

FILED
September 5, 2018
INDIANA UTILITY
REGULATORY COMMISSION

PETITIONER'S EXHIBIT 9

STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

PETITION OF THE CITY OF BOONVILLE,)
INDIANA, FOR APPROVAL TO ADJUST ITS)
RATES AND CHARGES AND ISSUE BONDS)

CAUSE NO. 45069

IURC
PETITIONER'S 9
EXHIBIT NO. 3-6-18
DATE REPORTER

SUPPLEMENTAL TESTIMONY AND EXHIBITS

OF

CLINT W. ROOS, P.E.

OFFICIAL
EXHIBITS

ON BEHALF OF PETITIONER,
CITY OF BOONVILLE, INDIANA

September 5, 2018

PETITIONER, CITY OF BOONVILLE, INDIANA
IURC Cause No. 45069
Supplemental Testimony and Exhibits of Clint W. Roos, P.E.

I.
Introduction

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3 **1. Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS FOR THE**
4 **RECORD.**

5 A. My name is Clint W. Roos and my business address is Midwestern Engineers,
6 Inc., 802 West Broadway Street, Loogootee, Indiana 47553.

7 **2. Q. ARE YOU THE SAME CLINT W. ROOS WHO PREVIOUSLY**
8 **PREFILED TESTIMONY AND EXHIBITS ON BEHALF OF THE**
9 **PETITIONER, CITY OF BOONVILLE, INDIANA ("BOONVILLE"), IN**
10 **THIS PROCEEDING?**

11 A. Yes, I am.

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

13 A. The purpose of my supplemental testimony is to correct and/or clarify two (2)
14 issues discussed in my prefiled direct testimony. Specifically, I will address
15 Boonville's anticipated periodic maintenance expense and the financial feasibility
16 of the solar projects.

II.
Periodic Maintenance

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19 **4. Q. MR. ROOS, CAN YOU PLEASE EXPLAIN THE NEED FOR**
20 **CORRECTIONS TO THE ORIGINAL ESTIMATES FOR PERIODIC**
21 **MAINTENANCE?**

1 A. Yes, I can. In preparing rebuttal testimony, it became evident that some of the
2 expenses listed in our prefiled papers for periodic maintenance (other than tank
3 painting) represented amortized replacement costs and not periodic maintenance
4 expenses. I also discovered that a few of the periodic maintenance expense items
5 were already being completed by Boonville's contractual operator, Veolia Water
6 North America-Central, LLC ("Veolia"). There are, however, a number of
7 periodic maintenance items that are not covered by Veolia's management
8 agreement and must be contracted out to third parties. The purpose of this
9 testimony is to present a more accurate depiction of the periodic maintenance
10 expense Boonville can expect to incur that is not included in the contract with
11 Veolia.

12 **5. Q. HOW DID YOU DETERMINE THE PERIODIC MAINTENANCE**
13 **EXPENSE THAT BOONVILLE WOULD INCUR ON A PROSPECTIVE**
14 **BASIS?**

15 A. Initially, I asked Boonville's Clerk-Treasurer to pull all of the invoices from third
16 party vendors for periodic maintenance for calendar years 2013 through 2016 and
17 the six (6) months ended June 30, 2017. I then outlined the individual periodic
18 maintenance tasks that will need to be completed on a prospective basis. Finally,
19 I reviewed the Veolia contract and spoke with Veolia's representative, Mr. Shawn
20 Wright, to determine the periodic maintenance items that are typically completed
21 by Veolia as part of its contract with Boonville. With this information, I prepared
22 a list of the anticipated periodic maintenance items and their estimated amounts.

1 6. Q. HAVE YOU PREPARED A WRITTEN LIST OF THE PERIODIC
2 MAINTENANCE ITEMS FOR WHICH BOONVILLE WILL BE
3 RESPONSIBLE?

4 A. Yes, I have. Attached to my testimony as Petitioner's Exhibit 10 is a list of the
5 periodic maintenance items (including estimated costs) for which Boonville will
6 be responsible.

