

February 28, 2023

VIA ELECTRONIC FILING

Public Utility Commission of Oregon
Attn: Filing Center
201 High Street SE, Suite 100
Post Office Box 1088
Salem, Oregon 97308-1088

Re: UG 462 – Renewable Natural Gas Adjustment Mechanism—Dakota City

Northwest Natural Gas Company, dba NW Natural (“NW Natural” or the “Company”), makes herewith a filing under Schedule 198, Renewable Natural Gas Adjustment Mechanism of its tariff. Per Section 2 of Schedule 198, NW Natural is seeking to revise the schedule to reflect a new renewable natural gas (“RNG”) qualified investment—the Dakota City RNG project. In support of this filing, the Company submits the filed testimony of Anna Chittum (NW Natural/100-108) and Lora Bourdo/Kyle Walker (NW Natural/200-203).

Please note that this filing contains confidential information that represents business-sensitive, non-public information. NW Natural has filed a Motion seeking entry of a General Protective Order in this proceeding. NW Natural also intends to file a Motion for entry of a Modified Protective Order in the coming days for Highly Confidential Information. The Company is actively working with entities that have participated in its prior RNG dockets to develop a mutually acceptable Modified Protective Order.

Pursuant to Section 3 of Schedule 198, NW Natural proposes the following preliminary draft procedural schedule. NW Natural is eager to work with parties that intervene in this docket on a mutually acceptable procedural schedule and, in that sense, this draft procedural schedule should be viewed as a starting point for these discussions.

Event	Date
Application	2/28/2023
Staff/Intervenor Testimony	5/01/2023
Settlement Conference	5/12/2023
NWN Reply Testimony	6/7/2023
Settlement Conference	6/15/2023
Cross-exam Statements, Pre-hearing Brief	6/20/2023
Hearing	Early July
NW Natural Opening Brief	8/1/2023

Staff/Intervenors Opening Brief	8/15/2023
NW Natural Reply Brief	8/30/2023
Oral Argument	Mid Sept. 2023
Commission Order	Mid Oct. 2023

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Respectfully submitted,

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Enclosures

BEFORE THE
PUBLIC UTILITY COMMISSION OF OREGON

UG 462

NW Natural
Direct Testimony of Anna K. Chittum

DAKOTA CITY RNG PROJECT
EXHIBIT 100

REDACTED

February 28, 2023

EXHIBIT 100 – DIRECT TESTIMONY– DAKOTA CITY RNG PROJECT

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1 **I. INTRODUCTION AND SUMMARY**

2 **Q. Please state your name and position at Northwest Natural Gas Company**
3 **(“NW Natural” or “the Company”).**

4 A. My name is Anna Chittum. I am the Director of Renewable Resources at NW
5 Natural. I have worked for the Company since 2017. My responsibilities include
6 developing renewable natural gas (“RNG”) projects for the Company, purchasing
7 RNG from other market participants, driving renewables strategy and goals for the
8 Company, and managing the Renewables team here at NW Natural.

9 **Q. Please describe your education and employment background.**

10 A. I received my Bachelor of Arts degree in Economics from Gonzaga University and
11 an M.S. degree in Urban Planning from Columbia University. I was also a Fulbright
12 Fellow in Denmark during the 2013-2014 academic year. From June 2006 to
13 March 2008, I worked as Manager of Client Services at the New York City Mayor’s
14 Office of Industrial and Manufacturing Businesses. From March 2008 to June
15 2014, I worked as a Senior Researcher and later a Visiting Fellow at The American
16 Council for an Energy Efficient Economy. Since 2017, I have worked at NW
17 Natural, where I am now the Director of Renewable Resources.

18 **Q. What is the purpose of your testimony?**

19 A. The primary purpose of my testimony is to provide details on the Dakota City RNG
20 project, the costs of which the Company is seeking recovery in this proceeding.

