhance the
22 Company’s ability to comply with its future REPS requirements; (6)
23 obtained approval from the Commission on a method by which to calculate

1 the RECs generated from net metering facilities and track these RECs for
2 use in meeting the Company's REPS requirements; and (7) issued a Request
3 for Proposals as part of the Competitive Procurement of Renewable Energy
4 ("CPRE") Program of North Carolina House Bill 589 ("NC HB 589"), the
5 RECs from which will be used to meet the Company's future REPS
6 requirements.

7 **Q. IS THE COMPANY ABLE TO USE RECS GENERATED FROM**
8 **NET METERING FACILITIES TO SATISFY ITS FUTURE REPS**
9 **REQUIREMENTS?**

10 A. Yes. Under the current Net Metering for Renewable Energy Facilities Rider
11 offered by DEP (Rider NM-4B), a customer receiving electric service under
12 a schedule other than a time-of-use schedule with demand rates ("NMNTD
13 customer") shall provide any RECs to DEP at no cost. Per the Commission's
14 June 5, 2018 *Order Approving Rider and Granting Waiver Request*
15 ("NMNTD Order") in Docket Nos. E-2, Sub 1106 and E-7, Sub 1113, for
16 NMNTD customers, DEP may use the PVWatts™ Solar Calculator
17 developed by the National Renewable Energy Laboratory for estimating the
18 generation from NMNTD customers' solar facilities, as permitted by
19 Commission Rule R8-67(g)(2). Commission Rule R8-67(g)(2) allows the
20 use of a scalable conversion factor for estimating annual generation from
21 program participants. DEP shall then report the total amount of electricity
22 produced by facilities under the Rider directly into NC-RETS in a separately
23 identified generation project. DEP has complied with these requirements

1 and reported generation from NMNTD customers to NC-RETS. The RECs
2 from these facilities are currently in DEP's REC inventory and available for
3 use for future compliance requirements.

4 **Q. ARE THERE OTHER COMPLIANCE REQUIREMENTS IN THE**
5 **NMNTD ORDER WITH WHICH DEP MUST COMPLY?**

6 A. Yes. The NMNTD Order also requires that DEP shall provide NC-RETS on
7 a monthly basis with a list of participating customers, including location
8 and the kW capacity of their installations, to be made available on the NC-
9 RETS website. DEP has complied, and continues to comply, with this
10 requirement. In addition, the NMNTD Order requires that for two years,
11 DEP shall verify through site visits to a statistically significant number of
12 participating residences that the solar installations covered by this Rider
13 continue to be operating, and shall include the findings of its site visits in
14 its annual REPS compliance filing. DEP hired a third-party contractor to
15 perform the required site visits which were completed in late May 2019.
16 Therefore, the results of these visits will be reported in the Company's 2019
17 compliance filing to be made in 2020.

18 **Q. HOW WILL THE CPRE PROGRAM OF NC HB 589 IMPACT DEP'S**
19 **COMPLIANCE WITH ITS GENERAL REQUIREMENT?**

20 A. Under G.S. § 62-110.8(a), DEC and DEP (the "Companies") are responsible
21 for procuring renewable energy and capacity through a competitive
22 procurement program with the purpose of adding renewable energy to the
23 state's generation portfolio in a manner that allows DEC and DEP to

1 continue to reliably and cost-effectively serve their customers' future
2 energy needs. To meet the CPRE Program requirements, the Companies
3 must issue requests for proposals to procure energy and capacity from
4 renewable energy facilities in the aggregate amount of 2,660 MW (subject
5 to adjustment in certain circumstances) reasonably allocated over a term of
6 45 months beginning on February 21, 2018, when the Commission
7 approved the CPRE Program.

8 Renewable energy facilities eligible to participate in the CPRE
9 solicitation(s) include those facilities that use renewable energy resources
10 identified in G.S. § 62-133.8(a)(8), the REPS statute. The renewable energy
11 facilities to be developed or acquired by the Companies or procured from a
12 third party through a power purchase agreement under the CPRE Program,
13 must also deliver to the Companies the environmental and renewable
14 attributes, or RECs, associated with the power. The Company's annual
15 CPRE Program Plan, filed on September 1, 2018 in Docket No. E-100, Sub
16 157, includes a planned allocation of ~1,460 to ~1,960 MWs between the
17 DEC and DEP service territories, as well as a planned timeline for each
18 solicitation. Additional details regarding DEP's CPRE compliance
19 activities for the current Test Period are being filed concurrently with this
20 REPS filing and may be reviewed in Docket No. E-2, Sub 1208. DEP plans
21 to use the RECs acquired through the CPRE RFP solicitations for its future
22 REPS compliance requirements and has therefore included the planned MW
23 allocation and timeline in its REPS compliance planning process. In the

1 Public Staff's May 20, 2019 testimony in the DEC REPS cost recovery
2 proceeding, Docket No. E-7, Sub 1191, witness Evan D. Lawrence stated
3 that CPRE costs cannot be recovered through REPS proceedings. In rebuttal
4 testimony filed on May 30, 2019, I disagreed with that position but stated
5 that the issue did not need to be decided at that time as there were no CPRE
6 costs in the DEC filing. Similarly in this proceeding, and as noted in Megan
7 W. Jennings' direct testimony in last year's annual REPS cost recovery
8 proceeding in Docket No. E-2, Sub 1175, the Company intends to recover
9 the reasonable and prudent costs incurred to implement the CPRE Program
10 through the CPRE Rider as contemplated under Commission Rule R8-71(j).
11 However, absent recovery of any such costs to implement the CPRE
12 program in future CPRE proceedings, the Company would propose to
13 recover the costs in a future REPS proceeding as an incremental cost of
14 procuring RECs to meet its REPS compliance requirement. There are no
15 CPRE program implementation costs in this current REPS proceeding, so
16 the issue again requires no immediate decision to complete the review and
17 approval of the currently proposed REPS rider.

18 **Q. HAS THE COMPANY COMPLIED WITH ITS SOLAR SET-ASIDE**
19 **REQUIREMENT FOR 2018?**

20 A. Yes, the Company has met the 2018 Solar Set-Aside requirement of 73,660
21 solar RECs. Pursuant to the NC-RETS Operating Procedures, the Company
22 has submitted for retirement 73,660 solar RECs. Specifically, the RECs to
23 be used for 2018 compliance have been transferred from the NC-RETS

1 Progress Energy Electric Power Supplier account to the Progress Energy
2 Compliance Sub-Account. Upon completion of this regulatory proceeding,
3 the Commission will finalize retirement of the RECs.

4 **Q. WILL THE COMPANY COMPLY WITH ITS SOLAR SET-ASIDE**
5 **REQUIREMENT IN 2019?**

6 A. Yes, the Company is well positioned to comply with its Solar Set-Aside
7 requirement in 2019.

8 **Q. PLEASE PROVIDE AN UPDATE ON THE COMPANY'S EFFORTS**
9 **TO COMPLY WITH ITS SOLAR SET-ASIDE REQUIREMENT.**

10 A. The Company is well positioned to comply with its Solar Set-Aside
11 Requirement in 2019 through a diverse and balanced portfolio of solar
12 resources. The Company's efforts to comply with the Solar Set-Aside
13 Requirement include REC generation and procurement from solar
14 renewable energy facilities.

15 The Company continues to operate the following Company-owned
16 solar facilities, the RECs from which are used for REPS compliance:

- 17 • Camp Lejeune Solar Facility – 13MW, located in Onslow County;
- 18 • Warsaw Solar Facility – 65MW, located in Duplin County;
- 19 • Fayetteville Solar Facility – 23MW, located in Bladen County; and
- 20 • Elm City Solar Facility – 40MW, located in Wilson County.

21 **Q. HAS THE COMPANY COMPLIED WITH ITS POULTRY WASTE**
22 **SET-ASIDE REQUIREMENT FOR 2018?**

1 A. Yes, the Company has met the 2018 Poultry Waste requirement of 84,565
2 RECs. Pursuant to NC-RETS Operating Procedures, the Company has
3 submitted for retirement 66,987 poultry RECs and 8,789 SB 886 RECs
4 (which count as 17,578 Poultry Waste Set-Aside RECs). Accordingly, the
5 Company has submitted the equivalent of 84,565 poultry RECs for
6 compliance. Specifically, the RECs to be used for 2018 compliance have
7 been transferred from the NC-RETS Progress Energy Electric Power
8 Supplier account to the Progress Energy Compliance Sub-Account. Upon
9 completion of this regulatory proceeding, the Commission will finalize
10 retirement of the RECs.

11 **Q. WILL THE COMPANY COMPLY WITH ITS POULTRY WASTE**
12 **SET-ASIDE REQUIREMENT IN 2019?**

13 A. The Company is in a position to comply with its poultry waste set-aside
14 requirement in 2019, though future compliance is dependent on the
15 performance of poultry waste-to-energy developers on current contracts and
16 new facilities that are scheduled to come online, including one that is
17 expected to come online in 2019. Ramping up to meet the increased
18 compliance targets for 2019 - 2020 has been problematic because suppliers
19 have either delayed projects or lowered the volume of RECs to be produced,
20 and other facilities have undergone extended outages to perform repairs.

21 **Q. WHAT ACTIONS HAS THE COMPANY TAKEN DURING THE**
22 **TEST PERIOD TO PROCURE OR DEVELOP POULTRY WASTE-**

1 **TO-ENERGY RESOURCES TO SATISFY ITS POULTRY WASTE**
2 **SET-ASIDE REQUIREMENTS?**

3 A. In the Test Period, the Company (1) continued direct negotiations for
4 additional supplies of both in-state and out-of-state resources with multiple
5 counterparties; (2) secured contracts for additional poultry waste-to-energy
6 resources; (3) worked diligently to understand the technological, permitting,
7 and operational risks associated with various methods of producing
8 qualifying poultry RECs to aid developers in overcoming those risks; when
9 those risks could not be overcome, the Company worked with developers
10 via contract amendments to adjust for more realistic outcomes; (4) explored
11 leveraging current biomass contracts by working with developers to add
12 poultry waste to their fuel mix; (5) explored adding thermal capabilities to
13 current poultry sites to bolster REC production; (6) explored poultry-
14 derived directed biogas at facilities located in North Carolina and directed
15 such biogas to combined cycle plants for combustion and electric
16 generation; (7) utilized the Company's REC trader to search the broker
17 market for out-of-state poultry RECs available in the market; and (8)
18 participated in the North Carolina Energy Policy Council Biogas Working
19 Group. Additional information on the Company's compliance with the
20 Poultry Waste Set-Aside requirement can be found in the Company's Joint
21 Semiannual Progress Report, filed on June 3, 2019 in Docket No. E-100,
22 Sub 113A.

1 The Company remains committed to satisfying its statutory
2 requirements for the Poultry Waste Set-Aside and will continue to
3 reasonably and prudently pursue procurement of these resources.

4 **Q. HAS THE COMPANY COMPLIED WITH ITS SWINE WASTE**
5 **SET-ASIDE REQUIREMENT FOR 2018?**

6 A. Yes. The Company has met the modified 2018 Swine Waste Set-Aside
7 Requirement of 0.02% or the equivalent of 7,366 swine RECs. Pursuant to
8 the NC-RETS Operating Procedures, the Company has submitted for
9 retirement 7,366 swine RECs. Specifically, the RECs to be used for 2018
10 compliance have been transferred from the NC-RETS Progress Energy
11 Electric Power Supplier account to the Progress Energy Compliance Sub-
12 Account. Upon completion of this regulatory proceeding, the Commission
13 will finalize retirement of the RECs.

14 **Q. WILL THE COMPANY COMPLY WITH ITS SWINE WASTE SET-**
15 **ASIDE REQUIREMENT IN 2019?**

16 A. Current projections indicate that DEP will not be able to comply with the
17 swine waste set-aside in 2019, as existing contracts have not been able to
18 reach contracted levels of production, and new contracts have not come
19 online in the timeframe originally planned. Several swine projects are
20 scheduled to come online over the next few years. The ability of these
21 facilities to come online and produce their full contracted RECs will
22 determine the levels of compliance that DEP is able to meet in the near term.

23 The Company understands that current swine waste-to-energy

1 projects have encountered difficulties in achieving the full REC output of
2 their contracts due to issues including local opposition to siting of the
3 facilities, the inability to secure firm and reliable sources of swine waste
4 feedstock from waste producers in North Carolina, difficulties securing
5 project financing and technological challenges encountered when ramping
6 up production. In addition, after terminating two contracts for swine waste
7 RECs in 2017 due to failure to perform, the Company was notified by
8 another project in January 2019 that the project will not be continuing due
9 to failure to operate.

10 **Q. WHAT ACTIONS HAS THE COMPANY TAKEN DURING THE**
11 **TEST PERIOD TO PROCURE OR DEVELOP SWINE WASTE-TO-**
12 **ENERGY RESOURCES TO MEET ITS SWINE WASTE SET-ASIDE**
13 **REQUIREMENTS?**

14 A. In the Test Period, the Company (1) continued direct negotiations for
15 additional supplies of both in-state and out-of-state resources; (2) secured
16 contracts for additional swine waste-to-energy resources; (3) worked
17 diligently to understand the technological, permitting, and operational risks
18 associated with various methods of producing qualifying swine waste RECs
19 to aid developers in overcoming those risks; when those risks could not be
20 overcome, the Company worked with developers via contract amendments
21 to adjust for outcomes that the developers believe are achievable based on
22 new experience; (4) explored and is engaging in modification of current
23 biomass and set-asides contracts by working with developers to add swine

1 waste to their fuel mix; (5) continued pursuit of swine-derived directed
2 biogas from North Carolina facilities; (6) utilized the Company's REC
3 trader to search the broker market for out-of-state swine RECs available in
4 the market; (7) participated in the North Carolina Energy Policy Council
5 Biogas Working Group; and (8) engaged the North Carolina Pork Council
6 ("NCPC") in a project evaluation collaboration effort that will allow the
7 Company and the NCPC to discuss project viability, as appropriate, with
8 respect to the Company's obligations to keep certain sensitive commercial
9 information confidential. Additional information on the Company's
10 compliance with the Swine Waste Set-Aside requirement can be found in
11 the Company's Joint Semiannual Progress Report, filed on June 3, 2019 in
12 Docket No. E-100, Sub 113A.

13 The Company remains committed to satisfying its statutory
14 requirements for the Swine Waste Set-Aside and will continue to reasonably
15 and prudently pursue procurement of these resources.

16 **Q. IS DUKE ENERGY PROGRESS CONTINUING TO EXECUTE**
17 **ADDITIONAL REC PURCHASE AGREEMENTS?**

18 A. Yes, the Company continues to execute additional REC purchase
19 agreements and maintains an open solicitation for proposals from
20 developers of renewable energy resources.

21 **Q. DID THE COMPANY SELL ANY RECS DURING THE TEST**
22 **PERIOD?**

23 A. No, it did not.

1 Costs of REPS Compliance

2 **Q. WHAT ARE THE COMPANY'S COSTS ASSOCIATED WITH REPS**
3 **COMPLIANCE DURING THIS TEST PERIOD AND THE**
4 **UPCOMING BILLING PERIOD?**

5 A. Duke Energy Progress' costs associated with REPS compliance are
6 reflected in Payne Confidential Exhibit No. 2 and are categorized by actual
7 costs incurred during the Test Period and projected costs for the Billing
8 Period.

9 **Q. IN ADDITION TO RENEWABLE ENERGY AND REC COSTS,**
10 **WHAT OTHER COSTS OF REPS COMPLIANCE DOES THE**
11 **COMPANY SEEK TO RECOVER IN THIS PROCEEDING?**

12 A. Payne Confidential Exhibit No. 2 identifies "Other Incremental Cost,"
13 "Solar Rebate Program Cost" and "Research Cost" that the Company has
14 incurred, and estimates it will incur, in association with REPS compliance.

15 Other Incremental Costs and Solar Rebate Program Costs

16 **Q. PLEASE EXPLAIN THE OTHER INCREMENTAL COSTS**
17 **INCLUDED FOR RECOVERY.**

18 A. Other Incremental Costs include labor costs associated with REPS
19 compliance activities and non-labor costs associated with administration of
20 REPS compliance. Among the non-labor costs associated with REPS
21 compliance are the Company's subscription to NC-RETS, and accounting,
22 and tracking tools related to RECs, reduced by agreed-upon liquidated
23 damages paid by sellers for failure to meet contractual milestones, and

1 amounts paid for administrative contractual amendments requested by
2 sellers.

3 **Q. PLEASE PROVIDE INFORMATION ON THE NC HB 589 SOLAR**
4 **REBATE PROGRAM.**

5 A. As required by G.S. § 62-155(f), DEP developed a Solar Rebate Program
6 offering reasonable incentives to residential and nonresidential customers
7 for the installation of small customer owned or leased solar energy facilities
8 participating in the Company's net metering tariff. The incentive is limited
9 to 10 kilowatts alternating current ("kW AC") for residential solar
10 installations and 100 kW AC for nonresidential solar installations. The
11 program incentive shall be limited to 10,000 kW of installed capacity
12 annually starting January 1, 2018 and continuing until December 31, 2022.

13 **Q. ARE COSTS RELATED TO THE NC HB 589 SOLAR REBATE**
14 **PROGRAM INCLUDED FOR RECOVERY IN THIS FILING?**

15 A. Yes. Pursuant to G.S. § 62-155(f), each public utility required to offer a
16 solar rebate program "shall be authorized to recover all reasonable and
17 prudent costs of incentives provided to customers and program
18 administrative costs by amortizing the total program incentives distributed
19 during a calendar year and administrative costs over a 20-year period,
20 including a return component adjusted for income taxes at the utility's
21 overall weighted average cost of capital established in its most recent
22 general rate case, which shall be included in the costs recoverable by the
23 public utility pursuant to G.S. § 62-133.8(h)." G.S. § 62-133.8(h) provides

1 for an electric power supplier's cost recovery and customer charges under
2 the REPS statute; NC HB 589 amended it by adding a provision to allow
3 for the recovery of incremental costs incurred to "provide incentives to
4 customers, including program costs, incurred pursuant to G.S. § 62-155(f)."
5 Therefore, DEP has included for recovery in this filing costs incurred during
6 the EMF period, and projected to be incurred in the Billing Period related
7 to the implementation of the NC HB 589 Solar Rebate Program. As detailed
8 on Payne Confidential Exhibit No. 3, these costs include the annual
9 amortization of incentives paid to customers and program administration
10 costs, which include labor, information technology and marketing costs.

11 **Q. PLEASE PROVIDE DETAIL ON THE NON-LABOR COSTS**
12 **ASSOCIATED WITH THE NC HB 589 SOLAR REBATE**
13 **PROGRAM.**

14 A. Non-labor costs associated with the NC HB 589 Solar Rebate Program
15 include the rebate incentives paid to customers, program marketing costs
16 and information technology costs for the automation of program
17 administrative tasks.

18 The NC HB 589 Solar Rebate Program launched on July 9, 2018.
19 On July 26, 2018, DEP filed a notice that the 2018 annual participation
20 limits for residential and non-residential customers under the Solar Rebate
21 Program, exclusive of the non-profit participation set-aside, had been
22 reached. Rebate payments were made to customers accepted into the
23 program, upon installation of their generating system. Beginning in 2019,

1 for a residential customer who obtains a rebate reservation prior to
2 installation, the installation must be completed no later than December 31
3 in the year in which the reservation was obtained. For a nonresidential
4 customer who obtains a rebate reservation prior to installation, the
5 installation must be completed no later than 365 days from the date of an
6 executed interconnection agreement. Therefore, rebate payments for the
7 2018 program year will continue into 2019, and the same principle will
8 apply for subsequent program years, with payments continuing into 2023
9 after the final program year of 2022. In accordance with the September 20,
10 2018 Order issued by the Commission in Docket Nos. E-2, Sub 1167, and
11 E-7, Sub 1166, after December 31, 2018, a reallocation was completed to
12 assign capacity and pay rebates to those defined as ‘Affected Customers’
13 within the Order. This resulted in an increase in rebate payments made at
14 the beginning of 2019. DEP filed a notice on January 4, 2019 for residential
15 customers and January 8, 2019 for non-residential customers, that the 2019
16 annual participation limits for residential and non-residential customers
17 under the Solar Rebate Program, exclusive of the non-profit participation
18 set-aside, had been reached.

19 **Q. PLEASE PROVIDE DETAIL ON THE INTERNAL LABOR COSTS**
20 **ASSOCIATED WITH THE NC HB 589 SOLAR REBATE**
21 **PROGRAM.**

22 A. The labor dollars related to the NC HB 589 Solar Rebate Program included
23 for recovery in this filing include projected costs for one Program Manager,

1 two Program Specialists, two complex billing staff, information technology,
2 and compliance, accounting and rates support. The Program Manager is
3 responsible for marketing, installer communications, reporting and
4 overseeing the Program Specialists, who are responsible for processing
5 applications, initiating incentive payments and handling customer inquiries.
6 In addition, incremental employees are needed in complex billing as the
7 number of net metering accounts has increased as a result of the NC HB 589
8 Solar Rebate Program. Information technology work is performed by both
9 internal employees and contractors and encompass implementation of an
10 electronic application process, including automation required to receive and
11 process solar rebate applications and payments. These employees and
12 contractors continue to provide support and enhancements to this platform
13 which ensures rebate applications are able to be accepted, tracked and
14 monitored. Compliance, accounting, and rates are responsible for ensuring
15 program costs incurred and included for recovery are valid and have
16 appropriate support, rebate payments made comply with the terms outlined
17 in the Solar Rebate Rider, and detail included in required website and
18 updates to the Commission is accurate.

19 **Q. PLEASE PROVIDE DETAIL ON THE INTERNAL LABOR COSTS**
20 **THAT ARE ASSOCIATED WITH REPS COMPLIANCE AND**
21 **SOLAR REBATE ACTIVITIES THAT ARE INCLUDED IN DEP'S**
22 **CURRENT APPLICATION FOR REPS COST RECOVERY.**

1 A. DEP charges only the incremental cost of REPS compliance and the NC HB
2 589 Solar Rebate Program to the REPS cost recovery rider. Consistent with
3 that policy and DEP's practices in previous applications for cost recovery
4 for REPS compliance, internal employees who work to comply with G.S. §
5 62-133.8 and G.S. § 62-155(f) charge only that portion of their labor to
6 REPS. The departments/functions that charged labor to REPS during the
7 Test Period are detailed in Payne Confidential Exhibit No. 3.