7 7. Q. HAVE YOU SHARED YOUR LIST OF ANTICIPATED PERIODIC
8 MAINTENANCE EXPENSES (i.e. PETITIONER'S EXHIBIT 10) WITH
9 BOONVILLE'S FINANCIAL CONSULTANT?

10 A. Yes, I have. I provided the list to John Seever of Umbaugh who has updated
11 Adjustment (5) for the corresponding periodic maintenance items on page 14 of
12 his revised Accounting Report (see Petitioner's Exhibit 16).

13 8. Q. DO YOU BELIEVE PETITIONER'S EXHIBIT 10 ACCURATELY
14 DETAILS THE PERIODIC MAINTENANCE ITEMS AND COSTS FOR
15 WHICH BOONVILLE WILL BE RESPONSIBLE?

16 A. Yes, I do. In my professional opinion, these are the maintenance items that
17 Boonville should undertake in order to ensure that its facilities are in a condition
18 to provide safe and efficient service to its customers. I also believe my estimated
19 amounts are reasonable.

III.
Solar Projects

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3 **9. Q. IS BOONVILLE PROPOSING SOLAR PROJECTS IN THIS CASE?**

4 A. Yes, it is.

5 **10. Q. HAS THE UNITED STATES DEPARTMENT OF AGRICULTURE –**
6 **RURAL DEVELOPMENT ("RURAL DEVELOPMENT") APPROVED**
7 **FUNDING FOR THE SOLAR PROJECTS?**

8 A. Rural Development has performed a preliminary review of the Preliminary
9 Engineering Report ("PER") with the solar improvements listed and indicated that
10 it would be willing to fund the project so long as the Life Cycle Cost Analysis
11 ("LCCA") shows it is a feasible alternative. In accordance with Rural
12 Development guidance, the LCCA planning period to be used is recommended to
13 be 20 years but may be any period determined reasonable by the engineer. A
14 separate LCCA was performed using planning periods of 20, 25, and 30 years
15 (see Petitioner's Exhibit 11). Based on the LCCAs, the solar field projects are a
16 feasible alternative in lieu of continuing to purchase the entire electric energy
17 from Vectren.

18 **11. Q. ARE THE SOLAR PROJECTS ELIGIBLE FOR GRANT FUNDING**
19 **FROM RURAL DEVELOPMENT?**

20 A. Yes, they are. I have spoken to Rural Development about potential grant funds
21 for the proposed solar projects. Rural Development has indicated that Boonville
22 would be eligible for grant funds to the extent its projects are approved for

1 financing by the Indiana Utility Regulatory Commission and Boonville's resulting
2 rate (without the grant) would exceed approximately \$35.00.

3 **12. Q. PRIOR TO DECIDING TO PROCEED WITH THE SOLAR PROJECT,**
4 **DID BOONVILLE CONSIDER THE FINANCIAL FEASIBILITY OF THE**
5 **PROJECT?**

6 A. Yes, it did. Boonville is in the process of completing a solar project for its
7 municipal sewer works and is well aware of the financial feasibility of the solar
8 project for the water utility proposed in this case.

9 **13. Q. HAVE YOU NOW PREPARED WRITTEN ANALYSES THAT**
10 **SPECIFICALLY RELATE TO THE SOLAR PROJECTS FOR THE**
11 **WATER UTILITY?**

12 A. Yes, I have. For the Commission's convenience, I have attached a copy of my
13 analyses as Petitioner's Exhibit 11.

14 **14. Q. CAN YOU EXPLAIN PETITIONER'S EXHIBIT 11?**

15 A. Yes, I can. Petitioner's Exhibit 11 is the financial analyses (i.e. the LCCAs) that I
16 prepared for the two (2) different solar projects at the water treatment plant and
17 wellfield sites. I have prepared the analyses assuming a 20, 25, and 30 year useful
18 life for the solar panels.