21 **Q. Please summarize your testimony.**

22 A. My testimony focuses on the following areas:

- 1 • Background: Section II describes what RNG is, why NW Natural is
2 interested in acquiring it, and the legal and regulatory framework that
3 facilitates such acquisitions by Oregon's natural gas utilities.
- 4 • Why NW Natural Decided to Pursue the Dakota City RNG Project: Section
5 III discusses how NW Natural evaluates potential RNG acquisitions and why
6 it selected the Dakota City RNG project.
- 7 • Overview of Dakota City RNG Project and its Participants: Section IV
8 provides an overview of 1) the Dakota City RNG project, and 2) the non-
9 affiliated and affiliated participating entities that are also involved in the
10 project. This includes a discussion of why these non-affiliated and affiliated
11 entities are participating in the project and their rights and responsibilities.
- 12 • Financial Structure of the Dakota City RNG Project: Section V describes
13 how the non-affiliated and affiliated participating entities interact, with an
14 emphasis on showing how the project is funded.
- 15 • NW Natural's Investment in the Dakota City RNG Project: Section VI
16 describes NW Natural's investment in the Dakota City RNG project and the
17 due diligence that it conducted.
- 18 • Addressing the Risks of the Dakota City RNG Project: Section VII
19 describes the risks of the Dakota City RNG project, how the Company
20 evaluated each risk, what steps the Company took to mitigate each risk,
21 and how risks are shared among project participants.

1 resources, such as Dakota City, for customers today will provide long-term
2 emissions reduction benefits.

3 **Q. Please briefly explain how Senate Bill 98 authorizes cost recovery of RNG**
4 **acquisitions.**

5 A. In 2019, the Oregon legislature passed Senate Bill 98 (the “RNG Statute”) that
6 authorizes cost recovery of RNG acquisitions.² The legislature found that “[n]atural
7 gas utilities can reduce emissions from the direct use of natural gas by procuring
8 renewable natural gas and investing in renewable natural gas infrastructure,” and
9 “[r]egulatory guidelines for the procurement of renewable natural gas and
10 investments in renewable natural gas infrastructure should enable the
11 procurements and investments while also protecting Oregon consumers.”³

12 To enable the procurement of RNG, the RNG Statute authorizes Oregon
13 natural gas utilities to make investments in RNG projects and purchase RNG from
14 third parties. Natural gas utilities may make these investments or purchases even
15 if the cost is higher than other options to meet customer demand.⁴ Per ORS
16 757.396(5), the difference between the total (or “all-in”) levelized annual cost of the
17 utility’s RNG portfolio and the all-in levelized annual cost of the same quantity of
18 conventional natural gas (i.e., the incremental cost of RNG) is capped at 5 percent
19 of a natural gas utility’s annual revenue requirement except as noted below. The
20 “all-in” cost reflects the total cost for a unit of natural gas, not just the gas

² ORS 757.390-398.

³ ORS 757.390(2).

⁴ ORS 757.396.

1 commodity cost. If a natural gas utility exceeds the cap, it is no longer authorized
2 to make further investments in RNG unless the Commission approves.⁵

3 Finally, the law sets RNG acquisition targets for large natural gas utilities
4 (i.e., NW Natural). The targets start at 5 percent of Oregon sales load from 2020
5 to 2024 and gradually escalates to 30 percent from 2045 to 2050.⁶

6 **Q. Please briefly explain how the Climate Protection Program (the “CPP Rule”)**
7 **adopted by the Oregon Department of Environmental Quality further**
8 **increases the need for NW Natural to decarbonize.**

9 A. The Oregon Department of Environmental Quality (“ODEQ”) adopted the CPP
10 Rule, which became effective on January 1, 2022. Under the CPP Rule, the ODEQ
11 requires that covered entities, such as NW Natural, reduce the greenhouse gas
12 (“GHG”) emissions for which the CPP Rule deems them to be responsible. For
13 NW Natural, these “covered emissions” are the emissions that result from its sales
14 customers’ and transport customers’ use of natural gas.⁷ The CPP Rule will
15 reduce these covered emissions over time by: 1) requiring NW Natural to obtain a
16 compliance instrument for each metric ton of those emissions, and 2) reducing the
17 amount of free compliance instruments issued to NW Natural annually.⁸

⁵ ORS 757.396(5).

⁶ ORS 757.396.

⁷ See OAR 340-271-0020(13); 340-271-0110(4). Note that there is an exception in OAR 340-271-0110(4) for: “Emissions avoided where the use of natural gas results in greenhouse gas emissions captured and stored, if sufficiently documented by information provided to DEQ.”

⁸ See OAR 340-271-9000, Table 4, which specifies this annual reduction in compliance instruments.