8 **Q. HOW DO EMPLOYEES CHARGE THEIR REPS-RELATED AND**
9 **NC HB 589 SOLAR REBATE PROGRAM-RELATED LABOR**
10 **COSTS TO REPS?**

11 A. Employees positively report their time, which means that each employee is
12 required to submit a timesheet every two weeks in DEP's time reporting
13 system. The hours reported for the period are split according to the
14 accounting entered in the time reporting system for that specific employee.
15 The division of hours is updated for the reporting period as necessary, as
16 the nature of the employee's work changes.

17 To educate employees to account for their time properly, DEP
18 annually provides instructions for charging time to REPS to affected
19 employees and the management of the employee groups performing REPS
20 work. Additionally, every year prior to filing for approval of the DEP REPS
21 Compliance Report and Cost-Recovery Rider, the labor hours charged are
22 carefully reviewed and confirmed.

1 **Q. ARE THERE ANY LABOR AND NON-LABOR**
2 **INTERCONNECTION-RELATED COSTS INCLUDED FOR**
3 **RECOVERY IN THIS FILING?**

4 A. No. As directed by the Commission in the *2015 DEP REPS Compliance*
5 *Order*, all internal interconnection-related labor costs, such as those related
6 to employees in the Distributed Energy Technology Standard PPAs and
7 Interconnection Team and the Renewables Service Center, contract labor
8 costs, such as those for temporary employees working on interconnection
9 information technology projects, and non-labor costs, such as PowerClerk
10 platform costs, have not been included for recovery in this filing.

11 **Research Costs**

12 With respect to Research and Development (“R&D”) activities during the
13 Test Period and projected for the Billing Period, the Company has incurred
14 or projects to incur costs associated with the support of various pilot projects
15 and studies related to distributed energy technology and the Company’s
16 REPS compliance.

17 **Q. THE COMMISSION’S *ORDER APPROVING REPS AND REPS EMF***
18 ***RIDERS AND 2012 REPS COMPLIANCE* REQUIRES DUKE**
19 **ENERGY PROGRESS TO FILE WITH ITS 2018 REPS RIDER**
20 **APPLICATION STUDY RESULTS FOR ANY STUDIES THE**
21 **COSTS OF WHICH IT HAS RECOVERED VIA THE REPS RIDER.**
22 **IS THE COMPANY SUPPLYING SUCH STUDIES IN THIS**
23 **FILING?**

1 A. Yes. The Company's R&D efforts are an integral part of its REPS
2 compliance efforts. The following summary outlines efforts undertaken by
3 the Company in the test period and specifies the availability of applicable
4 study results.

- 5 • CAPER, Smart Battery Gauge ("SBG") – In 2018, the Company
6 worked with North Carolina State University ("NC State") and
7 Clemson University, through CAPER, on a project to develop the
8 SBG and to validate the value proposition of the SBG by
9 demonstrating its ability to accurately estimate the State of Charge,
10 State of Health and the Remaining Useful Life in real-time and while
11 the energy storage device is in use. The results of this project can be
12 found in Payne Confidential Exhibit No. 4. This project is ongoing
13 and is estimated to be completed in 2019.
- 14 • Clemson University – Small DG Interface Testing – In 2018, the
15 Company engaged with the eGRID laboratory located at Clemson
16 University on a project to test and validate the function and
17 performance of the Company's small DG interface. A description of
18 the project background can be found in Payne Confidential Exhibit
19 No. 5.
- 20 • Coalition for Renewable Natural Gas – The Company joined the
21 Coalition for Renewable Natural Gas in 2017, and renewed its
22 membership in 2018, to add a valuable resource of knowledge and
23 public policy advocacy in this growing sector of potential animal

1 waste supply. The Coalition for Renewable Natural Gas provides its
2 members with exclusive whitepapers, support on model pipeline gas
3 specifications and access to other members for discussions on
4 current and future projects.

5 • DER Risks to Transformers and Transmission – In 2018, the
6 Company worked with ABB and Pike Engineering on a project to
7 evaluate the distribution energy resource interconnection impacts to
8 the Transmission to Distribution transformers and the transmission
9 system. The results of this project can be found in Payne
10 Confidential Exhibit No. 6. The report contains Critical Energy
11 Infrastructure Information as defined by the Federal Energy
12 Regulatory Commission. As such, Exhibit 6 should be treated as
13 strictly confidential.

14 • Eos Energy Storage Technology Development – The Company and
15 Eos Services started a collaborative technology development
16 program to validate, demonstrate, and quantify the benefits of an
17 Eos Aurora Battery System that is DC Coupled to a PV facility at
18 the McAlpine Creek Substation 50 kW Solar Facility. The expected
19 completion date of the project is in 2020.

20 • Electric Power Research Institute (“EPRI”) – In 2018, the Company
21 subscribed to the following EPRI programs, the costs of which were
22 recovered via the REPS rider: Program 174 – Integration of
23 Distributed Energy Resources. The Company participated in a

1 supplemental project under this program – “Evaluation of Inverter
2 On-Board Detection Methods to Prevent Unintended Islanding.”
3 EPRI designates such study results as proprietary or as trade secrets
4 and licenses such results to EPRI members, including Duke Energy
5 Progress. As such, the Company may not disclose the information
6 publicly. Non-members may access these studies for a fee.
7 Information regarding access to this information can be found at
8 <http://www.epri.com/Pages/Default.aspx>.

- 9 • ETO - Mitigation of Transformer High Inrush Current – In 2018, the
10 Company started working with multiple vendors on a project to test
11 and evaluate different options to mitigate the transformer high
12 inrush current. Transformers are very expensive components of the
13 electric power system. The transformers installed in the utility scale
14 solar generating facilities are experiencing high inrush current
15 during energization. Transformer inrush currents are short duration
16 currents that flow into the transformer primary every time the
17 transformer is energized. These currents are typically high
18 magnitude (up to 20 times the nominal current), harmonic currents
19 with some DC component. These high inrush currents can cause
20 numerous problems on the electrical system, such as breaker
21 tripping, voltage sags, voltage flicker, mechanical stress on the
22 transformer windings, oscillatory torque in motors and system
23 resonance. A detailed description of the project can be found in

- 1 Payne Confidential Exhibit No. 7. The expected completion date of
2 the project is by the end of 2019.
- 3 • NC State University’s Future Renewable Electric Energy Delivery
4 and Management (“FREEDM”) Systems Center – Duke Energy
5 supports NC State’s FREEDM Center through annual membership
6 dues. The FREEDM partnership provides Duke Energy with the
7 ability to influence and focus research on materials, technology, and
8 products that will enable the utility industry to transform the electric
9 grid into a two-way power flow system supporting distributed
10 generation.
 - 11 • Institute for Electrical and Electronics Engineers (“IEEE”) 1547
12 Conformity Assessment – The IEEE 1547 Conformity Assessment
13 Steering Committee has been working to develop industry standard
14 tools and methodologies to assure consistent and comprehensive
15 compliance prior to utility grid interconnection sign off. IEEE and
16 the Company share a common goal to accelerate and broaden
17 industry adoption through the development and publication of well-
18 designed and managed conformity assessment and certification
19 programs. This project was about establishment and execution of an
20 IEEE 1547 Commissioning Test demonstration for solar
21 installations within the eGRID laboratory located at Clemson
22 University. The project formally commissioned the operation of a
23 50kW inverter and established an operational test bed for more

1 advanced interconnection evaluation. The results of this project can
2 be found in Payne Confidential Exhibit No. 8.

3 • Marshall Solar Site Algorithm – In 2018, the Company continued to
4 work with the University of North Carolina at Charlotte (“UNCC”)
5 on a project to utilize the operational data to design and implement
6 an autonomous active and reactive power dispatch algorithm with
7 PV farms and/or Battery Energy Storage system on any feeder
8 considering DMS coordination. The work in 2018 was to develop a
9 battery degradation model that can be seamlessly integrated to a
10 stacked energy storage application controller. The methodology has
11 been tested on a specific battery type and compared with other
12 battery models. The Phase IV results of this project can be found in
13 Payne Confidential Exhibit No. 9. The Company is continuing to
14 support the next phase of this project, which will be completed in
15 the summer of 2019.

16 • Mini-DVAR Project – In 2016, the Company started a project to
17 investigate a new technology manufactured by American
18 Superconductor Corporation which makes a device called Mini-
19 DVAR. This device can potentially be used for voltage
20 stability/VAR support for renewable energy applications such as
21 voltage compliance, grid reliability, efficiency, energy savings and
22 grid integration of distributed PV. The project also included
23 engineering design of a protection scheme with Schweitzer

1 Engineering Laboratories, and the procurement of switch gear from
2 ABB. In 2017, the Company completed installation and
3 commissioning of the mini-DVAR to verify it was fully functional.
4 This project continued in 2018 to collect operational data and to
5 analyze its application and benefit in Volt VAR Optimization of the
6 distribution system. The results of this project can be found in Payne
7 Confidential Exhibit Nos. 10-12.

8 • NC State University – ETO – Grid-forming Battery Energy Storage
9 System Characterization and Testing – Starting from late 2018, the
10 Company worked with NC State on a project to install and
11 commission a Battery Energy Storage System (“BESS”) and to
12 study the loading capabilities of the BESS operating in grid-forming
13 mode. A BESS may need to power up a microgrid after an outage,
14 thus supplying all the magnetizing currents to line-start machines as
15 well as isolation transformers in the microgrid. There is a need to
16 understand the capabilities of the state-of-the art BESS inverters to
17 support these loads. Though simulating such behavior is feasible,
18 experimental validation is required to guarantee that the system will
19 operate as expected, and the BESS inverter protection will not trip.
20 The expected completion date of the project is by the end of 2019.

21 • NC State University – Interactions of PV Installations with
22 Distribution Systems – Starting from late 2018, the Company
23 worked with NC State on a project to construct a testbed and

1 analysis framework for investigating how large PV penetration on a
2 feeder affects the operation of the distribution system. The expected
3 completion date of the project is by the end of 2019.

4 • PNNL – Dynamic Var Compensator (“DVC”) Pilot – In 2018, the
5 Company worked with One-Cycle Control, Inc. and Pacific
6 Northwest National Laboratory (“PNNL”) on a project, which is
7 part of DOE SunlAmp Contract: 0000-1714, to install and
8 commission two DVC devices in the Company’s distribution
9 system, and to evaluate its performance in mitigating the voltage
10 variability due to high penetration of distributed photovoltaic on a
11 distribution feeder. A detailed description of the project can be
12 found in Payne Confidential Exhibit Nos. 13-14.

13 • Research Triangle Institute – Biogas Utilization in North Carolina –
14 In 2018, the Company began support of the Research Triangle
15 Institute project for the NC Energy Policy Council to determine the
16 potential bioenergy/biogas resources available in North Carolina,
17 and to identify the most beneficial and optimum utilization of
18 resources to maximize economic, environmental and societal
19 advantages. An overview of the project can be found in Payne
20 Exhibit No. 15.

21 • Rocky Mountain Institute (“RMI”) – The Company participates in
22 eLab, a forum sponsored by RMI, composed of a number of North
23 Carolina and nationally based entities, and organized to overcome

1 barriers to economic deployment of distributed energy resources in
2 the U.S. electric sector. Specifically, the Company seeks to gauge
3 customer desires related to distributed resources and provide ideas
4 of potential long-term solutions for distributed energy resources and
5 microgrids. Please visit RMI's website at <http://www.rmi.org/elab>
6 for more information on eLab.

- 7 • Swine Extrusion/Poultry Mortality – The Animal and Poultry Waste
8 Management Center (“APWMC”) at NC State University – In
9 2018, the Company continued support of the various projects being
10 undertaken by the APWMC. This work is centered around drying
11 swine lagoon solids, bagged lagoon sludge and sludge mixed with
12 agricultural wastes at a farm-based level to create a higher MMBtu
13 fuel that can be safely and easily transported to a central plant for
14 combustion. A detailed description of the project along with future
15 testing plans can be found in Payne Confidential Exhibit No. 16.
- 16 • UNCC – Evaluation of DER Fault Scenarios and Mitigation
17 Techniques – In 2018, the Company worked with UNCC on a
18 project to evaluate behavior of inverter-based power sources during
19 fault conditions and make recommendations to enhance protection
20 algorithms to standard vendors of protection and control systems.
21 The results of this project can be found in Payne Confidential
22 Exhibit No. 17.

- 1 • UNCC – Hardware Cyber Security for DER Inverters – In 2018, the
2 Company worked with UNCC on a project to provide hardware
3 assurance in an affordable manner to transition a global supply chain
4 to producing solar inverters with trusted hardware for secure control
5 and communications. In this work, the Company and UNCC
6 investigated the enhancement of security of power grid converters
7 using reconfigurable architecture and hardware-based crypto
8 processors. The results of this project can be found in Payne
9 Confidential Exhibit No. 18.
- 10 • Alliance for Sustainable Energy - Solar Impact Analysis – In 2019,
11 the Company began initial work with the Alliance for Sustainable
12 Energy on a project that will analyze the impacts of integrating
13 significant amounts of new solar power into the Duke Energy power
14 system, quantify solar potential and identify likely integration
15 challenges or opportunities for other technologies. The project is
16 expected to have a second phase with deliverables later in 2019 and
17 into 2020.

18 **Q. ARE YOU SATISFIED THAT THE ACTUAL COSTS INCURRED**
19 **IN THE TEST PERIOD HAVE BEEN, AND THAT THE**
20 **PROJECTED COSTS OF THE BILLING PERIOD WILL BE,**
21 **PRUDENTLY INCURRED?**

22 A. Yes. Duke Energy Progress believes it has incurred and projects to incur
23 these costs associated with REPS compliance in a prudent manner. The

1 Company continues to exercise thorough and rigorous technical and
2 economic analysis to evaluate all options for compliance with its REPS
3 requirements. Duke Energy Progress has developed strong foundational
4 market knowledge related to renewable resources. The Company continues
5 to enhance and develop expertise in this field through the Company's
6 various solicitations for renewable energy and the operation of its
7 unsolicited bid process, its participation in industry research, and daily
8 interaction with developers of renewable energy facilities. As a result of
9 these efforts, the Company has been able to identify, procure, and develop
10 a diverse portfolio of renewable resources to meet its REPS requirements in
11 a prudent, reasonable and cost-effective manner.

12 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

13 **A. Yes.**

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. E-2, SUB 1205

In the Matter of)	
)	DUKE ENERGY PROGRESS,
Application of Duke Energy Progress, LLC for)	LLC 2018 RENEWABLE
Approval of Renewable Energy and Energy)	ENERGY & ENERGY
Efficiency Portfolio Standard Compliance Report)	EFFICIENCY PORTFOLIO
and Rider Pursuant to N.C. Gen. Stat. § 62-133.8)	STANDARD COMPLIANCE
and Commission Rule R8-67(c))	REPORT

**DUKE ENERGY PROGRESS, LLC
RENEWABLE ENERGY AND ENERGY EFFICIENCY
PORTFOLIO STANDARD (“REPS”)
COMPLIANCE REPORT**

TABLE OF CONTENTS

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(B) REPS COMPLIANCE REPORT.....	3
(C) METHODOLOGY FOR DETERMINING NUMBER OF CUSTOMERS AND CUSTOMER CAP	7

Source	Number of Certificates	Incremental Costs
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]

[END CONFIDENTIAL]

II. ACTUAL 2018 TOTAL NORTH CAROLINA RETAIL SALES AND YEAR-END NUMBER OF ACCOUNTS, BY CUSTOMER CLASS:

	2018
NC Retail MWh Sales	38,687,268

Account Type	Duke Energy Progress Year-end number of Retail Accounts
Residential	1,210,740
General	195,967
Industrial	1,810

III. AVOIDED COST RATES

The avoided cost rates below, applicable to energy received pursuant to power purchase agreements, represent the annualized avoided cost rates in Schedule CSP/PP (NC), Distribution Interconnection, approved in the 2016 avoided cost proceeding Docket E-100, Sub 148, the 2014 avoided cost proceeding Docket No. E-100, Sub 140; the 2012 avoided cost proceeding Docket No. E-100, Sub 136; the 2010 avoided cost proceeding Docket No. E-100, Sub 127; the 2008 avoided cost proceeding Docket No. E-100, Sub 117; and the 2006 avoided cost proceeding Docket No. E-100, Sub 106.

ANNUALIZED CAPACITY AND ENERGY RATES						
(CENTS PER KWH)						
Docket No.:	E-100 Sub 148	E-100 Sub 140	E-100 Sub 136	E-100 Sub 127	E-100 Sub 117	E-100 Sub 106
Variable Rate	3.35	4.29	4.76	5.79	5.69	4.54
5 Year	n/a	4.42	4.97	6.18	5.82	4.67
10 Year	3.79	5.08	5.47	6.82	6.05	4.85
15 Year	n/a	5.53	5.88	7.29	6.11	4.98

IV. ACTUAL TOTAL AND INCREMENTAL COSTS INCURRED IN 2018

Actual costs incurred in 2018 for REPS compliance were comprised of the following cost of energy purchases and the purchase of various types of RECs and other reasonable and prudent costs incurred to meet the requirements of the statute.

2018 Actual Costs Incurred	Energy and REC Costs	Other	Total Costs
Total costs incurred	\$248,631,494	\$1,331,399	\$249,962,893
Avoided costs	\$215,903,397		\$215,903,397
Incremental costs	\$32,728,097	\$1,331,399	\$34,059,496

V. ACTUAL INCREMENTAL COSTS COMPARISON TO THE ANNUAL COST CAP

Account Type	Total 2017 Year-end number of Retail Accounts	Annual Per-Account Cost Cap	Total Annual Cost Cap – 2018 Compliance Year
Residential	1,204,664	\$27	\$32,525,928
General	196,549	\$150	\$29,482,350
Industrial	1,866	\$1,000	\$1,866,000
	Total Annual Cost Cap		\$63,874,278
	Actual Incremental Costs		\$34,059,496

VI. STATUS OF COMPLIANCE WITH REPS REQUIREMENTS

Pursuant to N.C. Gen. Stat. § 62-133.8(b) for Duke Energy Progress Retail customers, the REPS requirement for calendar year 2018 is set at 10% of 2017 North Carolina retail sales. In order to comply with the REPS obligation for Duke Energy Progress Retail customers, the Company submitted 3,665,412 RECs, which included 8,789 Senate Bill 886 (“SB886”) RECs, each of which counts for two poultry waste RECs and one general REC. Accordingly, the Company submitted the equivalent of 3,682,990 RECs for compliance, representing 10% of 2017 retail megawatt-hour sales of 36,829,899.

Pursuant to N.C. Gen. Stat. § 62-133.8(d), the REPS requirement for calendar year 2018 is at least 0.20% of the total electric power in kilowatt hours sold to retail electric customers in the prior calendar year in the State, or an equivalent amount of energy, shall be supplied by a combination of new solar electric facilities and new metered solar thermal energy facilities.

As a result, 73,660 solar RECs were used to meet the Solar Set-Aside Requirement. An additional 625,388 solar RECs were submitted for retirement toward compliance with the general requirement (the total REPS requirement net of solar, poultry and swine set-aside obligations).

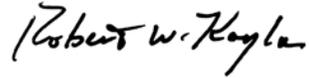
In its October 8, 2018 *Order Modifying the Swine and Poultry Waste Set-Aside Requirements and Providing Other Relief* (“2018 Delay Order”) in Docket No. E-100, Sub 113, the Commission modified the swine waste set-aside requirement, for 2018 to 0.02% of NC retail sales, and specified that the requirement applies to electric public utilities only, not to membership cooperatives or municipalities (which were excused from the swine waste set-aside requirement for 2018). To comply with the swine waste set-aside requirement applicable to DEP’s NC retail sales, the Company submitted for retirement 7,366 swine RECs.

The 2018 Delay Order also reduced the 2018 poultry waste set-aside requirement to 300,000 MWh state-wide, and set the 2019 and 2020 levels at 700,000 MWh and 900,000 MWh, respectively. In its August 5, 2016 *Order Establishing 2016, 2017, and 2018 Poultry Waste Set-Aside Requirement Allocation* in Docket No. E-100, Sub 113, the Commission directed the annual aggregate poultry waste set-aside requirement to be allocated among electric power suppliers and utility compliance aggregators based on the load ratio share calculations shown on the spreadsheet filed by the NC-RETS Administrator in the same docket on July 11, 2016. These percentages were applied to the 2018 state-wide requirement to determine the swine waste set-aside requirements applicable to DEP NC retail for reporting year 2018. The Company submitted for retirement 66,987 poultry waste RECs along with 8,789 SB886 RECs, which count as 17,578 poultry waste set-aside RECs. Accordingly, the Company submitted the equivalent of 84,565 poultry RECs for compliance, and met its 2018 poultry waste set-aside requirement

VII. IDENTIFICATION OF RECs CARRIED FORWARD

The table below reflects the RECs at year-end 2018 that the Company has banked for use in future compliance years.

Respectfully submitted this the 11th day of June, 2019.