19 **15. Q. CAN YOU EXPLAIN WHY YOU HAVE DONE ANALYSES FOR 20, 25,**
20 **AND 30 YEARS?**

1 A. Yes. I initially looked at 20 and 25 year analyses (i.e. LCCA) to mirror the
2 anticipated warranty periods for the solar panels. Based on recent research,
3 however, the useful life of the solar panels can often extend to 30 years and
4 beyond. (See, "Photovoltaic Degradation Rates – An Analytical Review," D.
5 Jordan and S. Kurtz, 2012 Journal Article, Petitioner's Exhibit 12). In light of the
6 anticipated warranties and useful life of the facilities, I prepared different analyses
7 to reflect the likely outcomes and circumstances in this case.

8 **16. Q. IS IT POSSIBLE THAT THE SOLAR PANELS WILL BE IN SERVICE**
9 **BEYOND 30 YEARS?**

10 A. Yes, it is. It is also possible that the solar panels will be in service for the full
11 term of the Rural Development loan. If the facilities experience a useful life in
12 excess of the 30 years, the financial feasibility of the projects improves.

13 **17. Q. CAN YOU GENERALLY EXPLAIN THE ANALYSES SET FORTH IN**
14 **PETITIONER'S EXHIBIT 11?**

15 A. Yes, I can. The analyses includes the proposed size of system, proposed amount
16 of electricity produced, and the proposed cost of the system that was included in
17 the PER. The annual benefits were derived from taking an annual average of
18 electric costs at each facility. The useful life is initially assumed to be 20 and 25
19 years. Photovoltaic ("PV") modules typically come with 20 or 25 year warranties
20 that guarantee the PV modules will produce 80% of rated power after 20 or 25
21 years of use. The annual cash outflows were derived using the proposed cost of
22 system (construction costs plus a 10% construction contingency) over a 40-year

1 RD loan using an interest rate of 3.25%. Annual maintenance expenses are
2 estimated to be 2% of the net installation cost (industry average is 1-1.5%) and
3 include, but are not limited to, cleaning of the PV modules and
4 mowing/maintenance of the site. Net financial benefits include performing a
5 present value analysis of all benefits and costs. For present value of benefits, a
6 3.0% rate of inflation was assumed. Based on the above criteria the net benefits
7 outweigh the net costs for both the proposed wellfield and water treatment plant
8 solar fields. For the Commission's convenience, I have also included cost-benefit
9 analyses assuming a 30 year life for the solar panels. The net benefits outweigh
10 the net costs for both the proposed wellfield and water treatment plant solar fields
11 in these scenarios as well.

12 **18. Q. DO YOU BELIEVE THE SOLAR PROJECTS MAKE ECONOMIC SENSE**
13 **FOR BOONVILLE?**

14 A. Yes, I do. As Petitioner's Exhibit 11 reflects, the solar projects make economic
15 sense with the PV modules having a 20, 25, or 30 year useful life. In reality, the
16 solar panels could last much longer than these time periods (and possibly for the
17 life of the Rural Development grant/loan), and prove to be even more
18 economically viable than what is set forth in the analyses included as Petitioner's
19 Exhibit 11.

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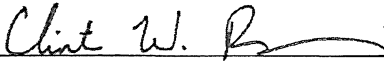
IV.
Conclusion

3 **19. Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

4 **A. Yes, it does.**

VERIFICATION

I affirm under the penalties of perjury that the foregoing testimony is true to the best of my knowledge, information, and belief as of the date here filed.



Clint W. Roos, P.E.
Midwestern Engineers, Inc.

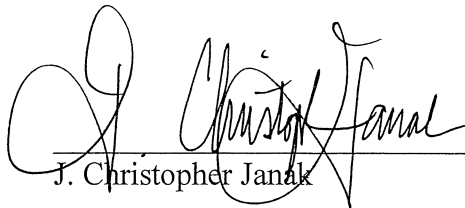
CERTIFICATE OF SERVICE

I certify that a copy of the foregoing *Supplemental Testimony and Exhibits of Clint W. Roos, P.E.* was served upon the following by electronic mail this 5th day of September, 2018:

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