1 **Q. Will acquiring RNG help NW Natural meet RNG acquisition targets in the RNG**
2 **Statute and comply with the CPP Rule?**

3 A. Yes. RNG projects, such as Dakota City, will help NW Natural meet the RNG
4 Statute's acquisition targets and comply with the CPP Rule. The CPP Rule was
5 created in direct response to Executive Order 20-04, which established aggressive
6 GHG reduction targets and that order recognizes that "transitioning the traditional
7 natural gas supply to renewable natural gas can significantly reduce GHG
8 emissions."⁹ The CPP Rule, itself, also recognizes that RNG can be used in lieu
9 of natural gas to lower emissions.¹⁰ As such, the Dakota City RNG project will help
10 NW Natural meet the RNG Statute's acquisition targets and comply with the CPP
11 Rule.

12 **Q. Are there any other laws that promote NW Natural's acquisition of RNG**
13 **projects like Dakota City?**

14 A. Yes. The recently passed Inflation Reduction Act ("IRA") explicitly recognizes the
15 value of renewable natural gas production equipment and targeted near-term
16 production opportunities, like Dakota City, by designing a tax credit for projects that
17 begin construction before December 31, 2024. The Company has evaluated the
18 likely tax benefits and concluded that a 30 percent Investment Tax Credit is the

⁹ "Directing State Agencies to Take Actions to Reduce and Regulate Greenhouse Gas Emissions, Executive Order No. 20-04, at 2, available at: https://www.oregon.gov/gov/eo/eo_20-04.pdf

¹⁰ Rulemaking, Action Item A, Greenhouse Gas Emissions Program 2021 Rulemaking Climate Protection Program, at 313-14 (Dec. 16, 2021) available at: https://www.oregon.gov/deq/EQCdocs/121621_ItemA.pdf

1 appropriate level of credit to currently assume, as further described in Section VI.
2 The Company is eager to take advantage of this direct benefit to customers to the
3 greatest extent possible. For projects that begin construction in 2025 and beyond,
4 the IRA has developed a production-focused incentive that will replace the
5 investment-focused incentive, and the Company intends to design its future RNG
6 projects to leverage that incentive for customer benefit wherever possible.

7 **Q. How does NW Natural demonstrate that the RNG it is acquiring is being used**
8 **to meet the targets under the RNG Statute and comply with the CPP Rule?**

9 A. Under the RNG Statute and the CPP Rule, NW Natural must retain the renewable
10 thermal credits (“RTCs”) associated with the RNG. RTCs represent the
11 environmental attributes of the RNG and are distinct from the energy content of
12 that gas.¹¹ To credit the retained RTCs for RNG Statute and CPP Rule
13 compliance, NW Natural must retire the RTCs in a tracking system operated by an
14 independent third party (currently the Midwest Renewable Energy Tracking
15 System (“M-RETS”)¹² per OAR 860-0150-0050(8)). By retaining and
16 subsequently retiring the RTCs associated with the RNG, NW Natural
17 demonstrates that its customers are receiving the environmental attributes of the
18 RNG without necessarily delivering the energy content of that gas to its customers.

19 This form of accounting, known as book-and-claim, was adopted as part of
20 the Commission’s rulemaking implementing the RNG Statute, with the

¹¹ OAR 860-0150-0010(5); OAR 860-0150-0010(16).

¹² See M-RETS homepage at <https://www.mrets.org/>

1 Commission stating that “[O]DEQ noted that the flexibility of the approach helps
2 the development of projects that would otherwise be uneconomic if physical
3 delivery was required.”¹³ Given ODEQ’s previous support for book-and-claim
4 during the Commission’s rulemaking implementing the RNG Statute, it is not
5 surprising that it was adopted as part of the CPP Rule. During the ODEQ’s
6 rulemaking process that adopted the CPP Rule, NW Natural requested clarification
7 that book-and-claim accounting would be permitted. The Oregon Environmental
8 Quality Council (“OEQC”) Staff Report accurately articulated NW Natural’s
9 concern, stating that the Company wants to “allow for book-and-claim accounting
10 of RNG or RNG procured on behalf of Oregon customers, regardless of delivery
11 to specific end-user,” and the ODEQ provided the requested clarification: “The
12 biomethane can be sourced from projects anywhere in North America, as long as
13 the biomethane is injected into a common carrier pipeline network. The natural
14 gas utility can claim the same volume of biomethane via displacement, also known
15 as book and claim, without tracking the gas to a specific end-user.”¹⁴