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Duke Energy Progress, LLC
Docket No. E-2, Sub 1205
2018 REPS Compliance Report
Dates and Amounts of Payments for RECs - Calendar Year 2018

Redacted Version
Payne Exhibit No. 1, Appendix 1
June 11, 2019

Counterparty and Payment Dates	REC Cost
[BEGIN CONFIDENTIAL]	
Apr-2018	\$ 2,790.34
Aug-2018	\$ 10,573.92
Dec-2018	\$ 3,157.49
Feb-2019	\$ 1,321.74
Jan-2019	\$ 2,202.90
Jun-2018	\$ 4,846.38
Mar-2019	\$ 3,084.06
May-2018	\$ 4,185.51
Nov-2018	\$ 7,710.15
Sep-2018	\$ 4,185.51
Apr-2018	\$ 3,686.04
Aug-2018	\$ 6,348.18
Dec-2018	\$ 5,017.11
Feb-2019	\$ 2,662.14
Jan-2019	\$ 3,481.26
Jul-2018	\$ 6,962.52
Mar-2019	\$ 3,583.65
May-2018	\$ 10,750.95
Nov-2018	\$ 4,402.77
Oct-2018	\$ 6,450.57
Sep-2018	\$ 6,450.57
Apr-2018	\$ 310.29
Aug-2018	\$ 413.72
Dec-2018	\$ 206.86
Feb-2019	\$ 310.29
Jan-2019	\$ 310.29
Jul-2018	\$ 413.72
Jun-2018	\$ 413.72
Mar-2019	\$ 310.29
May-2018	\$ 413.72
Nov-2018	\$ 724.01
Sep-2018	\$ 413.72
Apr-2018	\$ 146.86
Aug-2018	\$ 146.86
Dec-2018	\$ 73.43
Feb-2019	\$ 73.43
Jan-2019	\$ 73.43
Jul-2018	\$ 146.86
Jun-2018	\$ 73.43
Mar-2019	\$ 73.43
May-2018	\$ 73.43
Nov-2018	\$ 146.86
Sep-2018	\$ 73.43
Apr-2018	\$ 1,165.00
Aug-2018	\$ 2,190.00
Dec-2018	\$ 1,325.00
Feb-2019	\$ 1,165.00
Jan-2019	\$ 1,200.00
Jul-2018	\$ 1,905.00
Jun-2018	\$ 3,860.00
Mar-2019	\$ 1,520.00
Nov-2018	\$ 1,300.00
Oct-2018	\$ 2,215.00
Sep-2018	\$ 1,895.00

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Apr-2018	\$ 4,290.00
Aug-2018	\$ 4,450.00
Dec-2018	\$ 2,990.00
Feb-2019	\$ 3,120.00
Jan-2019	\$ 2,640.00
Jul-2018	\$ 5,040.00
Jun-2018	\$ 4,375.00
Mar-2019	\$ 2,630.00
May-2018	\$ 4,730.00
Nov-2018	\$ 3,990.00
Oct-2018	\$ 3,435.00
Sep-2018	\$ 4,810.00
Apr-2018	\$ 1,532.25
Aug-2018	\$ 1,730.25
Dec-2018	\$ 1,057.50
Feb-2019	\$ 1,176.75
Jan-2019	\$ 922.50
Jul-2018	\$ 1,813.50
Jun-2018	\$ 1,759.50
Mar-2019	\$ 956.25
May-2018	\$ 1,755.00
Nov-2018	\$ 1,408.50
Oct-2018	\$ 857.25
Sep-2018	\$ 1,811.25
Apr-2018	\$ 477.00
Aug-2018	\$ 715.50
Dec-2018	\$ 562.50
Feb-2019	\$ 427.50
Jan-2019	\$ 339.75
Jul-2018	\$ 675.00
Jun-2018	\$ 713.25
Mar-2019	\$ 526.50
May-2018	\$ 645.75
Nov-2018	\$ 576.00
Oct-2018	\$ 756.00
Sep-2018	\$ 643.50
Apr-2018	\$ 4,240.63
Aug-2018	\$ 8,377.83
Dec-2018	\$ 4,550.92
Feb-2019	\$ 3,309.76
Jan-2019	\$ 3,102.90
Jul-2018	\$ 7,136.67
Jun-2018	\$ 8,584.69
Mar-2019	\$ 4,033.77
May-2018	\$ 6,722.95
Nov-2018	\$ 11,273.87
Sep-2018	\$ 5,895.51
Apr-2018	\$ 1,174.88
Aug-2018	\$ 2,423.19
Dec-2018	\$ 1,395.17
Feb-2019	\$ 954.59
Jan-2019	\$ 1,101.45
Jul-2018	\$ 2,643.48
Jun-2018	\$ 2,423.19
Mar-2019	\$ 1,321.74

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Counterparty and Payment Dates		REC Cost
May-2018	\$	2,129.47
Nov-2018	\$	1,395.17
Oct-2018	\$	2,496.62
Sep-2018	\$	1,982.61
Aug-2018		
Aug-2018	\$	12,115.95
Feb-2019	\$	1,982.61
Jan-2019	\$	2,570.05
Jun-2018	\$	5,286.96
Mar-2019	\$	2,863.77
May-2018	\$	9,399.04
Nov-2018	\$	8,297.59
Oct-2018	\$	5,066.67
Apr-2018		
Apr-2018	\$	1,526.07
Aug-2018	\$	3,169.53
Dec-2018	\$	1,995.63
Feb-2019	\$	1,291.29
Jan-2019	\$	1,408.68
Jul-2018	\$	3,286.92
Jun-2018	\$	3,521.70
Mar-2019	\$	1,760.85
May-2018	\$	3,052.14
Nov-2018	\$	1,995.63
Oct-2018	\$	3,052.14
Sep-2018	\$	3,404.31
Apr-2018		
Apr-2018	\$	3,224.00
Aug-2018	\$	3,640.00
Dec-2018	\$	2,344.00
Feb-2019	\$	2,516.00
Jan-2019	\$	2,004.00
Jul-2018	\$	3,840.00
Jun-2018	\$	3,400.00
Mar-2019	\$	2,180.00
May-2018	\$	2,828.00
Nov-2018	\$	3,124.00
Oct-2018	\$	2,428.00
Sep-2018	\$	3,884.00
Apr-2018		
Apr-2018	\$	2,457.00
Aug-2018	\$	2,703.00
Dec-2018	\$	1,644.00
Feb-2019	\$	1,797.00
Jan-2019	\$	1,449.00
Jul-2018	\$	2,925.00
Jun-2018	\$	2,610.00
Mar-2019	\$	1,590.00
May-2018	\$	2,784.00
Nov-2018	\$	2,349.00
Oct-2018	\$	1,593.00
Sep-2018	\$	2,850.00
Aug-2018		
Aug-2018	\$	146.86
Dec-2018	\$	73.43
Jan-2019	\$	73.43
Jul-2018	\$	73.43
Jun-2018	\$	73.43
Mar-2019	\$	73.43
May-2018	\$	146.86

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Counterparty and Payment Dates		REC Cost
Mar-2019	\$	234.78
May-2018	\$	352.17
Nov-2018	\$	586.95
Sep-2018	\$	352.17

Apr-2018	\$	-
Aug-2018	\$	12,212.59
Dec-2018	\$	-
Feb-2019	\$	-
Jan-2019	\$	-
Jul-2018	\$	3,235.54
Jun-2018	\$	-
Mar-2019	\$	-
May-2018	\$	-
Nov-2018	\$	-
Oct-2018	\$	4,437.07
Sep-2018	\$	15,067.32

Apr-2018	\$	2,423.19
Aug-2018	\$	5,066.67
Dec-2018	\$	2,496.62
Feb-2019	\$	1,835.75
Jan-2019	\$	1,982.61
Jul-2018	\$	5,286.96
Jun-2018	\$	5,140.10
Mar-2019	\$	2,570.05
May-2018	\$	3,965.22
Nov-2018	\$	7,857.01
Sep-2018	\$	4,626.09

Apr-2018	\$	13,748.25
Aug-2018	\$	16,266.75
Dec-2018	\$	9,642.75
Feb-2019	\$	9,608.25
Jan-2019	\$	7,400.25
Jul-2018	\$	16,629.00
Jun-2018	\$	16,008.00
Mar-2019	\$	8,573.25
May-2018	\$	15,490.50
Nov-2018	\$	12,402.75
Oct-2018	\$	12,040.50
Sep-2018	\$	14,438.25

Apr-2018	\$	3,260.00
Aug-2018	\$	3,860.00
Dec-2018	\$	2,284.00
Feb-2019	\$	2,404.00
Jan-2019	\$	1,952.00
Jul-2018	\$	3,960.00
Jun-2018	\$	3,740.00
Mar-2019	\$	2,136.00
May-2018	\$	3,828.00
Nov-2018	\$	3,136.00
Oct-2018	\$	2,864.00
Sep-2018	\$	4,032.00

Apr-2018	\$	104,211.16
Aug-2018	\$	109,460.64
Dec-2018	\$	110,019.52
Feb-2019	\$	117,890.52

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Counterparty and Payment Dates		REC Cost
Jan-2019	\$	113,772.00
Jul-2018	\$	110,797.96
Jun-2018	\$	103,552.48
Mar-2019	\$	110,975.04
May-2018	\$	101,416.76
Nov-2018	\$	107,764.04
Oct-2018	\$	84,570.52
Sep-2018	\$	113,692.16

Apr-2018	\$	4,205.00
Aug-2018	\$	4,745.00
Dec-2018	\$	2,940.00
Feb-2019	\$	3,140.00
Jan-2019	\$	2,500.00
Jul-2018	\$	4,980.00
Jun-2018	\$	4,565.00
Mar-2019	\$	2,715.00
May-2018	\$	4,850.00
Nov-2018	\$	3,895.00
Oct-2018	\$	3,375.00
Sep-2018	\$	4,960.00

Apr-2018	\$	3,352.00
Aug-2018	\$	3,824.00
Dec-2018	\$	2,368.00
Feb-2019	\$	2,496.00
Jan-2019	\$	2,068.00
Jul-2018	\$	3,956.00
Jun-2018	\$	3,632.00
Mar-2019	\$	2,148.00
May-2018	\$	3,836.00
Nov-2018	\$	3,092.00
Oct-2018	\$	3,072.00
Sep-2018	\$	3,804.00

Apr-2018	\$	3,068.00
Aug-2018	\$	3,836.00
Dec-2018	\$	1,884.00
Feb-2019	\$	1,996.00
Jan-2019	\$	1,100.00
Jul-2018	\$	3,844.00
Jun-2018	\$	3,836.00
Mar-2019	\$	2,048.00
May-2018	\$	3,736.00
Nov-2018	\$	2,644.00
Oct-2018	\$	2,336.00
Sep-2018	\$	3,776.00

Apr-2018	\$	4,035.00
Aug-2018	\$	4,325.00
Dec-2018	\$	2,805.00
Feb-2019	\$	2,945.00
Jan-2019	\$	2,340.00
Jul-2018	\$	4,715.00
Jun-2018	\$	4,170.00
Mar-2019	\$	2,625.00
May-2018	\$	4,590.00
Nov-2018	\$	3,750.00
Oct-2018	\$	3,635.00
Sep-2018	\$	4,745.00

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Counterparty and Payment Dates	REC Cost
Apr-2018	\$ 6,137.16
Aug-2018	\$ 12,262.38
Dec-2018	\$ 4,865.55
Feb-2019	\$ 6,458.40
Jan-2019	\$ 5,474.49
Jun-2018	\$ 5,390.91
Mar-2019	\$ 3,941.10
May-2018	\$ 6,769.98
Nov-2018	\$ 6,811.77
Sep-2018	\$ 5,193.90
Apr-2018	\$ 3,044.00
Aug-2018	\$ 3,632.00
Dec-2018	\$ 2,236.00
Feb-2019	\$ 2,360.00
Jan-2019	\$ 1,912.00
Jul-2018	\$ 3,728.00
Jun-2018	\$ 3,504.00
Mar-2019	\$ 2,036.00
May-2018	\$ 3,672.00
Nov-2018	\$ 2,940.00
Oct-2018	\$ 2,980.00
Sep-2018	\$ 3,716.00
Apr-2018	\$ 3,404.31
Aug-2018	\$ 3,991.26
Dec-2018	\$ 2,465.19
Feb-2019	\$ 2,582.58
Jan-2019	\$ 1,995.63
Jul-2018	\$ 4,226.04
Jun-2018	\$ 3,873.87
Mar-2019	\$ 2,113.02
May-2018	\$ 3,756.48
Nov-2018	\$ 3,404.31
Oct-2018	\$ 2,934.75
Sep-2018	\$ 4,108.65
Apr-2018	\$ 14,027.72
Aug-2018	\$ 16,709.49
Dec-2018	\$ 9,489.34
Feb-2019	\$ 10,794.66
Jan-2019	\$ 6,807.57
Jul-2018	\$ 16,915.78
Jun-2018	\$ 16,296.91
Mar-2019	\$ 9,524.70
May-2018	\$ 16,296.91
Nov-2018	\$ 13,202.56
Oct-2018	\$ 10,727.08
Sep-2018	\$ 16,296.91
Apr-2018	\$ 2,113.02
Aug-2018	\$ 3,639.09
Dec-2018	\$ 2,699.97
Feb-2019	\$ 1,408.68
Jan-2019	\$ 2,347.80
Jul-2018	\$ 4,108.65
Jun-2018	\$ 3,756.48
Mar-2019	\$ 2,347.80
May-2018	\$ 3,521.70

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June 11, 2019

Counterparty and Payment Dates		REC Cost
Nov-2018	\$	2,699.97
Oct-2018	\$	3,991.26
Sep-2018	\$	3,639.09
<hr/>		
Apr-2018	\$	465.75
Aug-2018	\$	873.00
Dec-2018	\$	630.00
Feb-2019	\$	380.25
Jan-2019	\$	504.00
Jul-2018	\$	877.50
Jun-2018	\$	816.75
Mar-2019	\$	589.50
May-2018	\$	668.25
Nov-2018	\$	562.50
Oct-2018	\$	924.75
Sep-2018	\$	742.50
<hr/>		
Apr-2018	\$	3,404.00
Aug-2018	\$	3,656.00
Dec-2018	\$	2,344.00
Feb-2019	\$	2,452.00
Jan-2019	\$	1,964.00
Jul-2018	\$	3,860.00
Jun-2018	\$	3,704.00
Mar-2019	\$	2,200.00
May-2018	\$	3,820.00
Nov-2018	\$	3,184.00
Oct-2018	\$	2,332.00
Sep-2018	\$	4,000.00
<hr/>		
Apr-2018	\$	4,038.99
Aug-2018	\$	7,079.09
Dec-2018	\$	5,732.76
Feb-2019	\$	2,084.64
Jan-2019	\$	3,995.56
Jul-2018	\$	7,600.25
Jun-2018	\$	7,513.39
Mar-2019	\$	2,866.38
May-2018	\$	5,906.48
Nov-2018	\$	12,855.28
Sep-2018	\$	6,210.49
<hr/>		
Apr-2018	\$	3,344.00
Aug-2018	\$	3,540.00
Dec-2018	\$	2,272.00
Feb-2019	\$	2,496.00
Jan-2019	\$	2,012.00
Jul-2018	\$	3,876.00
Jun-2018	\$	3,440.00
Mar-2019	\$	2,188.00
May-2018	\$	3,744.00
Nov-2018	\$	2,900.00
Oct-2018	\$	2,368.00
Sep-2018	\$	3,788.00
<hr/>		
Apr-2018	\$	1,788.75
Aug-2018	\$	1,788.75
Dec-2018	\$	1,199.25
Feb-2019	\$	1,044.00
Jan-2019	\$	749.25

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Counterparty and Payment Dates		REC Cost
Jul-2018	\$	1,989.00
Jun-2018	\$	1,836.00
Mar-2019	\$	1,129.50
May-2018	\$	1,957.50
Nov-2018	\$	1,712.25
Oct-2018	\$	900.00
Sep-2018	\$	2,063.25

Apr-2018	\$	3,870.00
Aug-2018	\$	4,560.00
Dec-2018	\$	2,780.00
Feb-2019	\$	2,820.00
Jan-2019	\$	2,175.00
Jul-2018	\$	4,835.00
Jun-2018	\$	4,230.00
Mar-2019	\$	2,535.00
May-2018	\$	4,300.00
Nov-2018	\$	3,680.00
Oct-2018	\$	3,510.00
Sep-2018	\$	4,750.00

Apr-2018	\$	3,740.00
Aug-2018	\$	4,275.00
Dec-2018	\$	2,600.00
Feb-2019	\$	2,985.00
Jan-2019	\$	2,255.00
Jul-2018	\$	4,620.00
Jun-2018	\$	4,370.00
Mar-2019	\$	2,505.00
May-2018	\$	4,430.00
Nov-2018	\$	3,635.00
Oct-2018	\$	3,305.00
Sep-2018	\$	4,585.00

Apr-2018	\$	234.78
Aug-2018	\$	469.56
Dec-2018	\$	352.17
Feb-2019	\$	234.78
Jan-2019	\$	117.39
Jul-2018	\$	586.95
Jun-2018	\$	469.56
Mar-2019	\$	234.78
May-2018	\$	352.17
Nov-2018	\$	234.78
Oct-2018	\$	469.56
Sep-2018	\$	469.56

Apr-2018	\$	2,505.00
Aug-2018	\$	3,078.00
Dec-2018	\$	1,728.00
Feb-2019	\$	1,839.00
Jan-2019	\$	1,422.00
Jul-2018	\$	3,108.00
Jun-2018	\$	2,997.00
Mar-2019	\$	1,620.00
May-2018	\$	2,880.00
Nov-2018	\$	2,406.00
Oct-2018	\$	2,163.00
Sep-2018	\$	3,048.00

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Counterparty and Payment Dates	REC Cost
Apr-2018	\$ 4,085.00
Aug-2018	\$ 4,525.00
Dec-2018	\$ 2,435.00
Feb-2019	\$ 2,850.00
Jan-2019	\$ 2,345.00
Jul-2018	\$ 4,875.00
Jun-2018	\$ 4,295.00
Mar-2019	\$ 2,510.00
May-2018	\$ 4,655.00
Nov-2018	\$ 3,820.00
Oct-2018	\$ 3,235.00
Sep-2018	\$ 4,605.00
Apr-2018	\$ 2,220.00
Aug-2018	\$ 2,622.00
Dec-2018	\$ 1,605.00
Feb-2019	\$ 1,770.00
Jan-2019	\$ 1,215.00
Jul-2018	\$ 2,874.00
Jun-2018	\$ 2,811.00
Mar-2019	\$ 1,536.00
May-2018	\$ 2,763.00
Nov-2018	\$ 1,884.00
Oct-2018	\$ 1,743.00
Sep-2018	\$ 2,682.00
Apr-2018	\$ 1,448.02
Aug-2018	\$ 2,896.04
Dec-2018	\$ 1,758.31
Feb-2019	\$ 1,448.02
Jul-2018	\$ 2,896.04
Jun-2018	\$ 2,482.32
May-2018	\$ 2,378.89
Nov-2018	\$ 2,172.03
Oct-2018	\$ 2,999.47
Sep-2018	\$ 2,482.32
Apr-2018	\$ 755.00
Aug-2018	\$ 25.00
Dec-2018	\$ 535.00
Feb-2019	\$ 930.00
Jan-2019	\$ 1,090.00
Jul-2018	\$ 170.00
Jun-2018	\$ 775.00
Mar-2019	\$ 745.00
May-2018	\$ 735.00
Nov-2018	\$ 10.00
Oct-2018	\$ 210.00
Sep-2018	\$ 525.00
Apr-2018	\$ 4,090.00
Aug-2018	\$ 4,070.00
Dec-2018	\$ 2,790.00
Feb-2019	\$ 2,980.00
Jan-2019	\$ 2,355.00
Jul-2018	\$ 4,405.00
Jun-2018	\$ 4,140.00
Mar-2019	\$ 2,545.00
May-2018	\$ 4,525.00

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Counterparty and Payment Dates		REC Cost
Nov-2018	\$	3,230.00
Oct-2018	\$	1,460.00
Sep-2018	\$	4,475.00
Jan-2019		
Jan-2019	\$	403,650.00
Apr-2018		
Apr-2018	\$	117.39
Aug-2018	\$	352.17
Dec-2018	\$	117.39
Feb-2019	\$	117.39
Jan-2019	\$	117.39
Jul-2018	\$	352.17
Jun-2018	\$	352.17
Mar-2019	\$	234.78
May-2018	\$	234.78
Nov-2018	\$	469.56
Sep-2018	\$	352.17
Apr-2018		
Apr-2018	\$	3,440.00
Aug-2018	\$	3,810.00
Dec-2018	\$	2,690.00
Feb-2019	\$	2,890.00
Jan-2019	\$	2,360.00
Jul-2018	\$	4,330.00
Jun-2018	\$	3,970.00
Mar-2019	\$	2,585.00
May-2018	\$	4,210.00
Nov-2018	\$	3,115.00
Oct-2018	\$	2,755.00
Sep-2018	\$	4,245.00
Apr-2018		
Apr-2018	\$	1,827.00
Aug-2018	\$	1,901.25
Dec-2018	\$	1,289.25
Feb-2019	\$	1,406.25
Jan-2019	\$	1,149.75
Jul-2018	\$	2,036.25
Jun-2018	\$	1,824.75
Mar-2019	\$	1,176.75
May-2018	\$	2,009.25
Nov-2018	\$	1,723.50
Oct-2018	\$	1,406.25
Sep-2018	\$	1,995.75
Apr-2018		
Apr-2018	\$	607.50
Aug-2018	\$	819.00
Dec-2018	\$	589.50
Feb-2019	\$	528.75
Jan-2019	\$	501.75
Jul-2018	\$	814.50
Jun-2018	\$	852.75
Mar-2019	\$	643.50
May-2018	\$	796.50
Nov-2018	\$	1,536.75
Sep-2018	\$	544.50
Apr-2018		
Apr-2018	\$	117.39
Aug-2018	\$	117.39
Dec-2018	\$	117.39
Feb-2019	\$	117.39

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Counterparty and Payment Dates		REC Cost
Aug-2018	\$	3,785.00
Dec-2018	\$	2,835.00
Feb-2019	\$	3,085.00
Jan-2019	\$	2,490.00
Jul-2018	\$	4,475.00
Jun-2018	\$	4,070.00
Mar-2019	\$	2,550.00
May-2018	\$	4,285.00
Nov-2018	\$	3,170.00
Oct-2018	\$	1,515.00
Sep-2018	\$	2,820.00

Apr-2018	\$	2,496.62
Aug-2018	\$	5,213.53
Dec-2018	\$	3,230.92
Feb-2019	\$	1,615.46
Jan-2019	\$	2,643.48
Jul-2018	\$	4,626.09
Jun-2018	\$	4,772.95
Mar-2019	\$	2,202.90
May-2018	\$	4,185.51
Nov-2018	\$	3,230.92
Oct-2018	\$	4,993.24
Sep-2018	\$	4,626.09

Apr-2018	\$	736.00
Aug-2018	\$	1,272.00
Dec-2018	\$	1,016.00
Feb-2019	\$	740.00
Jan-2019	\$	844.00
Jul-2018	\$	1,296.00
Jun-2018	\$	1,212.00
Mar-2019	\$	960.00
May-2018	\$	1,244.00
Nov-2018	\$	984.00
Oct-2018	\$	1,408.00
Sep-2018	\$	1,248.00

Apr-2018	\$	3,930.00
Aug-2018	\$	4,450.00
Dec-2018	\$	2,785.00
Feb-2019	\$	3,040.00
Jan-2019	\$	2,465.00
Jul-2018	\$	4,525.00
Jun-2018	\$	4,370.00
Mar-2019	\$	2,580.00
May-2018	\$	4,455.00
Nov-2018	\$	3,720.00
Oct-2018	\$	3,585.00
Sep-2018	\$	4,625.00

Aug-2018	\$	29,910.56
Feb-2019	\$	9,772.56
Jan-2019	\$	17,218.25
Jun-2018	\$	12,790.70
May-2018	\$	25,974.96
Nov-2018	\$	27,844.37
Sep-2018	\$	12,298.75

Apr-2018	\$	234.78

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Counterparty and Payment Dates		REC Cost
Aug-2018	\$	469.56
Dec-2018	\$	234.78
Feb-2019	\$	234.78
Jan-2019	\$	117.39
Jul-2018	\$	469.56
Jun-2018	\$	469.56
Mar-2019	\$	234.78
May-2018	\$	352.17
Nov-2018	\$	586.95
Sep-2018	\$	469.56
██		
Apr-2018	\$	3,315.13
Aug-2018	\$	4,517.32
Dec-2018	\$	3,315.13
Feb-2019	\$	2,586.81
Jan-2019	\$	2,622.96
Jul-2018	\$	3,934.44
Jun-2018	\$	5,428.07
Mar-2019	\$	3,588.13
May-2018	\$	4,845.19
Nov-2018	\$	7,868.88
Sep-2018	\$	4,335.17
██		
Apr-2018	\$	5,869.50
Aug-2018	\$	6,808.62
Dec-2018	\$	5,634.72
Feb-2019	\$	5,634.72
Jan-2019	\$	4,108.65
Jul-2018	\$	6,573.84
Jun-2018	\$	6,573.84
Mar-2019	\$	4,108.65
May-2018	\$	7,865.13
Nov-2018	\$	5,986.89
Oct-2018	\$	5,517.33
Sep-2018	\$	6,691.23
██		
Apr-2018	\$	1,332.00
Aug-2018	\$	1,500.75
Dec-2018	\$	933.75
Feb-2019	\$	857.25
Jan-2019	\$	83.25
Jul-2018	\$	1,568.25
Jun-2018	\$	1,503.00
Mar-2019	\$	888.75
May-2018	\$	1,586.25
Nov-2018	\$	1,251.00
Oct-2018	\$	1,163.25
Sep-2018	\$	1,552.50
██		
Apr-2018	\$	400.50
Aug-2018	\$	720.00
Dec-2018	\$	578.25
Feb-2019	\$	364.50
Jan-2019	\$	452.25
Jul-2018	\$	810.00
Jun-2018	\$	675.00
Mar-2019	\$	519.75
May-2018	\$	695.25
Nov-2018	\$	515.25
Oct-2018	\$	769.50

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Counterparty and Payment Dates		REC Cost
Sep-2018	\$	690.75
Apr-2018	\$	1,195.00
Aug-2018	\$	1,870.00
Dec-2018	\$	1,240.00
Feb-2019	\$	1,100.00
Jan-2019	\$	1,090.00
Jul-2018	\$	1,855.00
Jun-2018	\$	1,690.00
Mar-2019	\$	1,240.00
May-2018	\$	1,565.00
Nov-2018	\$	1,285.00
Oct-2018	\$	1,975.00
Sep-2018	\$	1,550.00
Apr-2018	\$	620.58
Aug-2018	\$	1,448.02
Feb-2019	\$	517.15
Jan-2019	\$	206.86
Jul-2018	\$	1,241.16
Jun-2018	\$	1,344.59
Mar-2019	\$	206.86
May-2018	\$	1,034.30
Nov-2018	\$	206.86
Oct-2018	\$	1,344.59
Sep-2018	\$	1,137.73
Apr-2018	\$	1,752.03
Aug-2018	\$	6,340.68
Dec-2018	\$	1,752.03
Feb-2019	\$	1,334.88
Jan-2019	\$	1,668.60
Jun-2018	\$	3,337.20
Mar-2019	\$	2,085.75
May-2018	\$	2,502.90
Nov-2018	\$	1,918.89
Oct-2018	\$	2,920.05
Sep-2018	\$	3,086.91
Aug-2018	\$	440.00
Dec-2018	\$	22.50
Feb-2019	\$	15.00
Jan-2019	\$	20.00
Mar-2019	\$	12.50
Nov-2018	\$	22.50
Oct-2018	\$	30.00
Apr-2018	\$	2,960.00
Aug-2018	\$	2,990.00
Dec-2018	\$	1,940.00
Feb-2019	\$	2,105.00
Jan-2019	\$	1,655.00
Jul-2018	\$	3,225.00
Jun-2018	\$	3,160.00
Mar-2019	\$	1,790.00
May-2018	\$	3,345.00
Nov-2018	\$	2,400.00
Oct-2018	\$	2,015.00
Sep-2018	\$	3,270.00

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Counterparty and Payment Dates		REC Cost
Apr-2018	\$	3,940.00
Aug-2018	\$	4,195.00
Dec-2018	\$	2,650.00
Feb-2019	\$	2,930.00
Jan-2019	\$	2,375.00
Jul-2018	\$	4,560.00
Jun-2018	\$	4,065.00
Mar-2019	\$	2,500.00
May-2018	\$	4,410.00
Nov-2018	\$	3,675.00
Oct-2018	\$	3,405.00
Sep-2018	\$	4,415.00
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Apr-2018	\$	4,110.00
Aug-2018	\$	4,220.00
Dec-2018	\$	2,750.00
Feb-2019	\$	2,980.00
Jan-2019	\$	2,335.00
Jul-2018	\$	4,275.00
Jun-2018	\$	4,375.00
Mar-2019	\$	2,610.00
May-2018	\$	4,705.00
Nov-2018	\$	3,745.00
Oct-2018	\$	3,055.00
Sep-2018	\$	4,495.00
<hr/>		
Apr-2018	\$	469.56
Aug-2018	\$	939.12
Dec-2018	\$	586.95
Feb-2019	\$	352.17
Jan-2019	\$	352.17
Jul-2018	\$	821.73
Jun-2018	\$	939.12
Mar-2019	\$	352.17
May-2018	\$	704.34
Nov-2018	\$	469.56
Oct-2018	\$	821.73
Sep-2018	\$	821.73
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Apr-2018	\$	4,035.00
Aug-2018	\$	5,030.00
Dec-2018	\$	2,975.00
Feb-2019	\$	3,150.00
Jan-2019	\$	2,420.00
Jul-2018	\$	5,055.00
Jun-2018	\$	4,860.00
Mar-2019	\$	2,645.00
May-2018	\$	4,580.00
Nov-2018	\$	3,940.00
Oct-2018	\$	3,705.00
Sep-2018	\$	4,935.00
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Apr-2018	\$	524.25
Aug-2018	\$	830.25
Dec-2018	\$	708.75
Feb-2019	\$	447.75
Jan-2019	\$	517.50
Jul-2018	\$	954.00
Mar-2019	\$	510.75
May-2018	\$	1,442.25

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Counterparty and Payment Dates		REC Cost
Nov-2018	\$	533.25
Oct-2018	\$	967.50
Sep-2018	\$	875.25
<hr/>		
Apr-2018	\$	4,130.00
Aug-2018	\$	4,595.00
Dec-2018	\$	2,205.00
Feb-2019	\$	2,835.00
Jan-2019	\$	2,235.00
Jul-2018	\$	5,005.00
Jun-2018	\$	4,455.00
Mar-2019	\$	2,325.00
May-2018	\$	4,510.00
Nov-2018	\$	2,815.00
Oct-2018	\$	2,900.00
Sep-2018	\$	4,720.00
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Apr-2018	\$	4,105.00
Aug-2018	\$	5,040.00
Dec-2018	\$	3,020.00
Feb-2019	\$	3,085.00
Jan-2019	\$	2,440.00
Jul-2018	\$	4,910.00
Jun-2018	\$	4,760.00
Mar-2019	\$	2,765.00
May-2018	\$	4,855.00
Nov-2018	\$	4,105.00
Oct-2018	\$	4,105.00
Sep-2018	\$	5,165.00
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Apr-2018	\$	4,110.00
Aug-2018	\$	4,400.00
Dec-2018	\$	2,810.00
Feb-2019	\$	2,770.00
Jan-2019	\$	1,745.00
Jul-2018	\$	4,690.00
Jun-2018	\$	4,790.00
Mar-2019	\$	2,335.00
May-2018	\$	4,650.00
Nov-2018	\$	3,905.00
Oct-2018	\$	3,615.00
Sep-2018	\$	4,970.00
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Apr-2018	\$	3,260.00
Aug-2018	\$	3,576.00
Dec-2018	\$	2,064.00
Feb-2019	\$	2,308.00
Jan-2019	\$	1,568.00
Jul-2018	\$	3,692.00
Jun-2018	\$	3,716.00
Mar-2019	\$	1,996.00
May-2018	\$	3,680.00
Nov-2018	\$	2,288.00
Oct-2018	\$	2,244.00
Sep-2018	\$	3,516.00
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Apr-2018	\$	3,805.00
Aug-2018	\$	4,175.00
Dec-2018	\$	2,480.00
Feb-2019	\$	2,530.00

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Counterparty and Payment Dates		REC Cost
Jan-2019	\$	2,095.00
Jul-2018	\$	4,435.00
Jun-2018	\$	4,115.00
Mar-2019	\$	2,375.00
May-2018	\$	4,545.00
Nov-2018	\$	3,505.00
Oct-2018	\$	3,370.00
Sep-2018	\$	4,370.00

Apr-2018	\$	1,100.00
Aug-2018	\$	1,732.00
Dec-2018	\$	1,344.00
Feb-2019	\$	824.00
Jan-2019	\$	1,988.00
Jul-2018	\$	1,568.00
May-2018	\$	2,756.00
Nov-2018	\$	1,260.00
Oct-2018	\$	1,524.00
Sep-2018	\$	1,576.00

Apr-2018	\$	3,286.92
Aug-2018	\$	7,982.52
Dec-2018	\$	4,226.04
Feb-2019	\$	2,699.97
Jan-2019	\$	2,582.58
Jul-2018	\$	7,865.13
Jun-2018	\$	7,278.18
Mar-2019	\$	3,286.92
May-2018	\$	5,752.11
Nov-2018	\$	4,460.82
Oct-2018	\$	6,456.45
Sep-2018	\$	5,517.33

Apr-2018	\$	6,694.59
Aug-2018	\$	15,809.29
Dec-2018	\$	9,900.45
Feb-2019	\$	6,294.42
Jan-2019	\$	8,328.95
Jul-2018	\$	16,406.46
Jun-2018	\$	15,557.85
Mar-2019	\$	8,858.95
May-2018	\$	14,332.08
Nov-2018	\$	8,611.82
Oct-2018	\$	16,877.91
Sep-2018	\$	14,049.21

Apr-2018	\$	2,347.80
Aug-2018	\$	3,991.26
Dec-2018	\$	2,347.80
Feb-2019	\$	1,760.85
Jan-2019	\$	1,878.24
Jul-2018	\$	4,108.65
Jun-2018	\$	3,991.26
Mar-2019	\$	2,347.80
May-2018	\$	3,286.92
Nov-2018	\$	2,699.97
Oct-2018	\$	3,639.09
Sep-2018	\$	3,756.48

Apr-2018	\$	1,878.24

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Counterparty and Payment Dates		REC Cost
Aug-2018	\$	3,873.87
Dec-2018	\$	2,347.80
Feb-2019	\$	1,526.07
Jan-2019	\$	1,760.85
Jul-2018	\$	3,873.87
Jun-2018	\$	3,404.31
Mar-2019	\$	1,995.63
May-2018	\$	2,699.97
Nov-2018	\$	2,113.02
Oct-2018	\$	3,521.70
Sep-2018	\$	2,934.75

Apr-2018	\$	2,540.00
Aug-2018	\$	3,076.00
Dec-2018	\$	1,812.00
Feb-2019	\$	1,952.00
Jan-2019	\$	1,584.00
Jul-2018	\$	3,056.00
Jun-2018	\$	2,684.00
Mar-2019	\$	1,512.00
May-2018	\$	2,740.00
Nov-2018	\$	2,408.00
Oct-2018	\$	2,148.00
Sep-2018	\$	2,988.00

Apr-2018	\$	2,271.00
Aug-2018	\$	2,661.00
Dec-2018	\$	1,725.00
Feb-2019	\$	1,869.00
Jan-2019	\$	1,584.00
Jul-2018	\$	2,787.00
Jun-2018	\$	2,583.00
Mar-2019	\$	1,608.00
May-2018	\$	2,802.00
Nov-2018	\$	2,337.00
Oct-2018	\$	2,274.00
Sep-2018	\$	2,676.00

Apr-2018	\$	972.00
Aug-2018	\$	1,548.00
Dec-2018	\$	948.00
Feb-2019	\$	880.00
Jan-2019	\$	840.00
Jul-2018	\$	1,552.00
Jun-2018	\$	1,560.00
Mar-2019	\$	1,088.00
May-2018	\$	1,444.00
Nov-2018	\$	2,396.00
Sep-2018	\$	1,312.00

Apr-2018	\$	821.73
Aug-2018	\$	1,995.63
Dec-2018	\$	939.12
Feb-2019	\$	586.95
Jan-2019	\$	469.56
Jul-2018	\$	1,760.85
Jun-2018	\$	1,995.63
Mar-2019	\$	821.73
May-2018	\$	1,291.29
Nov-2018	\$	2,699.97

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Counterparty and Payment Dates		REC Cost
Mar-2019	\$	-
May-2018	\$	-
Nov-2018	\$	-
Oct-2018	\$	-
Sep-2018	\$	-
<hr/>		
Apr-2018	\$	1,861.74
Aug-2018	\$	6,412.66
Dec-2018	\$	1,448.02
Feb-2019	\$	1,241.16
Jan-2019	\$	930.87
Jun-2018	\$	3,309.76
May-2018	\$	2,585.75
Nov-2018	\$	4,344.06
Sep-2018	\$	2,585.75
<hr/>		
Apr-2018	\$	21,851.90
Aug-2018	\$	21,792.05
Dec-2018	\$	47,068.70
Feb-2019	\$	24,465.35
Jan-2019	\$	26,107.90
Jul-2018	\$	21,366.45
Jun-2018	\$	23,700.60
Mar-2019	\$	25,196.85
May-2018	\$	25,043.90
Oct-2018	\$	23,886.80
Sep-2018	\$	23,255.05
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Apr-2018	\$	396.00
Aug-2018	\$	1,300.00
Feb-2019	\$	276.00
Jan-2019	\$	436.00
Jun-2018	\$	988.00
Mar-2019	\$	304.00
May-2018	\$	432.00
Nov-2018	\$	1,004.00
Oct-2018	\$	636.00
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Apr-2018	\$	332.00
Aug-2018	\$	1,264.00
Feb-2019	\$	580.00
Jan-2019	\$	944.00
Jun-2018	\$	596.00
Mar-2019	\$	644.00
May-2018	\$	960.00
Nov-2018	\$	2,248.00
Oct-2018	\$	632.00
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Apr-2018	\$	840.00
Aug-2018	\$	2,868.00
Feb-2019	\$	268.00
Jan-2019	\$	428.00
Jun-2018	\$	1,296.00
Mar-2019	\$	296.00
May-2018	\$	2,340.00
Nov-2018	\$	992.00
Oct-2018	\$	1,436.00
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Apr-2018	\$	584.00
Aug-2018	\$	3,396.00

*Information in italics is confidential

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Counterparty and Payment Dates		REC Cost
Dec-2018	\$	652.00
Feb-2019	\$	488.00
Jan-2019	\$	556.00
Jun-2018	\$	392.00
Mar-2019	\$	696.00
May-2018	\$	644.00
Nov-2018	\$	836.00
Oct-2018	\$	936.00
Sep-2018	\$	948.00

Apr-2018	\$	51,660.00
Aug-2018	\$	34,692.52
Dec-2018	\$	37,156.00
Feb-2019	\$	36,904.00
Jan-2019	\$	30,368.00
Jul-2018	\$	48,688.08
Jun-2018	\$	62,580.00
Mar-2019	\$	33,832.00
May-2018	\$	61,500.00
Nov-2018	\$	47,052.00
Oct-2018	\$	40,848.00
Sep-2018	\$	83,334.51

Apr-2018	\$	25,608.00
Aug-2018	\$	26,736.00
Dec-2018	\$	17,868.00
Feb-2019	\$	18,644.00
Jan-2019	\$	14,964.00
Jul-2018	\$	28,580.00
Jun-2018	\$	26,648.00
Mar-2019	\$	16,568.00
May-2018	\$	28,524.00
Nov-2018	\$	22,820.00
Oct-2018	\$	17,948.00
Sep-2018	\$	28,272.00

Apr-2018	\$	3,152.00
Aug-2018	\$	3,440.00
Dec-2018	\$	1,860.00
Feb-2019	\$	2,236.00
Jan-2019	\$	1,696.00
Jul-2018	\$	3,568.00
Jun-2018	\$	2,888.00
Mar-2019	\$	1,892.00
May-2018	\$	3,424.00
Nov-2018	\$	2,800.00
Oct-2018	\$	2,328.00
Sep-2018	\$	3,444.00

Apr-2018	\$	-
Aug-2018	\$	-
Dec-2018	\$	-
Feb-2019	\$	-
Jan-2019	\$	-
Jul-2018	\$	-
Jun-2018	\$	-
Mar-2019	\$	-
May-2018	\$	-
Nov-2018	\$	-
Oct-2018	\$	-

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Counterparty and Payment Dates		REC Cost
Sep-2018	\$	-
Apr-2018	\$	3,224.00
Aug-2018	\$	3,468.00
Dec-2018	\$	2,124.00
Feb-2019	\$	2,096.00
Jan-2019	\$	1,836.00
Jul-2018	\$	3,612.00
Jun-2018	\$	3,480.00
Mar-2019	\$	1,928.00
May-2018	\$	3,516.00
Nov-2018	\$	2,664.00
Oct-2018	\$	2,352.00
Sep-2018	\$	3,512.00
Apr-2018	\$	2,612.00
Aug-2018	\$	3,332.00
Dec-2018	\$	1,996.00
Feb-2019	\$	2,224.00
Jan-2019	\$	1,944.00
Jul-2018	\$	3,360.00
Jun-2018	\$	3,100.00
Mar-2019	\$	2,040.00
May-2018	\$	3,016.00
Nov-2018	\$	2,832.00
Oct-2018	\$	2,932.00
Sep-2018	\$	3,552.00
Apr-2018	\$	3,224.00
Aug-2018	\$	3,628.00
Dec-2018	\$	2,196.00
Feb-2019	\$	2,376.00
Jan-2019	\$	1,920.00
Jul-2018	\$	3,772.00
Jun-2018	\$	3,452.00
Mar-2019	\$	1,980.00
May-2018	\$	3,640.00
Nov-2018	\$	1,932.00
Oct-2018	\$	2,304.00
Sep-2018	\$	3,600.00
Apr-2018	\$	234.78
Aug-2018	\$	469.56
Dec-2018	\$	234.78
Feb-2019	\$	234.78
Jan-2019	\$	117.39
Jul-2018	\$	352.17
Jun-2018	\$	352.17
Mar-2019	\$	117.39
May-2018	\$	352.17
Nov-2018	\$	234.78
Oct-2018	\$	234.78
Sep-2018	\$	352.17
Apr-2018	\$	369,019.78
Aug-2018	\$	323,069.24
Dec-2018	\$	344,326.06
Feb-2019	\$	343,229.34
Jan-2019	\$	300,865.76
Jul-2018	\$	378,491.88

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Counterparty and Payment Dates		REC Cost
Jun-2018	\$	687,791.52
Mar-2019	\$	381,237.50
May-2018	\$	3,786.64
Nov-2018	\$	244,152.22
Oct-2018	\$	356,632.64
Sep-2018	\$	337,699.44

Apr-2018	\$	32,940.00
Aug-2018	\$	8,775.00
Dec-2018	\$	14,715.00
Feb-2019	\$	8,085.00
Jan-2019	\$	2,160.00
Jul-2018	\$	11,490.00
Jun-2018	\$	21,765.00
Mar-2019	\$	12,420.00
May-2018	\$	23,040.00
Nov-2018	\$	6,255.00
Oct-2018	\$	6,225.00
Sep-2018	\$	17,310.00

Apr-2018	\$	234.78
Aug-2018	\$	352.17
Dec-2018	\$	234.78
Feb-2019	\$	117.39
Jan-2019	\$	117.39
Jul-2018	\$	469.56
Jun-2018	\$	352.17
Mar-2019	\$	234.78
May-2018	\$	352.17
Nov-2018	\$	352.17
Oct-2018	\$	352.17
Sep-2018	\$	469.56

Apr-2018	\$	352.17
Aug-2018	\$	352.17
Dec-2018	\$	234.78
Feb-2019	\$	234.78
Jan-2019	\$	234.78
Jul-2018	\$	469.56
Jun-2018	\$	352.17
Mar-2019	\$	234.78
May-2018	\$	352.17
Nov-2018	\$	234.78
Oct-2018	\$	352.17
Sep-2018	\$	469.56

Apr-2018	\$	3,176.00
Aug-2018	\$	3,644.00
Dec-2018	\$	2,232.00
Feb-2019	\$	2,432.00
Jan-2019	\$	1,980.00
Jul-2018	\$	3,732.00
Jun-2018	\$	3,492.00
Mar-2019	\$	2,024.00
May-2018	\$	3,568.00
Nov-2018	\$	2,944.00
Oct-2018	\$	2,936.00
Sep-2018	\$	3,720.00

Apr-2018	\$	639.00

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Counterparty and Payment Dates		REC Cost
Aug-2018	\$	1,056.00
Dec-2018	\$	855.00
Feb-2019	\$	585.00
Jan-2019	\$	666.00
Jul-2018	\$	1,068.00
Jun-2018	\$	1,023.00
Mar-2019	\$	771.00
May-2018	\$	1,050.00
Nov-2018	\$	723.00
Oct-2018	\$	1,176.00
Sep-2018	\$	963.00

Apr-2018	\$	3,365.00
Aug-2018	\$	3,515.00
Dec-2018	\$	2,260.00
Feb-2019	\$	2,240.00
Jan-2019	\$	2,020.00
Jul-2018	\$	3,930.00
Jun-2018	\$	3,560.00
Mar-2019	\$	2,175.00
May-2018	\$	3,920.00
Nov-2018	\$	3,130.00
Oct-2018	\$	2,760.00
Sep-2018	\$	3,740.00