16 **Q. Can you describe the Company’s strategy for complying with the RNG**
17 **Statute and the CPP Rule?**

18 A. The Company seeks to meet the RNG Statute’s acquisition targets and comply
19 with the CPP Rule. To do this, NW Natural seeks to first procure enough RNG to

¹³ *In the Matter of Rulemaking Regarding the 2019 Senate Bill 98 Renewable Natural Gas Programs*, Docket AR 632, Order No. 20-227 at 5 (July 16, 2020).

¹⁴ Rulemaking, Action Item A, Greenhouse Gas Emissions Program 2021 Rulemaking Climate Protection Program, at 313-14 (Dec. 16, 2021) available at: https://www.oregon.gov/deq/EQCdocs/121621_ItemA.pdf

1 meet the RNG Statute’s acquisition targets in the relevant timeframe, which also
2 drives down NW Natural’s covered emissions under the CPP Rule. After acquiring
3 this amount of RNG, NW Natural will take incremental actions as necessary to
4 comply with the CPP Rule to further reduce its covered emissions under the
5 program. Such actions may include enhanced energy efficiency measures or the
6 purchase of Climate Commitment Investment credits, which provide funding to
7 third-party entities to implement projects that seek to reduce greenhouse gas
8 emissions.¹⁵

9 **Q. How does the Dakota City RNG project fit into NW Natural’s compliance with**
10 **the RNG Statute and the CPP Rule?**

11 A. The Dakota City RNG project helps NW Natural meet the RNG Statute’s
12 acquisition target of 5 percent of sales from 2020 to 2024 and will continue to help
13 NW Natural meet higher RNG acquisition targets under the RNG Statute in
14 subsequent years. Also, by reducing NW Natural’s covered emissions under the
15 CPP Rule, the Dakota City RNG project helps the Company comply with that
16 program.

¹⁵ Further information regarding NW Natural’s plans to comply with the RNG Statute and the CPP Rule can be found in NW Natural’s most recent Integrated Resource Plan in docket LC 79.

1 **Q. Will the Company continue to need the Dakota City RNG project to comply**
2 **with the RNG Statute and the CPP Rule even in scenario modeling where**
3 **existing load declines due to increased electrification of space-heating?**

4 A. Yes, the Dakota City RNG project would still be needed even if that were to occur.
5 The Dakota City RNG project is expected to produce gas equal to 0.14 percent of
6 the Company's current sales load. Analysis performed by the Company in its IRP
7 in docket LC 79, shows that meeting the overall RNG sales target of 5 percent
8 through 2024 and 10 percent in 2025 "is not dependent upon whether a gas
9 decarbonization or electrification-based focused outcome unfolds."¹⁶ In other
10 words, "even under aggressive electrification scenarios," acquiring the RNG
11 necessary to meet these targets "would not be greater than the amount that would
12 likely be needed for compliance with the CPP and SB 98 [RNG Statute] in 2050."¹⁷
13 Since the Dakota City RNG project will produce only a fraction of the gas to meet
14 the RNG Statute's acquisition target and comply with the CPP Rule, the Company
15 would still need to utilize the Dakota City RNG project even if its load were to
16 decline in an electrification-based modeling scenario.

¹⁶ NW Natural's Reply Comments, Integrated Resource Plan, Docket No. LC 79 at 7 (Feb. 3, 2023)
(available at: <https://edocs.puc.state.or.us/efdocs/HAC/lc79hac155918.pdf>).