Apr-2018	\$	1,740.00
Aug-2018	\$	1,980.00
Dec-2018	\$	1,128.00
Feb-2019	\$	1,252.00
Jan-2019	\$	812.00
Jul-2018	\$	2,152.00
Jun-2018	\$	2,104.00
Mar-2019	\$	1,148.00
May-2018	\$	2,120.00
Nov-2018	\$	1,628.00
Oct-2018	\$	1,412.00
Sep-2018	\$	2,080.00

Apr-2018	\$	4,055.00
Aug-2018	\$	4,220.00
Dec-2018	\$	2,435.00
Feb-2019	\$	2,890.00
Jan-2019	\$	2,020.00
Jul-2018	\$	4,660.00
Jun-2018	\$	4,175.00
Mar-2019	\$	2,590.00
May-2018	\$	4,600.00
Nov-2018	\$	3,765.00
Oct-2018	\$	3,415.00
Sep-2018	\$	4,355.00

Apr-2018	\$	555.75
Aug-2018	\$	814.50
Dec-2018	\$	603.00
Feb-2019	\$	533.25
Jan-2019	\$	506.25
Jul-2018	\$	839.25
Jun-2018	\$	810.00
Mar-2019	\$	630.00
May-2018	\$	717.75

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Counterparty and Payment Dates	REC Cost
Nov-2018	\$ 643.50
Oct-2018	\$ 810.00
Sep-2018	\$ 738.00

Apr-2018	\$ 3,264.00
Aug-2018	\$ 3,704.00
Dec-2018	\$ 2,276.00
Feb-2019	\$ 2,492.00
Jan-2019	\$ 2,032.00
Jul-2018	\$ 3,896.00
Jun-2018	\$ 3,492.00
Mar-2019	\$ 2,116.00
May-2018	\$ 3,680.00
Nov-2018	\$ 3,060.00
Oct-2018	\$ 2,620.00
Sep-2018	\$ 3,756.00

Apr-2018	\$ 117.39
Aug-2018	\$ 117.39
Dec-2018	\$ 117.39
Feb-2019	\$ 117.39
Jul-2018	\$ 234.78
Jun-2018	\$ 117.39
May-2018	\$ 117.39
Nov-2018	\$ 234.78
Sep-2018	\$ 117.39

Apr-2018	\$ 895.00
Aug-2018	\$ 170.00
Dec-2018	\$ 940.00
Feb-2019	\$ 1,245.00
Jan-2019	\$ 1,000.00
Jul-2018	\$ 280.00
Jun-2018	\$ 755.00
Mar-2019	\$ 955.00
May-2018	\$ 850.00
Nov-2018	\$ 550.00
Oct-2018	\$ 480.00
Sep-2018	\$ 785.00

Apr-2018	\$ 73.43
Aug-2018	\$ 146.86
Jan-2019	\$ 73.43
Jul-2018	\$ 73.43
Jun-2018	\$ 73.43
Mar-2019	\$ 73.43
May-2018	\$ 73.43
Nov-2018	\$ 73.43
Oct-2018	\$ 73.43
Sep-2018	\$ 73.43

Apr-2018	\$ 3,164.00
Aug-2018	\$ 3,608.00
Dec-2018	\$ 2,176.00
Feb-2019	\$ 2,336.00
Jan-2019	\$ 1,884.00
Jul-2018	\$ 3,728.00
Jun-2018	\$ 3,600.00
Mar-2019	\$ 1,984.00
May-2018	\$ 3,644.00

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Counterparty and Payment Dates		REC Cost
Nov-2018	\$	2,892.00
Oct-2018	\$	2,868.00
Sep-2018	\$	3,696.00
<hr/>		
Apr-2018	\$	1,195.00
Aug-2018	\$	1,970.00
Dec-2018	\$	1,630.00
Jan-2019	\$	2,390.00
Jul-2018	\$	2,200.00
Mar-2019	\$	1,175.00
May-2018	\$	3,450.00
Nov-2018	\$	1,585.00
Oct-2018	\$	1,930.00
Sep-2018	\$	2,125.00
<hr/>		
Apr-2018	\$	1,716.75
Aug-2018	\$	1,764.00
Dec-2018	\$	1,210.50
Feb-2019	\$	1,201.50
Jan-2019	\$	1,082.25
Jul-2018	\$	1,928.25
Jun-2018	\$	1,728.00
Mar-2019	\$	965.25
May-2018	\$	1,962.00
Nov-2018	\$	1,608.75
Oct-2018	\$	1,399.50
Sep-2018	\$	1,845.00
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Apr-2018	\$	1,714.50
Aug-2018	\$	1,719.00
Dec-2018	\$	1,163.25
Feb-2019	\$	1,269.00
Jan-2019	\$	1,044.00
Jul-2018	\$	1,800.00
Jun-2018	\$	1,689.75
Mar-2019	\$	1,093.50
May-2018	\$	1,948.50
Nov-2018	\$	1,442.25
Oct-2018	\$	1,291.50
Sep-2018	\$	1,773.00
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Aug-2018	\$	103.43
Dec-2018	\$	103.43
Jan-2019	\$	103.43
Jul-2018	\$	206.86
Jun-2018	\$	103.43
Mar-2019	\$	103.43
May-2018	\$	206.86
Nov-2018	\$	103.43
Oct-2018	\$	103.43
Sep-2018	\$	206.86
<hr/>		
Apr-2018	\$	206.86
Aug-2018	\$	413.72
Dec-2018	\$	206.86
Feb-2019	\$	103.43
Jan-2019	\$	206.86
Jul-2018	\$	310.29
Jun-2018	\$	413.72
Mar-2019	\$	206.86

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Counterparty and Payment Dates		REC Cost
May-2018	\$	206.86
Nov-2018	\$	310.29
Oct-2018	\$	310.29
Sep-2018	\$	310.29
<hr/>		
Apr-2018	\$	73.43
Aug-2018	\$	220.29
Dec-2018	\$	73.43
Jan-2019	\$	73.43
Jun-2018	\$	146.86
Mar-2019	\$	73.43
May-2018	\$	146.86
Nov-2018	\$	73.43
Oct-2018	\$	73.43
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Apr-2018	\$	3,276.00
Aug-2018	\$	3,784.00
Dec-2018	\$	2,328.00
Feb-2019	\$	2,456.00
Jan-2019	\$	2,028.00
Jul-2018	\$	3,992.00
Jun-2018	\$	3,708.00
Mar-2019	\$	2,084.00
May-2018	\$	3,708.00
Nov-2018	\$	3,156.00
Oct-2018	\$	2,564.00
Sep-2018	\$	3,948.00
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Apr-2018	\$	73.43
Aug-2018	\$	73.43
Dec-2018	\$	73.43
Feb-2019	\$	73.43
Jan-2019	\$	73.43
Jul-2018	\$	220.29
Jun-2018	\$	73.43
Mar-2019	\$	73.43
May-2018	\$	146.86
Nov-2018	\$	73.43
Oct-2018	\$	146.86
Sep-2018	\$	146.86
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Apr-2018	\$	4,010.00
Aug-2018	\$	4,370.00
Dec-2018	\$	2,635.00
Feb-2019	\$	2,920.00
Jan-2019	\$	2,275.00
Jul-2018	\$	4,465.00
Jun-2018	\$	4,240.00
Mar-2019	\$	2,040.00
May-2018	\$	4,470.00
Nov-2018	\$	3,555.00
Oct-2018	\$	2,235.00
Sep-2018	\$	4,450.00
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Apr-2018	\$	3,340.00
Aug-2018	\$	3,968.00
Dec-2018	\$	2,376.00
Feb-2019	\$	2,512.00
Jan-2019	\$	2,088.00
Jul-2018	\$	4,096.00

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Counterparty and Payment Dates		REC Cost
Jun-2018	\$	3,800.00
Mar-2019	\$	2,108.00
May-2018	\$	3,564.00
Nov-2018	\$	3,152.00
Oct-2018	\$	2,392.00
Sep-2018	\$	3,976.00

Apr-2018	\$	1,885.50
Aug-2018	\$	1,973.25
Dec-2018	\$	1,248.75
Feb-2019	\$	1,381.50
Jan-2019	\$	1,102.50
Jul-2018	\$	2,155.50
Jun-2018	\$	2,020.50
Mar-2019	\$	1,237.50
May-2018	\$	2,031.75
Oct-2018	\$	794.25
Sep-2018	\$	2,112.75

Apr-2018	\$	3,720.00
Aug-2018	\$	3,855.00
Dec-2018	\$	2,580.00
Feb-2019	\$	2,840.00
Jan-2019	\$	1,930.00
Jul-2018	\$	4,315.00
Jun-2018	\$	4,160.00
Mar-2019	\$	2,425.00
May-2018	\$	4,430.00
Nov-2018	\$	3,560.00
Oct-2018	\$	2,955.00
Sep-2018	\$	4,370.00

Apr-2018	\$	3,775.00
Aug-2018	\$	4,665.00
Dec-2018	\$	2,670.00
Feb-2019	\$	2,865.00
Jan-2019	\$	2,000.00
Jul-2018	\$	4,650.00
Jun-2018	\$	4,625.00
Mar-2019	\$	2,470.00
May-2018	\$	4,540.00
Nov-2018	\$	3,370.00
Oct-2018	\$	2,920.00
Sep-2018	\$	3,810.00

Apr-2018	\$	19,337.20
Aug-2018	\$	22,417.00
Dec-2018	\$	13,763.40
Feb-2019	\$	14,534.80
Jan-2019	\$	10,515.40
Jul-2018	\$	23,890.20
Jun-2018	\$	22,968.00
Mar-2019	\$	12,423.60
May-2018	\$	22,028.40
Nov-2018	\$	18,548.40
Oct-2018	\$	16,547.40
Sep-2018	\$	23,414.60

Apr-2018	\$	3,180.00
Aug-2018	\$	3,812.00

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Counterparty and Payment Dates		REC Cost
Nov-2018	\$	2,830.00
Oct-2018	\$	2,505.00
Sep-2018	\$	3,815.00
██		
Apr-2018	\$	3,310.00
Aug-2018	\$	3,800.00
Dec-2018	\$	2,210.00
Feb-2019	\$	1,930.00
Jan-2019	\$	1,760.00
Jul-2018	\$	4,050.00
Jun-2018	\$	3,810.00
Mar-2019	\$	2,020.00
May-2018	\$	3,880.00
Nov-2018	\$	2,760.00
Oct-2018	\$	2,960.00
Sep-2018	\$	3,950.00
██		
Apr-2018	\$	3,236.00
Aug-2018	\$	3,912.00
Dec-2018	\$	2,212.00
Feb-2019	\$	2,292.00
Jan-2019	\$	1,756.00
Jul-2018	\$	4,124.00
Jun-2018	\$	3,556.00
Mar-2019	\$	2,112.00
May-2018	\$	3,856.00
Nov-2018	\$	3,100.00
Oct-2018	\$	3,028.00
Sep-2018	\$	4,052.00
██		
Apr-2018	\$	868.00
Aug-2018	\$	1,460.00
Dec-2018	\$	1,228.00
Feb-2019	\$	840.00
Jan-2019	\$	752.00
Jul-2018	\$	1,536.00
Jun-2018	\$	1,500.00
Mar-2019	\$	1,068.00
May-2018	\$	1,212.00
Nov-2018	\$	1,068.00
Oct-2018	\$	1,568.00
Sep-2018	\$	1,340.00
██		
Apr-2018	\$	117.39
Aug-2018	\$	117.39
Dec-2018	\$	352.17
Feb-2019	\$	117.39
Jan-2019	\$	117.39
Jul-2018	\$	234.78
Jun-2018	\$	234.78
May-2018	\$	234.78
Nov-2018	\$	117.39
Oct-2018	\$	234.78
Sep-2018	\$	234.78
██		
Apr-2018	\$	268,048.03
Aug-2018	\$	45,281.89
Dec-2018	\$	306,819.41
Feb-2019	\$	308,038.03
Jan-2019	\$	328,345.62

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Counterparty and Payment Dates		REC Cost
Jul-2018	\$	385,976.23
Jun-2018	\$	262,390.96
Mar-2019	\$	247,817.91
May-2018	\$	233,587.28
Nov-2018	\$	227,394.16
Oct-2018	\$	277,770.06
Sep-2018	\$	144,243.90
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Apr-2018	\$	11,739.00
Aug-2018	\$	18,782.40
Dec-2018	\$	7,865.13
Feb-2019	\$	10,212.93
Jan-2019	\$	6,926.01
Jul-2018	\$	20,191.08
Jun-2018	\$	21,247.59
Mar-2019	\$	13,734.63
May-2018	\$	17,373.72
Nov-2018	\$	25,121.46
Sep-2018	\$	19,604.13
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Apr-2018	\$	3,895.00
Aug-2018	\$	3,835.00
Dec-2018	\$	2,640.00
Feb-2019	\$	2,605.00
Jan-2019	\$	1,660.00
Jul-2018	\$	3,280.00
Jun-2018	\$	4,320.00
Mar-2019	\$	2,570.00
May-2018	\$	4,015.00
Nov-2018	\$	3,490.00
Oct-2018	\$	2,725.00
Sep-2018	\$	4,500.00
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Apr-2018	\$	9,641.46
Aug-2018	\$	24,711.67
Feb-2019	\$	7,035.66
Jan-2019	\$	17,372.00
Jul-2018	\$	15,417.65
May-2018	\$	22,062.44
Nov-2018	\$	21,237.27
Oct-2018	\$	14,679.34
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Apr-2018	\$	495.00
Aug-2018	\$	697.50
Dec-2018	\$	614.25
Jan-2019	\$	918.00
Jul-2018	\$	839.25
Mar-2019	\$	387.00
May-2018	\$	1,359.00
Nov-2018	\$	618.75
Oct-2018	\$	753.75
Sep-2018	\$	697.50
<hr/>		
Apr-2018	\$	1,804.50
Aug-2018	\$	1,833.75
Dec-2018	\$	1,280.25
Feb-2019	\$	1,381.50
Jan-2019	\$	1,066.50
Jul-2018	\$	1,950.75
Jun-2018	\$	1,939.50

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Counterparty and Payment Dates		REC Cost
Mar-2019	\$	1,102.50
May-2018	\$	1,971.00
Nov-2018	\$	1,649.25
Oct-2018	\$	1,388.25
Sep-2018	\$	1,957.50
<hr/>		
Apr-2018	\$	3,208.00
Aug-2018	\$	3,724.00
Dec-2018	\$	2,272.00
Feb-2019	\$	2,408.00
Jan-2019	\$	1,868.00
Jul-2018	\$	4,148.00
Jun-2018	\$	3,972.00
Mar-2019	\$	2,144.00
May-2018	\$	3,780.00
Nov-2018	\$	3,108.00
Oct-2018	\$	2,988.00
Sep-2018	\$	4,092.00
<hr/>		
Apr-2018	\$	4,020.00
Aug-2018	\$	4,230.00
Dec-2018	\$	2,570.00
Feb-2019	\$	2,995.00
Jan-2019	\$	2,165.00
Jul-2018	\$	4,425.00
Jun-2018	\$	3,850.00
Mar-2019	\$	2,515.00
May-2018	\$	4,290.00
Nov-2018	\$	3,175.00
Oct-2018	\$	2,840.00
Sep-2018	\$	4,355.00
<hr/>		
Apr-2018	\$	1,818.00
Aug-2018	\$	1,514.25
Dec-2018	\$	1,507.50
Feb-2019	\$	1,469.25
Jan-2019	\$	1,597.50
Jul-2018	\$	1,503.00
Jun-2018	\$	1,536.75
Mar-2019	\$	780.75
May-2018	\$	1,617.75
Nov-2018	\$	1,566.00
Oct-2018	\$	641.25
Sep-2018	\$	1,287.00
<hr/>		
Apr-2018	\$	1,820.25
Aug-2018	\$	1,950.75
Dec-2018	\$	1,235.25
Feb-2019	\$	1,332.00
Jan-2019	\$	1,068.75
Jul-2018	\$	1,950.75
Jun-2018	\$	1,959.75
Mar-2019	\$	1,109.25
May-2018	\$	2,009.25
Nov-2018	\$	1,631.25
Oct-2018	\$	1,165.50
Sep-2018	\$	2,027.25
<hr/>		
Apr-2018	\$	10,747.37
Aug-2018	\$	13,416.18

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Counterparty and Payment Dates		REC Cost
Apr-2018	\$	4,005.00
Aug-2018	\$	4,400.00
Dec-2018	\$	2,870.00
Feb-2019	\$	3,100.00
Jan-2019	\$	2,445.00
Jul-2018	\$	4,235.00
Jun-2018	\$	4,290.00
Mar-2019	\$	2,545.00
May-2018	\$	4,355.00
Nov-2018	\$	3,735.00
Oct-2018	\$	3,155.00
Sep-2018	\$	4,470.00
REDACTED		
Apr-2018	\$	3,975.00
Aug-2018	\$	4,850.00
Dec-2018	\$	2,860.00
Feb-2019	\$	2,940.00
Jan-2019	\$	2,550.00
Jul-2018	\$	5,060.00
Jun-2018	\$	4,760.00
Mar-2019	\$	2,610.00
May-2018	\$	4,780.00
Nov-2018	\$	3,905.00
Oct-2018	\$	3,510.00
Sep-2018	\$	4,595.00
REDACTED		
Apr-2018	\$	1,967.50
Aug-2018	\$	2,072.50
Dec-2018	\$	1,345.00
Feb-2019	\$	1,440.00
Jan-2019	\$	1,085.00
Jul-2018	\$	2,162.50
Jun-2018	\$	2,085.00
Mar-2019	\$	1,220.00
May-2018	\$	2,172.50
Nov-2018	\$	1,782.50
Oct-2018	\$	1,565.00
Sep-2018	\$	2,120.00
REDACTED		
Apr-2018	\$	845.25
Aug-2018	\$	1,286.25
Dec-2018	\$	666.75
Feb-2019	\$	817.25
Jan-2019	\$	624.75
Jul-2018	\$	1,312.50
Jun-2018	\$	1,274.00
Mar-2019	\$	603.75
May-2018	\$	1,195.25
Nov-2018	\$	885.50
Oct-2018	\$	661.50
Sep-2018	\$	1,223.25
REDACTED		
Apr-2018	\$	3,775.00
Aug-2018	\$	4,210.00
Dec-2018	\$	2,545.00
Feb-2019	\$	2,850.00
Jan-2019	\$	1,755.00
Jul-2018	\$	4,635.00
Jun-2018	\$	4,365.00
Mar-2019	\$	2,540.00

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Counterparty and Payment Dates		REC Cost
May-2018	\$	4,515.00
Nov-2018	\$	3,605.00
Oct-2018	\$	3,120.00
Sep-2018	\$	4,345.00

Apr-2018	\$	1,204.00
Aug-2018	\$	1,664.00
Dec-2018	\$	1,024.00
Feb-2019	\$	904.00
Jan-2019	\$	952.00
Jul-2018	\$	1,628.00
Jun-2018	\$	1,768.00
Mar-2019	\$	1,236.00
May-2018	\$	1,352.00
Nov-2018	\$	1,240.00
Oct-2018	\$	1,508.00
Sep-2018	\$	1,432.00

Apr-2018	\$	4,550.92
Aug-2018	\$	14,480.20
Feb-2019	\$	3,723.48
Jan-2019	\$	7,033.24
Jun-2018	\$	7,550.39
May-2018	\$	6,619.52
Nov-2018	\$	10,860.15
Oct-2018	\$	6,205.80

Apr-2018	\$	22,538.00

Apr-2018	\$	2,230.41
Aug-2018	\$	586.95
Dec-2018	\$	1,526.07
Feb-2019	\$	1,995.63
Jan-2019	\$	1,526.07
Jul-2018	\$	352.17
May-2018	\$	586.95
Nov-2018	\$	821.73
Oct-2018	\$	2,582.58
Sep-2018	\$	3,873.87

Aug-2018	\$	4,821.60
Dec-2018	\$	1,790.88
May-2018	\$	1,584.24
Nov-2018	\$	5,579.28

Aug-2018	\$	3,650.64
Dec-2018	\$	1,446.48
Feb-2019	\$	5,441.52
May-2018	\$	413.28
Nov-2018	\$	5,510.40

Apr-2018	\$	3,400.00
Aug-2018	\$	3,748.00
Dec-2018	\$	2,512.00
Feb-2019	\$	2,604.00
Jan-2019	\$	2,108.00
Jul-2018	\$	3,756.00
Jun-2018	\$	3,764.00
Mar-2019	\$	2,072.00
May-2018	\$	3,720.00

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Counterparty and Payment Dates		REC Cost
Jul-2018	\$	1,973.25
Jun-2018	\$	1,883.25
Mar-2019	\$	1,143.00
May-2018	\$	1,995.75
Nov-2018	\$	1,669.50
Oct-2018	\$	1,539.00
Sep-2018	\$	2,004.75
 		
Apr-2018	\$	4,000.00
Aug-2018	\$	4,350.00
Dec-2018	\$	2,380.00
Feb-2019	\$	2,970.00
Jan-2019	\$	2,335.00
Jul-2018	\$	4,620.00
Jun-2018	\$	4,380.00
Mar-2019	\$	2,560.00
May-2018	\$	4,480.00
Nov-2018	\$	3,510.00
Oct-2018	\$	2,285.00
Sep-2018	\$	4,605.00
 		
Apr-2018	\$	3,328.00
Aug-2018	\$	3,528.00
Dec-2018	\$	2,392.00
Feb-2019	\$	2,548.00
Jan-2019	\$	2,052.00
Jul-2018	\$	4,080.00
Jun-2018	\$	3,548.00
Mar-2019	\$	2,116.00
May-2018	\$	3,736.00
Nov-2018	\$	3,168.00
Oct-2018	\$	2,956.00
Sep-2018	\$	4,004.00
 		
Apr-2018	\$	3,368.00
Aug-2018	\$	3,012.00
Dec-2018	\$	2,440.00
Feb-2019	\$	2,612.00
Jan-2019	\$	2,228.00
Jul-2018	\$	4,064.00
Jun-2018	\$	3,604.00
Mar-2019	\$	2,220.00
May-2018	\$	1,400.00
Nov-2018	\$	3,236.00
Oct-2018	\$	2,824.00
Sep-2018	\$	3,976.00
 		
Apr-2018	\$	2,370.00
Aug-2018	\$	2,815.00
Dec-2018	\$	1,595.00
Feb-2019	\$	1,770.00
Jan-2019	\$	1,190.00
Jul-2018	\$	2,895.00
Jun-2018	\$	2,725.00
Mar-2019	\$	1,595.00
May-2018	\$	2,735.00
Nov-2018	\$	2,225.00
Oct-2018	\$	1,945.00
Sep-2018	\$	2,800.00

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Counterparty and Payment Dates	REC Cost
Apr-2018	\$ 3,940.00
Aug-2018	\$ 4,565.00
Dec-2018	\$ 2,710.00
Feb-2019	\$ 2,985.00
Jan-2019	\$ 2,150.00
Jul-2018	\$ 4,695.00
Jun-2018	\$ 4,630.00
Mar-2019	\$ 2,440.00
May-2018	\$ 4,680.00
Nov-2018	\$ 3,620.00
Oct-2018	\$ 2,985.00
Sep-2018	\$ 4,730.00
Apr-2018	\$ 4,155.00
Aug-2018	\$ 4,465.00
Dec-2018	\$ 2,820.00
Feb-2019	\$ 2,820.00
Jan-2019	\$ 2,450.00
Jul-2018	\$ 4,600.00
Jun-2018	\$ 4,385.00
Mar-2019	\$ 2,675.00
May-2018	\$ 4,660.00
Nov-2018	\$ 745.00
Sep-2018	\$ 2,715.00
Apr-2018	\$ 19,702.41
Aug-2018	\$ 34,208.58
Dec-2018	\$ 17,537.31
Feb-2019	\$ 16,543.20
Jan-2019	\$ 14,289.66
Jul-2018	\$ 34,858.11
Jun-2018	\$ 32,043.48
Mar-2019	\$ 19,851.84
May-2018	\$ 29,445.36
Nov-2018	\$ 22,084.02
Oct-2018	\$ 21,651.00
Sep-2018	\$ 4,113.69
Apr-2018	\$ 4,085.00
Aug-2018	\$ 4,575.00
Dec-2018	\$ 2,855.00
Feb-2019	\$ 3,095.00
Jan-2019	\$ 2,305.00
Jul-2018	\$ 4,645.00
Jun-2018	\$ 4,415.00
Mar-2019	\$ 2,440.00
May-2018	\$ 4,485.00
Nov-2018	\$ 3,655.00
Oct-2018	\$ 2,000.00
Sep-2018	\$ 4,665.00
Apr-2018	\$ 1,995.63
Aug-2018	\$ 3,873.87
Dec-2018	\$ 1,995.63
Feb-2019	\$ 1,408.68
Jan-2019	\$ 1,526.07
Jul-2018	\$ 3,991.26
Jun-2018	\$ 3,639.09
Mar-2019	\$ 1,643.46

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Counterparty and Payment Dates		REC Cost
May-2018	\$	3,169.53
Nov-2018	\$	2,230.41
Oct-2018	\$	3,756.48
Sep-2018	\$	3,873.87
 		
Apr-2018	\$	3,880.00
Aug-2018	\$	4,480.00
Dec-2018	\$	2,380.00
Feb-2019	\$	3,215.00
Jan-2019	\$	2,570.00
Jul-2018	\$	4,430.00
Jun-2018	\$	4,460.00
Mar-2019	\$	2,395.00
May-2018	\$	4,380.00
Nov-2018	\$	3,360.00
Oct-2018	\$	2,985.00
Sep-2018	\$	4,575.00
 		
Apr-2018	\$	3,256.00
Aug-2018	\$	3,864.00
Dec-2018	\$	2,256.00
Feb-2019	\$	2,492.00
Jan-2019	\$	1,900.00
Jul-2018	\$	3,988.00
Jun-2018	\$	3,828.00
Mar-2019	\$	2,072.00
May-2018	\$	3,676.00
Nov-2018	\$	3,080.00
Oct-2018	\$	2,824.00
Sep-2018	\$	3,924.00
 		
Apr-2018	\$	234.78
Aug-2018	\$	352.17
Dec-2018	\$	234.78
Feb-2019	\$	234.78
Jan-2019	\$	234.78
Jul-2018	\$	352.17
Jun-2018	\$	234.78
Mar-2019	\$	234.78
May-2018	\$	352.17
Nov-2018	\$	234.78
Oct-2018	\$	352.17
Sep-2018	\$	352.17
 		
Apr-2018	\$	3,723.48
Aug-2018	\$	6,102.37
Dec-2018	\$	3,620.05
Feb-2019	\$	3,102.90
Jan-2019	\$	2,689.18
Jul-2018	\$	6,309.23
Jun-2018	\$	6,516.09
Mar-2019	\$	4,033.77
May-2018	\$	5,585.22
Nov-2018	\$	9,205.27
Sep-2018	\$	5,688.65
 		
Jun-2018	\$	330.00
 		
Apr-2018	\$	14,024.25
Aug-2018	\$	15,042.00

*Information in italics is confidential

Counterparty and Payment Dates		REC Cost
Dec-2018	\$	9,090.75
Feb-2019	\$	9,936.00
Jan-2019	\$	7,831.50
Jul-2018	\$	16,025.25
Jun-2018	\$	15,266.25
Mar-2019	\$	8,711.25
May-2018	\$	15,921.75
Nov-2018	\$	12,161.25
Oct-2018	\$	11,040.00
Sep-2018	\$	15,611.25

Apr-2018	\$	2,476.00
Aug-2018	\$	2,608.00
Dec-2018	\$	1,664.00
Feb-2019	\$	1,772.00
Jan-2019	\$	1,464.00
Jul-2018	\$	2,844.00
Jun-2018	\$	2,572.00
Mar-2019	\$	1,532.00
May-2018	\$	2,908.00
Nov-2018	\$	2,276.00
Oct-2018	\$	1,884.00
Sep-2018	\$	2,792.00

Apr-2018	\$	4,015.00
Aug-2018	\$	4,185.00
Dec-2018	\$	2,755.00
Feb-2019	\$	2,940.00
Jan-2019	\$	2,280.00
Jul-2018	\$	4,525.00
Jun-2018	\$	4,200.00
Mar-2019	\$	2,545.00
May-2018	\$	4,665.00
Nov-2018	\$	3,690.00
Oct-2018	\$	3,195.00
Sep-2018	\$	4,450.00

Apr-2018	\$	4,030.00
Aug-2018	\$	4,445.00
Dec-2018	\$	2,750.00
Feb-2019	\$	3,015.00
Jan-2019	\$	2,355.00
Jul-2018	\$	4,750.00
Jun-2018	\$	4,570.00
Mar-2019	\$	2,490.00
May-2018	\$	4,580.00
Nov-2018	\$	3,720.00
Oct-2018	\$	3,360.00
Sep-2018	\$	4,585.00

Apr-2018	\$	86,071.00
Aug-2018	\$	92,192.00
Dec-2018	\$	96,206.88
Feb-2019	\$	102,286.80
Jan-2019	\$	99,681.12
Jul-2018	\$	86,190.00
Jun-2018	\$	92,684.00
Mar-2019	\$	91,605.36
May-2018	\$	89,692.00
Nov-2018	\$	90,718.32

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Counterparty and Payment Dates		REC Cost
Jun-2018	\$	3,600.00
Mar-2019	\$	2,096.00
May-2018	\$	3,792.00
Nov-2018	\$	3,212.00
Oct-2018	\$	2,760.00
Sep-2018	\$	3,992.00

Apr-2018	\$	4,055.00
Aug-2018	\$	4,425.00
Dec-2018	\$	2,935.00
Feb-2019	\$	3,175.00
Jan-2019	\$	2,395.00
Jul-2018	\$	4,670.00
Jun-2018	\$	4,520.00
Mar-2019	\$	2,555.00
May-2018	\$	4,490.00
Nov-2018	\$	3,515.00
Oct-2018	\$	3,665.00
Sep-2018	\$	4,555.00

Apr-2018	\$	3,755.00
Aug-2018	\$	4,595.00
Dec-2018	\$	2,750.00
Feb-2019	\$	3,020.00
Jan-2019	\$	2,120.00
Jul-2018	\$	4,655.00
Jun-2018	\$	4,635.00
Mar-2019	\$	2,600.00
May-2018	\$	4,490.00
Nov-2018	\$	3,800.00
Oct-2018	\$	3,005.00
Sep-2018	\$	4,595.00

Apr-2018	\$	2,202.90
Aug-2018	\$	4,332.37
Dec-2018	\$	2,570.05
Feb-2019	\$	1,762.32
Jan-2019	\$	2,056.04
Jul-2018	\$	4,699.52
Jun-2018	\$	4,258.94
Mar-2019	\$	2,496.62
May-2018	\$	3,084.06
Nov-2018	\$	2,129.47
Oct-2018	\$	3,157.49
Sep-2018	\$	3,598.07

Apr-2018	\$	1,990.00
Aug-2018	\$	2,020.00
Dec-2018	\$	1,372.50
Feb-2019	\$	1,280.00
Jan-2019	\$	1,182.50
Jul-2018	\$	2,095.00
Jun-2018	\$	1,945.00
Mar-2019	\$	1,200.00
May-2018	\$	2,187.50
Nov-2018	\$	1,655.00
Oct-2018	\$	1,440.00
Sep-2018	\$	2,130.00

Apr-2018	\$	3,980.00

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Counterparty and Payment Dates		REC Cost
Sep-2018	\$	1,551.45
Apr-2018	\$	3,795.00
Aug-2018	\$	4,200.00
Dec-2018	\$	2,355.00
Feb-2019	\$	2,465.00
Jan-2019	\$	1,950.00
Jul-2018	\$	4,265.00
Jun-2018	\$	4,040.00
Mar-2019	\$	2,015.00
May-2018	\$	4,320.00
Nov-2018	\$	2,320.00
Oct-2018	\$	1,705.00
Sep-2018	\$	4,020.00
Apr-2018	\$	3,276.00
Aug-2018	\$	3,480.00
Dec-2018	\$	2,176.00
Feb-2019	\$	2,428.00
Jan-2019	\$	1,960.00
Jul-2018	\$	3,756.00
Jun-2018	\$	3,408.00
Mar-2019	\$	2,068.00
May-2018	\$	3,676.00
Nov-2018	\$	3,008.00
Oct-2018	\$	2,108.00
Sep-2018	\$	3,640.00
Apr-2018	\$	375.00
Aug-2018	\$	471.50
Dec-2018	\$	264.00
Feb-2019	\$	288.50
Jan-2019	\$	179.00
Jul-2018	\$	486.00
Jun-2018	\$	453.50
Mar-2019	\$	259.50
May-2018	\$	468.50
Nov-2018	\$	375.00
Oct-2018	\$	307.50
Sep-2018	\$	480.00
Apr-2018	\$	3,770.00
Aug-2018	\$	4,850.00
Dec-2018	\$	2,640.00
Feb-2019	\$	2,915.00
Jan-2019	\$	1,960.00
Jul-2018	\$	4,920.00
Jun-2018	\$	4,805.00
Mar-2019	\$	2,525.00
May-2018	\$	4,635.00
Nov-2018	\$	3,385.00
Oct-2018	\$	3,070.00
Sep-2018	\$	4,725.00
Apr-2018	\$	2,972.00
Aug-2018	\$	3,780.00
Dec-2018	\$	2,044.00
Feb-2019	\$	1,912.00
Jan-2019	\$	1,512.00
Jul-2018	\$	3,828.00

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REDACTED VERSION

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Compliance Costs

Line No.	Renewable Resource	EMF Period April 1, 2018 - March 31, 2019				Billing Period December 1, 2019 - November 30, 2020			
		RECs only	Total Units Note 3	Cost per Unit	Total Cost	RECs	Total Units Note 3	Cost per Unit	Total Cost
1									
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28									
29									

Compliance Costs

Line No.	Renewable Resource	EMF Period April 1, 2018 - March 31, 2019				Billing Period December 1, 2019 - November 30, 2020			
		RECs only	Total Units Note 3	Cost per Unit	Total Cost	RECs	Total Units Note 3	Cost per Unit	Total Cost
30									
31									
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Compliance Costs

Line No.	Renewable Resource	EMF Period April 1, 2018 - March 31, 2019				Billing Period December 1, 2019 - November 30, 2020			
		RECs only	Total Units <small>Note 3</small>	Cost per Unit	Total Cost	RECs	Total Units <small>Note 3</small>	Cost per Unit	Total Cost
59									
60									
61									
62									
63									
64									
65									
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REDACTED VERSION

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Line No.	Renewable Resource	EMF Period April 1, 2018 - March 31, 2019				Billing Period December 1, 2019 - November 30, 2020			
		RECs only	Total Units Note 3	Cost per Unit	Total Cost	Total Units Note 3	Cost per Unit	Total Cost	RECs
88									
89									
90									
91									
92									
93									
94									
95									
96									
97									
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Payne Exhibit No. 2
Page 5 of 11
June 11, 2019

DUKE ENERGY PROGRESS, LLC
Docket No. E-2, Sub 1205

Compliance Costs

Line No.	Renewable Resource	EMF Period April 1, 2018 - March 31, 2019				Billing Period December 1, 2019 - November 30, 2020			
		RECs only	Total Units Note 3	Cost per Unit	Total Cost	RECs	Total Units Note 3	Cost per Unit	Total Cost
117									
118									
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Payne Exhibit No. 2
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June 11, 2019

DUKE ENERGY PROGRESS, LLC
Docket No. E-2, Sub 1205

Compliance Costs

Line No.	Renewable Resource	EMF Period April 1, 2018 - March 31, 2019				Billing Period December 1, 2019 - November 30, 2020			
		RECs only	Total Units Note 3	Cost per Unit	Total Cost	Total Units Note 3	Cost per Unit	Total Cost	RECs
146									
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Jun 11 2019

Compliance Costs

Line No.	Renewable Resource	EMF Period April 1, 2018 - March 31, 2019				Billing Period December 1, 2019 - November 30, 2020			
		RECs only	Total Units Note 3	Cost per Unit	Total Cost	RECs	Total Units Note 3	Cost per Unit	Total Cost
175									
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Compliance Costs

Line No.	Renewable Resource	EMF Period April 1, 2018 - March 31, 2019				Billing Period December 1, 2019 - November 30, 2020			
		RECs only	Total Units Note 3	Cost per Unit	Total Cost	RECs	Total Units Note 3	Cost per Unit	Total Cost
204									
205									
206									
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Payne Exhibit No. 2
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June 11, 2019

DUKE ENERGY PROGRESS, LLC
Docket No. E-2, Sub 1205

Compliance Costs

Line No.	Renewable Resource	ENF Period April 1, 2018 - March 31, 2019				Billing Period December 1, 2019 - November 30, 2020			
		RECs only	Total Units Note 3	Cost per Unit	Total Cost	RECs	Total Units Note 3	Cost per Unit	Total Cost
228									
229									
230									
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Payne Exhibit No. 2
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June 11, 2019

DUKE ENERGY PROGRESS, LLC
Docket No. E-2, Sub 1205

Compliance Costs

Line No.	Renewable Resource	EMF Period April 1, 2018 - March 31, 2019				Billing Period December 1, 2019 - November 30, 2020			
		RECs only	Total Units Note 3	Cost per Unit	Total Cost	RECs	Total Units Note 3	Cost per Unit	Total Cost
250									
251									
252									
253									
254									
255									
256									
257									
258									
259									
260									
261	Other Incremental Cost (see Payne Exhibit No. 3 for Incremental Cost worksheet)			\$	1,631,233			\$	1,721,000
262	Billing Period estimated credits for receipts related to contracts (see Payne Exhibit No. 3)			\$	-	Note 1		\$	(700,000) Note 1
263	Solar Rebate Program (see Payne Exhibit No. 3 for cost detail)			\$	281,211			\$	1,220,856
264	Research (see Payne Exhibit No. 3 for Research cost detail)			\$	923,051			\$	900,000
265	Total Research and Other Incremental Cost			\$	2,835,495			\$	3,141,856
266	Total REPS Cost - to Williams Exhibit No. 1			\$	221,506,130			\$	228,016,561
267	EMF Period actual credits for receipts related to contracts - to Williams Exhibit No.4 - footnote (2)			\$	(758,000)	Note 1			
						Payne Exhibit No.3			

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Payne Exhibit No. 2
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June 11, 2019

DUKE ENERGY PROGRESS, LLC
Docket No. E-2, Sub 1205

Compliance Costs

Line No.	Renewable Resource	EMF Period April 1, 2018 - March 31, 2019				Billing Period December 1, 2019 - November 30, 2020			
		RECs only	Total Units <small>Note 3</small>	Cost per Unit	Total Cost	RECs	Total Units <small>Note 3</small>	Cost per Unit	Total Cost

Notes

Note 1: EMF Period contract receipts are not included in the under/overcollection calculation on Williams Exhibit No. 2, instead they are credited directly to customer class on Williams Exhibit No. 4. Estimated contract receipts are included in Billing Period total other incremental cost as a reduction in REPS charges proposed for the Billing Period.

Note 2: The revenue requirements associated with each of the Company's solar generating facilities were included in total in the Company's base rate case in Docket No. E-2, Sub 1142. The Commission accepted DEP's conclusion that the facility costs included in its proposed base rates were prudently incurred and approved recovery through base rates. Annual levelized costs are no longer calculated and reported in this exhibit.

Note 3: Total units refers to MWhs for bundled energy and REC purchases or to RECs for purchases denoted as RECs only.

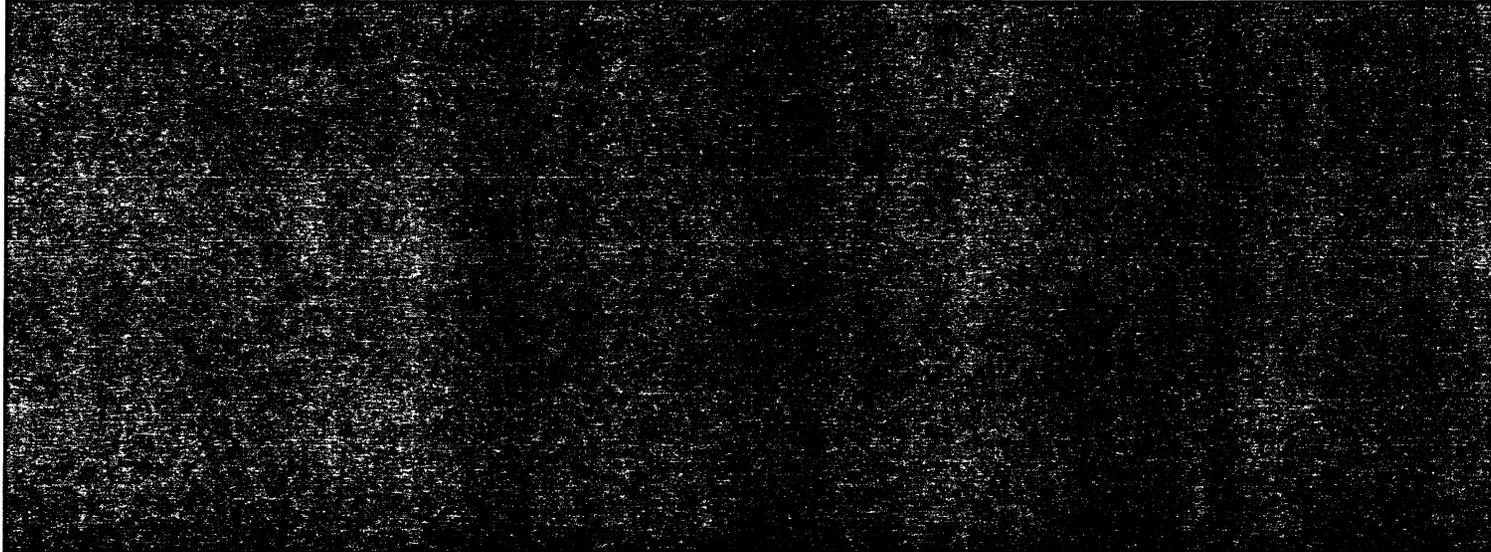
REDACTED VERSION

EMF Period	Billing Period
April 1, 2018 -	December 1, 2019 -
March 31, 2019	November 30, 2020

Line No. Incremental Cost Worksheet:

Labor by activity:

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20	Total Other Incremental Cost	\$	1,631,233	\$	1,721,000
Solar Rebate Program Cost Detail (recovery in REPS pursuant to G.S. 62-155(f)): (1)					
21	Annual Amortization of Incentives Provided to Customers, plus return on unamortized balance		265,607		1,186,097
22	Annual Amortization of Program Administrative Labor Costs, plus return on unamortized balance				
23	Annual Amortization of Program Administrative Contract Labor & Other Administrative Costs, plus return on unamortized balance				
24	Total Solar Rebate Program Cost	\$	281,211	\$	1,220,856

(1) All annual Solar Rebate Program costs reflect amortization of incurred costs over 20 years, including a return on the unamortized balance.