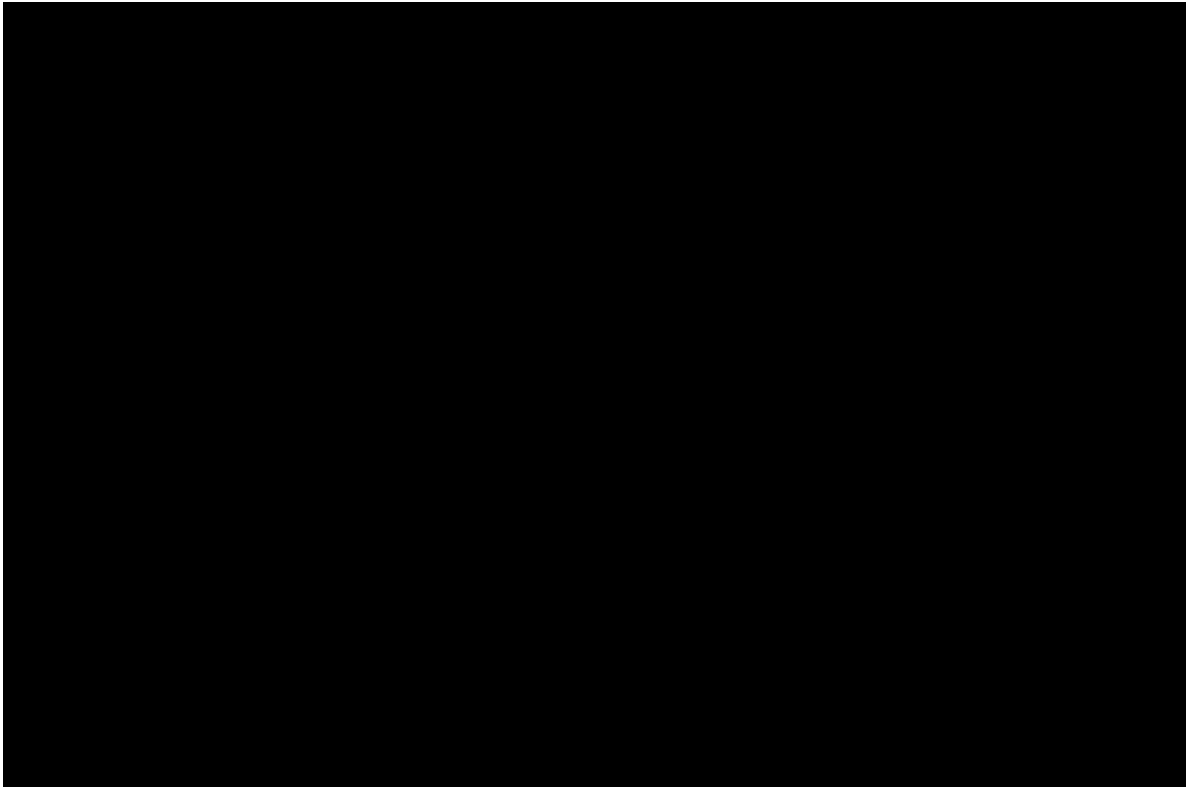
¹⁷ *Id.*

1 targets). At the time of investment decision-making, which occurred after we had
2 completed our 2021 RFP for RNG resources described below, only two other RNG
3 resources had a lower first-year risk-adjusted incremental cost of RNG.¹⁸ The first,
4 **[BEGIN CONFIDENTIAL]** [REDACTED]
5 [REDACTED] **[END CONFIDENTIAL]** on behalf of
6 Oregon customers in the near future. The second, **[BEGIN CONFIDENTIAL]** [REDACTED]
7 [REDACTED] **[END CONFIDENTIAL]** is a project that we were conducting an initial
8 assessment of at the time, but has since changed owners and is not considered
9 an immediately available resource, though it could be an actionable project in the
10 future. Please see Confidential NW Natural/101, Chittum for a graph showing all
11 of these RNG acquisition opportunities at the time of the investment decision,
12 reproduced here:

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¹⁸ NW Natural's risk-adjusted incremental cost methodology is described in detail below.

1 **[BEGIN CONFIDENTIAL]:**



2 **[END CONFIDENTIAL]**

3 **Q. In making the decision to pursue Dakota City RNG project in November 2021,**
4 **please describe how the Company determined the amount of RNG that the**
5 **Dakota City project is expected to produce.**

6 A. The Company first determined the average amount of biogas production that could
7 be converted into RNG over a relevant historical period. After discussions with
8 Tyson executives and extensive data collection and analysis of different factors
9 impacting gas production, the Company determined that the prior four years (2018-
10 2021) would be a reasonable proxy for future production, given the changes in
11 facility operations Tyson had undertaken in that time (see Highly Confidential NW
12 Natural/102, Chittum).