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EMF Period	Billing Period
April 1, 2018 - March 31, 2019	December 1, 2019 - November 30, 2020

Line No. Incremental Cost Worksheet:

Research Cost Detail:			
25	Alliance for Sustainable Energy - Solar Impact Analysis		
26	CAPER - Smart Battery Gauge		
27	Clemson University - Small DG Interface Testing		
28	Coalition for Renewable Natural Gas Membership		
29	DER Risks to Transformers and Transmission		
30	EPRI Membership		
31	EPRI - Inverter Onboard Islanding Detection Case Study Project		
32	ETO - Mitigation of Transformer High Inrush Current		
33	FREEDM Center - NCSU		
34	IEEE 1547 Conformity Assessment Pilot Project		
35	Marshall Solar Site Storage Integration and Controller Design		
36	NCSU - ETO - Grid-forming Battery Energy Storage System Characterization & Testing		
37	NCSU - Interactions of PV Installations with Distribution Systems		
38	PNNL - Dynamic Var Compensator Pilot		
39	Research Triangle Institute - Biogas Utilization in NC		
40	Rocky Mountain Institute - eLab		
41	Swine Extrusion/Poultry Mortality - NC State Natural Resources Foundation		
42	UNCC - Evaluation of Fault Scenarios and Mitigation Techniques		
43	UNCC - Hardware Cyber Security for DER Inverters		
44	Total Research Cost	\$	923,051
		\$	900,000

REDACTED VERSION

Line No. Incremental Cost Worksheet:

	EMF Period April 1, 2018 - March 31, 2019	Billing Period December 1, 2019 - November 30, 2020
45 Total Other Incremental Cost	\$ 1,631,233	\$ 1,721,000
46 Projected credits for receipts related to contract amendments/liquidated damages, etc		\$ (700,000)
47 Total Other Incremental Cost and other credits	\$ 1,631,233	\$ 1,021,000
48 Total Solar Rebate Program Cost	281,211	\$ 1,220,856
49 Total Research Cost	923,051	\$ 900,000
50 Grand Total - Other Incremental, Solar Rebate Program, and Research Cost, other credits	\$ 2,835,495	\$ 3,141,856
51 EMF Period actual credits for receipts related to contracts - see Note 1	\$ (758,000)	
52 Net Other Incremental, Solar Rebate Program and Research Cost	\$ 2,077,495	\$ 3,141,856

Note 1: EMF Period contract receipts are not included in the under/overcollection calculation on Williams Exhibit No. 2, instead they are credited directly to customer class on Williams Exhibit No. 4. Estimated contract receipts are included in Billing Period total other incremental cost as a reduction in REPS charges proposed for the Billing Period.

PAYNE CONFIDENTIAL EXHIBIT NOS. 4 - 14
DOCKET NO. E-2, SUB 1205

CONFIDENTIAL – FILED UNDER SEAL



Office of Research Contracts

3040 Cornwallis Road ■ PO Box 12194 ■ Research Triangle Park, NC 27709-2194 ■ USA
Telephone 919.541.6000 ■ Fax 919.541.7148 ■ www.rti.org

October 16, 2018

Mr. Travis Payne
Business Development Manager Distributed Energy Resources
Duke Energy Corporation

Dear Mr. Payne,

RTI is pleased to conduct a study titled “Biogas Utilization in North Carolina: Opportunities and Impact Analysis” with grant funding of \$250,000 per year for two years from Duke Energy. The objectives of the study will be to:

- a. Determine the potential bioenergy/biogas resources available in North Carolina
- b. Identify the most beneficial and optimum utilization of resources to maximize economic, environmental and societal advantages.

RTI will collaborate with Duke University, East Carolina University, North Carolina State University and University of North Carolina at Chapel Hill to carry out the tasks based on recommendations laid out in the NC Department of Environmental Quality’s Energy Policy Council Report. The following will be the deliverables from this study:

1. Bioenergy/Biogas inventory for North Carolina
2. Impact analysis for various products from biogas
3. Decision-support tool
4. Optimal resource utilization plan

A preliminary budget breakdown is shown in Table 1. The budget splits between the subcontractors will be finalized during sub-award negotiations.

	Year 1	Year 2
RTI	\$25,000	\$25,000
<i>Sub-Contractors</i>		
Duke University		
East Carolina University		
NC State University		
<i>Total Sub-Contractors</i>	<i>\$225,000</i>	<i>\$225,000</i>
Total Grant Award	\$250,000	\$250,000

Table 1: Proposed preliminary budget

If this is acceptable to you, we would be pleased to authorize this effort as a grant pursuant to RTI’s standard terms and conditions (https://www.rti.org/sites/default/files/ffp_quote_terms_final.pdf). Please note that any reference to a “fixed price contract” in the incorporated terms and conditions is hereby replaced with the term “grant.”

If acceptable, please sign and return this offer letter at your earliest convenience. We plan to commence this two-year period of performance upon your acceptance of this offer and will submit an invoice for Year 1 promptly.



Office of Research Contracts

3040 Cornwallis Road ■ PO Box 12194 ■ Research Triangle Park, NC 27709-2194 ■ USA
Telephone 919.541.6000 ■ Fax 919.541.7148 ■ www.rti.org

Thank you for your consideration. If you have any questions regarding this submission, please contact me at kehayes@rti.org or 919-541-7482.

Sincerely,

A handwritten signature in blue ink that reads 'Katie Hayes'.

Katie Hayes
Senior Contracting Officer

DUKE ENERGY CORPORATION ACCEPTANCE

A handwritten signature in blue ink that reads 'David B. Johnson'. The signature is written above a horizontal line.

Name David B. Johnson

Title Director

Date 10/23/18

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JUN 11 2019

PAYNE CONFIDENTIAL EXHIBIT NOS. 16 - 18
DOCKET NO. E-2, SUB 1205

CONFIDENTIAL – FILED UNDER SEAL

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. E-2, SUB 1205

In the Matter of)
)
Application of Duke Energy Progress, LLC for)
Approval of Renewable Energy and Energy)
Efficiency Portfolio Standard (REPS))
Compliance Report and Cost Recovery Rider)
Pursuant to N.C. Gen. Stat. § 62-133.8 and)
Commission Rule R8-67)
)
)
)

**DIRECT TESTIMONY
OF VERONICA I.
WILLIAMS**

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

2 A. My name is Veronica I. Williams, and my business address is 550 South Tryon
3 Street, Charlotte, North Carolina.

4 **Q. PLEASE STATE YOUR POSITION WITH DUKE ENERGY AND**
5 **DESCRIBE YOUR CURRENT RESPONSIBILITIES.**

6 A. In my capacity as Rates and Regulatory Strategy Manager, I am responsible
7 for providing regulatory support related to retail and wholesale rates, providing
8 guidance on Renewable Energy and Energy Efficiency Portfolio Standard
9 (“REPS”) compliance and cost recovery for Duke Energy Progress, LLC
10 (“Duke Energy Progress,” “DEP,” or the “Company”) and Duke Energy
11 Carolinas, LLC (“Duke Energy Carolinas” or “DEC”), and preparing and filing
12 testimony and exhibits in annual DEP and DEC REPS rider proceedings.

13 **Q. PLEASE BRIEFLY SUMMARIZE YOUR EDUCATIONAL**
14 **BACKGROUND, BUSINESS BACKGROUND AND PROFESSIONAL**
15 **AFFILIATIONS.**

16 A. I received a Bachelor of Science degree in Business from the University of
17 North Carolina at Charlotte. I am a certified public accountant licensed in the
18 state of North Carolina. I began my career with Duke Power Company (now
19 known as Duke Energy Carolinas) as an internal auditor and subsequently
20 worked in various departments in the finance organization. I joined the Rates
21 Department in 2001.

22 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE NORTH**
23 **CAROLINA UTILITIES COMMISSION?**

1 A. Yes. I most recently provided testimony in Docket No. E-7, Sub 1191 regarding
2 Duke Energy Carolinas' 2018 REPS compliance report and application for
3 approval of its REPS cost recovery rider, in Docket No. E-7, Sub 1181
4 regarding Duke Energy Carolinas' application to transfer certificates and
5 ownership interest in hydroelectric generating facilities, and in Docket No. E-
6 2, Sub 1175 regarding Duke Energy Progress' 2017 REPS compliance report
7 and application for approval of its REPS cost recovery rider.

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

9 A. The purpose of my testimony is to describe the calculation of and present the
10 support for the REPS rider proposed by Duke Energy Progress under N.C. Gen.
11 Stat. ("G.S.") § 62-133.8 and to present the information and data required by
12 Commission Rule R8-67 as set forth in Williams Exhibit Nos. 1 through 4. The
13 test period used in supplying this information and data is the twelve months
14 beginning on April 1, 2018 and ending on March 31, 2019 ("Test Period" or
15 "EMF Period"), and the billing period for the REPS rider requested in the
16 Company's application is the twelve months beginning on December 1, 2019
17 and ending on November 30, 2020 ("Billing Period").

18 **Q. PLEASE DESCRIBE THE EXHIBITS TO YOUR TESTIMONY.**

19 A. Williams Confidential Exhibit No. 1 ("Williams Exhibit No. 1") identifies the
20 total incremental REPS compliance costs for which the Company seeks
21 recovery from Duke Energy Progress North Carolina Retail ("NC Retail")
22 customers. Williams Confidential Exhibit No. 2 ("Williams Exhibit No. 2")
23 shows the allocation of the total REPS compliance costs, identified in Williams

1 Exhibit No. 1, to the Company's NC Retail customer classes for the Test Period.
2 Williams Confidential Exhibit No. 3 ("Williams Exhibit No. 3") shows the
3 allocation of the total expected REPS compliance costs, identified on Williams
4 Exhibit No. 1, to the Company's NC Retail customer classes for the Billing
5 Period. Williams Exhibit No. 4 shows the total REPS rider amounts proposed,
6 including the REPS Experience Modification Factor ("EMF"), by customer
7 class, compared to the cost cap for each customer class. Finally, Williams
8 Exhibit No. 5 is a worksheet detailing the Company's energy efficiency
9 certificate ("EEC") inventory balance as of December 31, 2018.

10 **Q. WERE THESE EXHIBITS PREPARED BY YOU OR AT YOUR**
11 **DIRECTION AND UNDER YOUR SUPERVISION?**

12 A. Yes.

13 **Q. WHAT COSTS ARE INCLUDED IN DUKE ENERGY PROGRESS'**
14 **PROPOSED REPS RIDER?**

15 A. The proposed REPS rider intends to recover Duke Energy Progress'
16 incremental costs of compliance with the renewable energy requirements
17 pursuant to G.S. § 62-133.8. The costs incurred by the Company to comply
18 with its REPS compliance requirements are described comprehensively in the
19 testimony of Company Witness Payne, and detailed in Payne Confidential
20 Exhibit Nos. 2 and 3, filed in this docket. The costs incurred during the Test
21 Period are presented in this filing to demonstrate their reasonableness and
22 prudence as provided in North Carolina Utilities Commission ("Commission")
23 Rule R8-67(e).

1 The rider includes the REPS EMF component to recover the difference
2 between the compliance costs incurred and revenues realized during the Test
3 Period. The proposed rider also includes a component to recover the costs
4 expected to be incurred for the Billing Period.

5 **Q. PLEASE DESCRIBE THE METHODOLOGY DUKE ENERGY**
6 **PROGRESS USED TO CALCULATE THE INCREMENTAL COSTS OF**
7 **COMPLIANCE WITH THE REPS REQUIREMENTS.**

8 A. Company Witness Payne describes the costs Duke Energy Progress incurred
9 during the Test Period and the costs it projects to incur during the Billing Period
10 to comply with its REPS requirements. General Statute § 62-133.8(h)(1)
11 provides that “incremental costs” means “all reasonable and prudent costs
12 incurred by an electric power supplier” to comply with the REPS requirements
13 “that are in excess of the electric power supplier’s avoided costs other than those
14 costs recovered pursuant to G.S. § 62-133.9.”

15 For purchased power agreements with renewable energy facilities, Duke
16 Energy Progress subtracted its avoided cost, as determined pursuant to R8-
17 67(a)(2), from the total cost associated with each renewable energy purchase to
18 arrive at the incremental cost related to the renewable energy purchase during
19 the period in question. For biogas purchases forecast to be used to produce
20 renewable energy at the Company’s generating stations, the incremental cost is
21 calculated by subtracting the applicable avoided cost (as determined pursuant
22 to R8-67(a)(2)) from the total biogas cost associated with the MWhs generated.

1 Consistent with Rule R8-67(e)(2), which provides that the cost of an
2 unbundled renewable energy certificate (“REC”) “is an incremental cost and
3 has no avoided cost component,” the total cost for REC purchases incurred
4 during the Test Period is included in incremental costs. Further, the projected
5 costs for REC purchases during the Billing Period are included as incremental
6 costs.

7 As described in detail by Company Witness Payne in his direct
8 testimony filed in this docket, the REPS EMF and Billing Period components
9 of the proposed REPS rider also include compliance-related incremental
10 administration costs, labor costs, and costs related to research incurred during
11 the EMF Period and estimated for the Billing Period, respectively. Additionally,
12 as further detailed in the testimony of Witness Payne, an amount equal to the
13 annual amortization of Solar Rebate Program costs incurred pursuant to G.S. §
14 62-155(f) applicable to the Billing Period is also included for recovery in the
15 proposed REPS rider.

16 **Q. PLEASE DESCRIBE HOW DUKE ENERGY PROGRESS ALLOCATES**
17 **INCREMENTAL REPS COSTS AMONG CUSTOMER CLASSES FOR**
18 **REPS AND REPS EMF RIDER PURPOSES.**

19 A. Incremental costs assigned to Duke Energy Progress’ NC Retail customers are
20 separated into two categories: costs related to solar, poultry and swine waste
21 compliance requirements, and research and other incremental and Solar Rebate
22 costs (“Set-Aside and Other Incremental Costs”); and costs related to the

1 General Requirement¹ (“General Incremental Costs”). This separation is based
2 on the percentages of Set-Aside and Other Incremental Costs, and General
3 Incremental Costs, calculated on Williams Exhibit No. 1. This separation is
4 calculated in Williams Exhibit No. 1.

5 Set-Aside and Other Incremental Costs are allocated among customer
6 classes based on per-account cost caps. General Incremental Costs are allocated
7 among customer classes in a manner that gives credit for EE RECs (for which
8 there are no General Incremental Costs) according to the relative energy
9 reduction contributed by each customer class. As a result, General Incremental
10 Costs are allocated among customer classes based on each class’ pro-rata share
11 of requirements for non-EE general RECs. The calculations for allocating
12 General Incremental Costs reflect the updated method recommended by the
13 Public Staff, and accepted by the Commission in its November 17, 2017 *Order*
14 *Approving REPS and REPS EMF Rider and Approving REPS Compliance*
15 *Report* in DEP’s 2017 REPS rider filing in Docket No. E-2, Sub 1144. The
16 Company notes that any deviation from allocating costs according to the
17 statutory per-account cost cap ratios creates the potential for the resulting
18 charges computed for one or more classes to exceed the per-account cost
19 cap(s). If that occurs, the Company would continue to reallocate the costs in
20 excess of the cap for the affected customer class to the other customer classes
21 to the extent required to produce charges for all classes that do not exceed the
22 respective caps.

¹ The Company generally refers to the “General Requirement” as its overall REPS requirement, set forth in N.C. Gen. Stat. § 62-133.8(b), net of the three set-asides.

1 **Q. PLEASE DESCRIBE HOW DUKE ENERGY PROGRESS**
2 **CALCULATED THE PROJECTED PORTION OF THE REPS RIDER**
3 **THAT THE COMPANY PROPOSES FOR THE BILLING PERIOD.**

4 A. Using the allocation methods described above, and as shown on Williams
5 Exhibit No. 3, the Set-Aside and Other Incremental Costs and the General
6 Incremental Costs are calculated by customer class for the Company's NC
7 Retail customers. The Set-Aside and Other Incremental Costs and General
8 Incremental Costs are summed for the Billing Period by customer class to arrive
9 at a total REPS cost to be collected from the Company's NC Retail customers.
10 On Williams Exhibit No. 4, the cost allocated to each customer class is then
11 divided by the total projected number of Duke Energy Progress NC Retail
12 accounts within each customer class to arrive at the total annual cost to be
13 recovered from each account over the Billing Period. The monthly NC Retail
14 REPS rider for each customer class is one-twelfth of the total annual cost.

15 **Q. PLEASE EXPLAIN THE CALCULATION OF THE PROPOSED REPS**
16 **EMF.**

17 A. Using the allocation methods described above, and as shown on Williams
18 Exhibit No. 2, the Set-Aside and Other Incremental Costs and the General
19 Incremental Costs are calculated by customer class for the Company's NC
20 Retail customers. The Set-Aside and Other Incremental Costs and General
21 Incremental Costs are summed for the Test Period by customer class to illustrate
22 the total REPS cost assigned to the Company's NC Retail customers. The
23 actual NC Retail revenues realized during the Test Period by customer class are

1 then subtracted from the total REPS costs by customer class to arrive at the
2 EMF for each class. On Williams Exhibit No. 4, the total EMF over/under
3 collection to be recovered from each customer class is adjusted to include any
4 credits to customers not considered a refund of amounts advanced by
5 customers, and then divided by the total projected number of Duke Energy
6 Progress NC Retail accounts within each customer class to arrive at the total
7 EMF to be recovered from each account over the Billing Period. The monthly
8 EMF for each customer class is one-twelfth of the total EMF.

9 **Q. DOES DUKE ENERGY PROGRESS DEFINE A “CUSTOMER” FOR**
10 **PURPOSES OF REPS BILLING IN ACCORDANCE WITH THE**
11 **COMMISSION’S ORDER ISSUED NOVEMBER 12, 2009 IN DOCKET**
12 **NO. E-2, SUB 948?**

13 A. Yes. Consistent with the Commission’s order issued November 12, 2009 in
14 Docket No. E-2, Sub 948, for purposes of REPS billing, a customer is defined
15 as all accounts (metered and unmetered) serving the same customer of the same
16 revenue classification located on the same or contiguous properties. If a
17 customer has accounts that serve in an auxiliary role to a main account on the
18 same premises, no REPS charge applies to the auxiliary accounts, regardless of
19 their revenue classification. Upon written notification from the customer,
20 accounts meeting these criteria are coded in the billing system to allow the
21 customer to receive only one monthly REPS charge for all identified accounts.

1 **Q. DOES THE COMPANY PROJECT THE REPS CHARGE TO EACH**
 2 **CUSTOMER ACCOUNT FOR THE BILLING PERIOD TO BE WITHIN**
 3 **THE ANNUAL COST CAPS DEFINED IN N.C. GEN. STAT. § 62-133.8?**

4 A. Yes. In NC House Bill 589, the General Assembly revised G.S. § 62-
 5 133.8(h)(4) to lower the annual cost cap for the Residential customer class from
 6 \$34.00 to \$27.00 in years subsequent to 2014, for cost recovery proceedings
 7 initiated on or after July 1, 2017. Accordingly, the Company has applied that
 8 revision to the cost caps in this cost recovery proceeding. As shown in Williams
 9 Exhibit No. 4, the annual charge for each customer class, including regulatory
 10 fee, is below the per-account cap as defined in N.C. Gen. Stat. § 62-133.8.

11 **Q. HOW DOES DUKE ENERGY PROGRESS PROPOSE TO COLLECT**
 12 **THE REPS CHARGES FROM EACH CUSTOMER CLASS?**

13 A. The Company proposes a fixed monthly charge be added to the bill for each
 14 class of customer.

15 **Q. WHAT IS THE MONTHLY REPS CHARGE PROPOSED BY THE**
 16 **COMPANY FOR EACH CUSTOMER CLASS?**

17 A. The Company proposes the following REPS charges to be effective December
 18 1, 2019.

Customer class	Per month – excluding regulatory fee	Per month – including regulatory fee	Annual – including regulatory fee	Annual per account cost cap
Residential	\$ 1.43	\$ 1.43	\$17.16	\$ 27.00
General	\$ 8.11	\$ 8.12	\$97.44	\$150.00
Industrial	\$ 58.59	\$ 58.67	\$704.04	\$1,000.00

19

20 **Q. WHAT IS THE CHANGE IN THE MONTHLY REPS CHARGE**
 21 **PROPOSED BY THE COMPANY FOR EACH CUSTOMER CLASS?**

- 1 A. The following tables show the proposed monthly REPS rider charges, and a
 2 comparison to the monthly REPS rider charges currently in effect – with and
 3 without the regulatory fee applied.

4 *Excluding regulatory fee*

Customer class	Proposed			Current			Change		
	EMF	Rider	Total	EMF	Rider	Total	EMF	Rider	Total
Residential	\$ 0.04	\$ 1.39	\$ 1.43	\$ 0.12	\$ 1.30	\$ 1.42	\$ (0.08)	\$ 0.09	\$ 0.01
General	\$(0.73)	\$ 8.84	\$ 8.11	\$(0.66)	\$ 8.61	\$ 7.95	\$(0.07)	\$ 0.23	\$ 0.16
Industrial	\$(4.48)	\$63.07	\$58.59	\$ 8.11	\$64.96	\$73.07	\$(12.59)	\$(1.89)	\$(14.48)

5

6 *Including regulatory fee:*

Customer class	Proposed			Current			Change		
	EMF	Rider	Total	EMF	Rider	Total	EMF	Rider	Total
Residential	\$ 0.04	\$ 1.39	\$ 1.43	\$ 0.12	\$ 1.30	\$ 1.42	\$ (0.08)	\$ 0.09	\$ 0.01
General	\$(0.73)	\$ 8.85	\$ 8.12	\$(0.66)	\$ 8.62	\$ 7.96	\$(0.07)	\$ 0.23	\$ 0.16
Industrial	\$(4.49)	\$63.16	\$58.67	\$ 8.12	\$65.05	\$73.17	\$(12.61)	\$(1.89)	\$(14.50)

7

- 8 **Q. PLEASE DESCRIBE THE EEC INVENTORY DETAILS PRESENTED**
 9 **IN WILLIAMS EXHIBIT NO. 5.**

- 10 A. Williams Exhibit No. 5 shows a reconciliation of the Company's EEC inventory
 11 balance available for REPS compliance as of December 31, 2018, as well as
 12 references to the evaluation, measurement and verification ("EM&V") reports
 13 the results of which are incorporated into current EEC balances. The Company
 14 annually determines the level of EECs generated and available for REPS
 15 compliance, and this update includes the results of any periodic EM&V
 16 performed to-date, adjustments identified in the course of the Company's
 17 ongoing analysis of energy efficiency program effectiveness, as well as any
 18 other corrections. The updated cumulative level of EECs generated to date is
 19 compared to the number of EECs previously reported for compliance, less any

1 EECs used for compliance, to determine the EECs to be added to inventory in
2 the North Carolina Renewable Energy Certificate Tracking System for the most
3 recent calendar year. Williams Exhibit No. 5 shows the calculation of EECs
4 added to inventory for 2018, including details of the adjustments incorporated
5 therein.

6 **Q. DOES THE COMPANY CONTINUE TO INCORPORATE THE**
7 **COMMISSION'S ORDER ADDRESSING THE DURATION OF**
8 **ENERGY EFFICIENCY SAVINGS AS CALCULATED FOR REPS**
9 **COMPLIANCE PURPOSES?**

10 A. Yes. In its January 17, 2017 *Order Approving REPS and REPS EMF Rider and*
11 *REPS Compliance Report* in the Duke Energy Progress REPS Docket No. E-2,
12 Sub 1109, the Commission directed DEP to limit its continued recognition of
13 EE savings initiated in a particular EE program year to the life of the measure
14 or program as established in DEP's energy efficiency rider proceedings held
15 pursuant to G.S. § 62-133.9. Consistent with that Order, in this rider filing DEP
16 continues to calculate EE savings only for the duration of the established
17 measure life of each program or measure.

18 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

19 A. Yes.

REDACTED VERSION

DUKE ENERGY PROGRESS, LLC
 Docket No. E-2, Sub 1205
 Compliance Costs for the EMF Period April 1, 2018 to March 31, 2019

Williams Exhibit No. 1
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 June 11, 2019

Line No.	Renewable Resource	RECs - Payne Exhibit No. 2	MWh (Energy)	Total Cost - Payne Exhibit No. 2	Avoided Cost	Incremental Cost	Avoided Cost Recovered in Fuel Cost Adjustment Rider
1	[REDACTED]						
2							
3							
4							
5							
6							
7							
8	Other Incremental cost			\$ 1,631,233		\$ 1,631,233 (f)	
9	Solar Rebate Program			\$ 281,211	Payne Exhibit No. 2	\$ 281,211 (g)	
10	Research			\$ 923,051		\$ 923,051 (h)	
11	Total			\$ 221,506,130 Payne Exhibit No. 2		\$ 36,616,233 (below)	
	Incremental cost category					Incremental Cost	Percent of Total Incremental Cost
12	[REDACTED]						
13							
14	Total					\$ 36,616,233 (above)	100.00%
	Allocate estimated incremental cost of solar resources between solar compliance requirement and general compliance requirement:						
15	[REDACTED]						
16							
17							
18							
19							
20							

REDACTED VERSION

DUKE ENERGY PROGRESS, LLC
 Docket No. E-2, Sub 1205
 Compliance Cost for the Billing Period December 1, 2019 to November 30, 2020

Williams Exhibit No. 1
 Page 2 of 2
 June 11, 2019

Line No.	Renewable Resource	RECs - Payne Exhibit No. 2	MWh (Energy)	Total Cost - Payne Exhibit No. 2	Avoided Cost	Incremental Cost	Avoided Cost Recovered in Fuel Cost Adjustment Rider
1	[REDACTED]						
2							
3							
4							
5							
6							
7							
8							
9	Other Incremental cost			\$ 1,721,000		\$ 1,721,000	(g)
10	Estimated receipts related to contract performance			\$ (700,000)		\$ (700,000)	(h)
11	Solar Rebate Program			\$ 1,220,856	Payne Exhibit No. 2	\$ 1,220,856	(i)
12	Research			\$ 900,000		\$ 900,000	(j)
13	Total			\$ 228,016,561		\$ 43,246,220	
				Payne Exhibit No. 2			
	Incremental cost category					Incremental Cost - Retail	Percent of Total Incremental Cost
14	[REDACTED]						
15							
16	Total					⁽¹⁾ \$ 43,246,220	100.00%
Allocate estimated incremental cost of solar resources between solar compliance requirement and general compliance requirement:							
17	[REDACTED]						
18							
19							
20							
21							
22							

Calculate set-aside and other incremental and research cost per customer class - EMF Period:

Line No.	Customer Class	Total Unadjusted Number of Accounts ⁽¹⁾	Annual Rider Cap per Account Type	Calculated Annual Revenue Cap	Cost Cap Allocation Factor	Allocated Annual Set-aside, Other Incremental, and Research Cost
1	Residential	1,219,245	\$ 27	\$ 32,919,615	51.2%	\$ 8,925,549
2	General	197,172	\$ 150	\$ 29,575,800	46.0%	\$ 8,019,048
3	Industrial	1,808	\$ 1,000	\$ 1,808,000	2.8%	\$ 488,116
4	Totals			\$ 64,303,415	100.0%	\$ 17,432,713

Williams Ex No. 1, Pg 1 Line 12

Calculate general cost per customer class - EMF Period:

Line No.	Customer Class	Number of RECs for General compliance ^(a)	% of EE REC supplied by Class ⁽²⁾	REC Requirement supplied by EE by class ^{(3)(b)}	Number of General RECs net of EE (c) = (a) - (b)	General Cost Allocation Factor (e) = (c) / (d)	Allocated Annual General Incremental Costs
5	Residential		63.4%			44.1%	\$ 8,467,578
6	General		35.5%			52.1%	\$ 9,990,074
7	Industrial		1.1%			3.8%	\$ 725,868
8	Totals		100.0%			100.0%	\$ 19,183,520

(d)

Williams Ex No. 1, Pg 1 Line 13

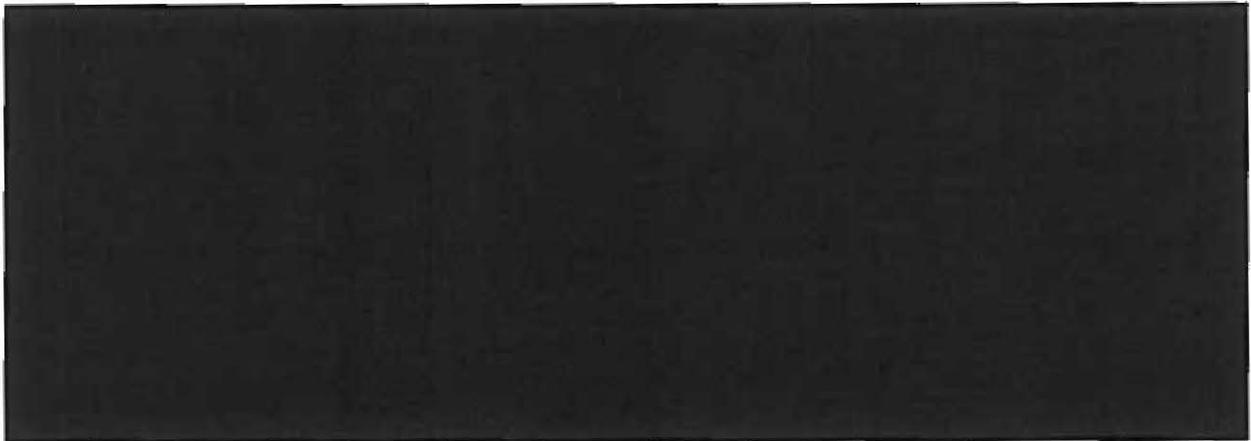
Total cost allocation by customer class - EMF Period:

	Total Incremental REPS cost by class	% Incremental REPS cost by class
9 Residential	\$ 17,393,127	47.50%
10 General	\$ 18,009,122	49.18%
11 Industrial	\$ 1,213,984	3.32%
12 Total	\$ 36,616,233	100.00%

Williams Ex. No. 1 Pg 1 Line No. 14

Notes:

- (1) Average monthly number of REPS accounts for the EMF Period.
- (2) EE allocated to account type according to actual relative contribution of EE RECs by customer class.
- (3) Limited to 25% of total RECs



DUKE ENERGY PROGRESS, LLC
Docket No. E-2, Sub 1205
Compliance Costs for the EMF Period April 1, 2018 to March 31, 2019

Williams Exhibit No. 2
Page 2 of 2
June 11, 2019

Calculate incremental cost under/(over) collection per customer class - EMF Period:

Line No.	Account Type	Allocated Annual Set-aside and Other Incremental costs	Allocated Annual General Incremental Costs	Total Incremental Costs	Actual NC Retail REPS Revenues Realized - EMF Period	Annual REPS EMF - Under/(Over)-Collection, before Interest	Interest on Over-collection ⁽¹⁾	Annual REPS EMF - Under/(Over)-Collection
1	Residential	\$ 8,925,549	\$ 8,467,578	\$ 17,393,127	\$ 16,401,778	\$ 991,349	\$ -	\$ 991,349
2	General	\$ 8,019,048	\$ 9,990,074	\$ 18,009,122	\$ 19,213,014	\$ (1,203,892)	\$ (200,649)	\$ (1,404,541)
3	Industrial	\$ 488,116	\$ 725,868	\$ 1,213,984	\$ 1,278,418	\$ (64,434)	\$ (10,739)	\$ (75,173)
4	Total	\$ 17,432,713	\$ 19,183,520	\$ 36,616,233	\$ 36,893,210	\$ (276,977)	\$ (211,388)	\$ (488,365)

<<< Williams Exhibit No. 2 page 1>>>

Notes:

⁽¹⁾ Interest calculated at annual rate of 10% for number months from mid-point of EMF period to mid-point of prospective rider billing period.

REDACTED VERSION

DUKE ENERGY PROGRESS, LLC
 Docket No. E-2, Sub 1205
 Compliance Cost for the Billing Period December 1, 2019 to November 30, 2020

Williams Exhibit No. 3
 Page 1 of 2
 June 11, 2019

Calculate set-aside and other incremental and research cost per customer class - Billing Period:

Line No.	Customer Class	Total Unadjusted Number of Accounts ⁽¹⁾	Annual Rider Cap per Account Type	Calculated Annual Revenue Cap	Cost Cap Allocation Factor	Allocated Annual Set-aside, Other Incremental, and Research Cost
1	Residential	1,234,405	\$ 27	\$ 33,328,935	51.1%	\$ 11,310,110
2	General	200,915	\$ 150	\$ 30,137,250	46.2%	\$ 10,225,580
3	Industrial	1,794	\$ 1,000	\$ 1,794,000	2.7%	\$ 597,599
4	Totals			<u>\$ 65,260,185</u>	100.0%	<u>\$ 22,133,289</u>

Williams Ex No. 1, Pg 2 Line 14

Calculate general cost per customer class - Billing Period:

Line No.	Customer Class	Number of RECs for General compliance ⁽¹⁾	% of EE REC supplied by Class ⁽²⁾	REC Requirement supplied by EE by class ^{(3)(b)}	Number of General RECs net of EE (c) = (a) - (b)	General Cost Allocation Factor (e) = (c) / (d)	Allocated Annual General Incremental Costs
5	Residential		63.4%			43.9%	\$ 9,268,577
6	General		35.5%			52.5%	\$ 11,084,288
7	Industrial		1.1%			3.6%	\$ 760,066
8	Totals		100.0%			100.0%	<u>\$ 21,112,931</u>

(d)

Williams Ex No. 1, Pg 2 Line 15

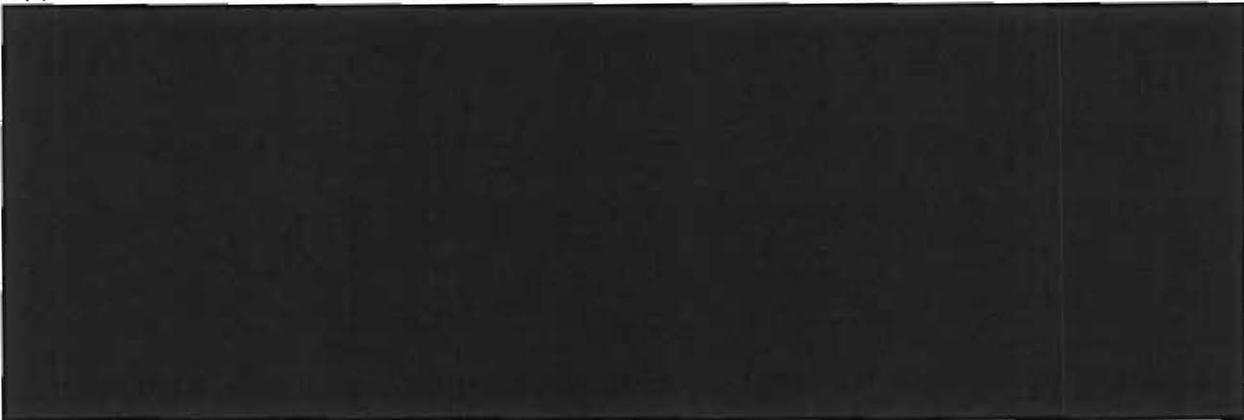
Total cost allocation by customer class - Billing Period:

	Total Incremental REPS cost by class	% Incremental REPS cost by class
9 Residential	\$ 20,578,687	47.58%
10 General	\$ 21,309,868	49.28%
11 Industrial	\$ 1,357,665	3.14%
12 Total	<u>\$ 43,246,220</u>	100.00%

Williams Ex No. 1, Pg 2 Line 16

Notes:

- (1) Projected average monthly number of REPS accounts for the Billing Period
- (2) EE allocated to account type according to actual relative contribution of EE RECs by customer class
- (3) Limited to 25% of total RECs



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DUKE ENERGY PROGRESS, LLC
 Docket No. E-2, Sub 1205
 Compliance Cost for the Billing Period December 1, 2019 to November 30, 2020

Williams Exhibit No. 3
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 June 11, 2019

Calculate Total cost to collect by Customer Class - Billing Period:

North Carolina Retail Annual Rider Cost by Account Type

Line No.	North Carolina Retail Only - Billing Period	Allocated Annual Set- aside and Other Incremental costs	Allocated Annual General Incremental Costs	Total Incremental Costs
1	Residential	\$ 11,310,110	\$ 9,268,577	\$ 20,578,687
2	General	\$ 10,225,580	\$ 11,084,288	\$ 21,309,868
3	Industrial	\$ 597,599	\$ 760,066	\$ 1,357,665
4	Total	\$ 22,133,289	\$ 21,112,931	\$ 43,246,220
		Williams Exhibit No. 3, Pg 1, line 4	Williams Exhibit No. 3, Pg 1, line 8	Williams Exhibit No. 3, Pg 1, line 9

DUKE ENERGY PROGRESS, LLC
 Docket No. E-2, Sub 1205
 DEP REPS Billing Components proposed to be effective December 1, 2019 - November 30, 2020

Williams Exhibit No. 4
 Page 1 of 1
 June 11, 2019

Calculate DEP NC Retail monthly REPS rider components:

Line No.	Customer Class	Total Projected Number of Accounts - DEP NC Retail ⁽¹⁾	Annual REPS EMF Under/(Over)-Collection	Contract Amendments, Penalties, Change-of-control, Etc. ⁽²⁾	Total EMF costs/(credits)	Monthly EMF Rider	Projected Total Billing Period Incremental Costs	Monthly REPS Rider
1	Residential	1,234,405	\$ 991,349	\$ (388,096)	\$ 603,253	\$ 0.04	\$ 20,578,687	\$ 1.39
2	General	200,915	\$ (1,404,541)	\$ (348,680)	\$ (1,753,221)	\$ (0.73)	\$ 21,309,868	\$ 8.84
3	Industrial	1,794	\$ (75,173)	\$ (21,224)	\$ (96,397)	\$ (4.48)	\$ 1,357,665	\$ 63.07
4			<u>\$ (488,365)</u>	<u>\$ (758,000)</u>	<u>\$ (1,246,365)</u>		<u>\$ 43,246,220</u>	

Williams Ex. No. 2, Pg 2

Williams Ex. No. 3, Pg 2

Compare total annual REPS charges per account to per-account cost caps:

Customer Class	Monthly EMF Rider	Monthly REPS Rider - 12 months	Combined Monthly Rider - 12 months	Regulatory Fee Multiplier	Rider including Regulatory Fee	REPS Rider including Regulatory Fee	Combined Monthly Rider including Regulatory Fee	Combined Annual Rider including Regulatory Fee	Annual Per-Account Cost Cap
5 Residential	\$ 0.04	\$ 1.39	\$ 1.43	1.001402	\$ 0.04	\$ 1.39	\$ 1.43	\$ 17.16	\$ 27.00
6 General	\$ (0.73)	\$ 8.84	\$ 8.11	1.001402	\$ (0.73)	\$ 8.85	\$ 8.12	\$ 97.44	\$ 150.00
7 Industrial	\$ (4.48)	\$ 63.07	\$ 58.59	1.001402	\$ (4.49)	\$ 63.16	\$ 58.67	\$ 704.04	\$ 1,000.00

Notes:

- (1) Projected average monthly number of REPS accounts for the Billing Period.
- (2) Forward EMF Period receipts for contract amendments, penalties, change-of-control, etc

Customer Class	Contract receipts credited by customer class	NC retail portion of EMF Period costs - Williams Exhibit No. 1, Pg 1	Allocation to customer class - Williams Exhibit No. 2, Pg 1	Receipts for contract amendments, penalties, change-of-control, etc
Residential			51.20%	\$ (388,096)
General			46.00%	\$ (348,680)
Industrial			2.80%	\$ (21,224)
Total contract payments received - EMF Period	<u>\$ (758,000)</u>	<u>\$ (758,000)</u>	<u>100.00%</u>	<u>\$ (758,000)</u>

Payne Exhibit No. 2 100.00%

DUKE ENERGY PROGRESS, LLC
Docket No. E-2, Sub 1205

Williams Exhibit No. 5
Page No. 1 of 2
June 11, 2019

Worksheet detailing energy efficiency certificate ("EEC") inventory

	EECs	Reference
EECs carried forward at Dec 31, 2012	333,742	2012 Compliance Report - Docket No. E-2, Sub 1032
EECs generated for 2013 per Company's annual update	392,996	2012 Compliance Report - Docket No. E-2, Sub 1043
Less: EECs used for compliance for 2013	274,420	Company workpapers
EECs carried forward at Dec 31, 2013	452,318	2012 Compliance Report - Docket No. E-2, Sub 1043
EECs generated for 2014 per Company's annual update	479,942	Company workpapers
Less: EECs used for compliance for 2014	276,649	2014 Compliance Report - Docket No. E-2, Sub 1071
EECs carried forward at Dec 31, 2014	655,611	2014 Compliance Report - Docket No. E-2, Sub 1071
EECs generated for 2015 per Company's annual update	1,682,467	Company workpapers
EEC inventory balance adjustment to recognize perpetual savings	1,966,773	Company workpapers
EEC inventory balance 2015 adjustment for EM&V results	4,506	Company workpapers
Less: EECs used for compliance for 2015	562,361	2015 Compliance Report - Docket No. E-2, Sub 1109
EECs carried forward at Dec 31, 2015	3,746,996	2015 Compliance Report - Docket No. E-2, Sub 1109
EECs generated for 2016 per Company's annual update	1,854,388	Company workpapers
EEC inventory balance adjustment - conversion to measure life	(123,943)	Company workpapers
EEC inventory balance 2016 adjustment for EM&V results	(83,074)	Company workpapers
Less: EECs used for compliance for 2016	561,829	2016 Compliance Report - Docket No. E-2, Sub 1144
EECs carried forward at Dec 31, 2016	4,832,538	2016 Compliance Report - Docket No. E-2, Sub 1144
EECs generated for 2017 per Company's annual update	2,026,234	Company workpapers
EEC inventory balance 2017 adjustment for EM&V results	(61,225)	Company workpapers
Less: EECs used for compliance for 2017	559,087	2017 Compliance Report - Docket No. E-2, Sub 1175
EECs carried forward at Dec 31, 2017	6,238,460	2017 Compliance Report - Docket No. E-2, Sub 1175
EECs generated for 2018 per Company's annual update	2,182,561	Company workpapers ^(a)
EEC inventory balance 2018 adjustment for EM&V results	2,467	Company workpapers
Less: EECs used for compliance for 2018	920,747	2018 Compliance Report - Docket No. E-2, Sub 1205
EECs carried forward at Dec 31, 2018	<u>7,502,741</u>	2018 Compliance Report - Docket No. E-2, Sub 1205

Summary workpapers - EECs generated

	Program year						Total
	2008-2012	2013	2014	2015	2016	2017	
Update for EECs generated - as of year-end 2018:							
Current view at year-end 2018	1,233,837	923,647	1,219,361	1,533,015	1,817,503	2,028,060	2,182,561
Previously reported current view at year-end 2017	1,233,837	923,647	1,219,361	1,533,015	1,816,862	2,026,234	(a) 8,752,956
Total Adjustments to previously reported results	0	0	0	0	641	1,826	2,185,028
EM&V and participation adjustments (detail below)	0	0	0	0	641	1,826	2,467
EECs generated 2018 per current view							(a) 2,182,561
EECs entered in NC-RETS for vintage 2018							2,185,028

Worksheet detailing energy efficiency certificate ("EEC") inventory

Detail for adjustments applicable to 2008 - 2017 results:

Adjustment type	Program	Program year					Total	
		2008-2012	2013	2014	2015	2016		2017
EM&V and participation adjustments:								
	Residential Energy Assessment	-	-	-	-	651	3,126	3,777
	Residential New Construction	-	-	-	-	(10)	(254)	(264)
	Energy Efficiency for Business	-	-	-	-	-	278	278
	Small Business Energy Saver	-	-	-	-	-	(434)	(434)
	Residential Lighting	-	-	-	-	-	(890)	(890)
	Home Energy Improvement	-	-	-	-	-	(1)	(1)
	Multi-Family Energy Efficiency	-	-	-	-	-	1	1
Total Adjustments to previously reported results		-	-	-	-	641	1,826	2,467

EM&V reports applicable to results reported above and the time period covered in this docket - filed as Exhibit No. 8 to the testimony of DEP witness Robert Evans in DEP's energy efficiency Docket No. E-2, Sub 1206:

Program Name As Filed	Docket	Report Reference	Effective Date
CIG-DR	E-2, Sub 953	2017 EM&V Report for the Duke Energy Progress Commercial, Industrial, and Governmental Demand Response Automation (DI)	5/1/2018
Residential New Construction	E-2, Sub 1021	EM&V Report for the Residential New Construction Program Years: 2015-2016	1/1/2016
EnergyWise	E-2, Sub 927	EM&V Report for the EnergyWise Home Program Winter 2017/2018	8/6/2018
Small Business Energy Saver	E-2, Sub 1022	EM&V Report for the Small Business Energy Saver Program Duke Energy Progress and Duke Energy	7/1/2017
Residential Energy Assessment	E-2, Sub 1094	Duke Energy Progress Residential Energy Assessments Program Evaluation Report - Final	4/1/2016
Non-Residential Smart Saver	E-2, Sub 1086	Duke Energy Carolinas and Progress EnergyWise Business Evaluation Report - Final	1/1/2018
Energy Efficiency in Business	E-2, Sub 938	Smart Saver® Non-Residential Custom Program Years 2016-2017 Evaluation Report	12/1/2018
EnergyWise	E-2, Sub 927	EM&V Report for the EnergyWise Home Demand Response Program Summer PY2018	11/30/2018
Energy Efficiency in Education	E-2, Sub 1060	Energy Efficiency Education in Schools Program Year 2017 – 2018 Evaluation Report	8/1/2018