1 Next, the Company considered Tyson’s expectations about future activities
2 at Dakota City. While **[BEGIN HIGHLY CONFIDENTIAL]** [REDACTED]
3 [REDACTED]
4 [REDACTED]
5 [REDACTED]
6 [REDACTED]
7 [REDACTED]
8 [REDACTED]
9 [REDACTED]
10 [REDACTED] **[END HIGHLY**
11 **CONFIDENTIAL]**.

12 The quality of the biogas also determines how much RNG can be produced.
13 **[BEGIN HIGHLY CONFIDENTIAL]** [REDACTED]
14 [REDACTED]
15 [REDACTED]
16 [REDACTED]
17 [REDACTED] **[END HIGHLY**
18 **CONFIDENTIAL]**.

19 Finally, NW Natural and BioCarbN assessed the technology (provided by
20 Greenlane Biogas) to convert the biogas into RNG. **[BEGIN HIGHLY**
21 **CONFIDENTIAL]** [REDACTED]
22 [REDACTED]

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[REDACTED]

[END HIGHLY CONFIDENTIAL].

Taken together, this caused the Company to assume **[BEGIN CONFIDENTIAL]** [REDACTED] **[END CONFIDENTIAL]** as the average RNG production of the facility at the time of the financial investment decision in November 2021. That number was assumed to be the average production amount over time, with a recognition that there would be a ramp-up period for the project during the first year. Below is a simplified way to calculate total RNG mmbtu:





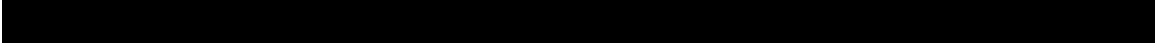


- $(\text{SCFM}) \times (60 \text{ [minutes in an hr]}) \times (24 \text{ [hrs in a day]}) \times (365 \text{ [days in a year]}) =$
total SCF of biogas produced a year
- Total SCF of biogas produced a year * average methane content = annual standard cubic feet of methane production
- Annual standard cubic feet of methane production * 1,012 [btu per standard cubic foot of methane] = annual btu of methane
- Annual btu of methane / 1,000,000 = annual mmbtu of methane production
- Annual mmbtu of methane production / 24 hours in a day = mmbtu/hr of methane production

Q. Has the Company initially evaluated the carbon intensity of the Dakota City RNG project?

A. Yes. The initial evaluation of the carbon intensity of the Dakota City project found a score of 21 grams CO₂e/MJ. While the current ODEQ rules that guide the reporting of greenhouse gases in Oregon utilize a combustion basis instead of a lifecycle basis, we note that on a lifecycle basis the RNG from Dakota City yields

1 an emissions reduction of about 62 percent on a per-mmbtu basis when compared
2 to conventional natural gas.

3 **Q. In deciding to pursue the Dakota City RNG project, did the Company**
4 **consider RNG purchases from third parties (known as “offtake**
5 **agreements”), as well as investment opportunities?**

6 A. Yes. NW Natural evaluated both investment opportunities and offtake agreements
7 from third parties. In 2021, NW Natural conducted a request-for-proposals (“RFP”)
8 for offtake agreements as well as development opportunities and it received a total
9 of 27 offers from 18 respondents. These offers were evaluated on the same basis
10 as the Dakota City RNG project, as well as other potential RNG investment
11 opportunities. Overall NW Natural evaluated over **[BEGIN CONFIDENTIAL]** 
12 **[END CONFIDENTIAL]** RNG resources (both investments and offtake
13 agreements) before deciding to pursue Dakota City. As noted above, Dakota City
14 was among the very least cost resources on a risk-adjusted first-year incremental
15 cost basis. **[BEGIN CONFIDENTIAL]** 
16 
17 
18 
19 
20  **[END CONFIDENTIAL].**

1 **Q. How did the Company evaluate RNG offtake agreements and investment**
2 **opportunities, like the Dakota City RNG project?**

3 A. The Company applied its risk-adjusted incremental cost methodology (the
4 Renewable Gas Supply Resource Evaluation Methodology) to evaluate both RNG
5 offtake agreements and investment opportunities. This methodology assesses the
6 customer costs and benefits of both NW Natural-owned RNG projects and third-
7 party RNG contracts on an apples-to-apples basis.

8 We are able to select resources only once they are “actionable,” which
9 means we have finalized negotiations and have draft agreements in place with the
10 counterparties, so that the resource is truly an option for our customers. We also
11 look at when the resource will deliver, and when the final agreements would be
12 able to be signed. For instance, we are in communication with some developers
13 who have resources that would not deliver until 2025 or 2026. We would not select
14 and pursue those resources – we would not treat them as “actionable” – until we
15 saw that the developers had funding, initial gas agreements in place, etc.

16 **Q. Please briefly describe NW Natural’s evolution in how it evaluates RNG**
17 **projects.**

18 A. Prior to the development and approval of NW Natural’s Renewable Gas Supply
19 Resource Evaluation Methodology, the Company evaluated projects on a dollar
20 per-mmbtu basis (both as bundled resources and unbundled resources). After the
21 risk-adjusted Renewable Gas Supply Resource Evaluation Methodology was
22 developed, we applied it to the Company’s first RNG qualified investment,
23 Lexington. We have since applied it to all other potential RNG acquisitions (offtake

1 procurements and qualified investments), including Dakota City, since that time.
2 We are looking forward to continuing to evaluate projects on an incremental cost
3 basis, which better enables the apples-to-apples comparisons that RNG
4 opportunities require.

5 **Q. Please further describe the Renewable Gas Supply Resource Evaluation**
6 **Methodology.**

7 A. The Renewable Gas Supply Resource Evaluation Methodology is used to
8 determine the incremental cost of RNG from a particular project as opposed to
9 using conventional natural gas. The incremental cost of RNG is the difference
10 between the “all-in” (or total) cost of RNG and the “all-in” cost of conventional
11 natural gas. Calculating the incremental cost of RNG is required under OAR 860-
12 0150-200 and the Commission approved the Renewable Gas Supply Resource
13 Evaluation Methodology for that purpose.¹⁹ The Company has since incorporated
14 into the methodology a risk-adjustment metric for evaluating resources established
15 in its 2018 IRP. Incorporating this metric results in a risk-adjusted incremental
16 cost, which better reflects the risks associated with potential development projects.
17 The Company has continued to update the incremental cost of the Dakota City
18 RNG project since the decision to invest. Based on the cost of service, it currently
19 finds that the first-year levelized incremental cost of RNG from the project will be

¹⁹ *In the Matter of Public Utility Commission of Oregon, Investigation into the Use of Northwest Natural's Renewable Natural Gas Evaluation Methodology*, Docket No. UM 2030, Order No. 20-403 (Nov. 5, 2020).

1 [BEGIN CONFIDENTIAL] [REDACTED]

2 [END CONFIDENTIAL] (see Confidential NW Natural/104, Chittum).

3 **Q. In applying the Renewable Gas Supply Resource Evaluation Methodology,**
4 **please describe the inputs the Company used to determine the all-in cost of**
5 **conventional natural gas and the Dakota City RNG project.**

6 A. The “all-in” cost of conventional gas represents the total cost for a unit of natural
7 gas (i.e., what customers pay for a unit of gas delivered), not just the commodity
8 costs of gas. Mathematically this is shown as:

9 All-in Cost = Commodity cost of gas + Green-House-Gas Compliance costs
10 + Supply Infrastructure Costs + Distribution System Costs + Capacity Costs

11 To determine the “all-in” cost of the Dakota City RNG project, the cost of service
12 is inputted by year. Key components include:

- 13 i. Regulated return on rate base according to the project investment cost;
- 14 ii. Other costs associated with the investment, including interest payments,
15 depreciation, taxes, etc.;
- 16 iii. NW Natural’s cost to purchase the project’s RNG from Dakota City
17 Renewable Energy, LLC;
- 18 iv. Proceeds from the sale of the physical gas (revenue offset); and
- 19 v. Proceeds from Dakota Renewable Energy LLC’s cash flow distributions
20 (revenue offset).

21 Since NW Natural sells the underlying natural gas to the local gas marketer, in
22 order to determine the true “all-in” cost of the RNG, the analysis also calculates
23 the cost of conventional gas that customers will be paying in association with the

1 use and retirement of the RTCs from the Dakota City RNG project. This, in total,
2 is the “all-in” cost of the Dakota City RNG project.

3 **Q. After calculating the “all-in” cost of both conventional gas and the Dakota**
4 **City RNG project, what happens next?**

5 A. The Company calculates the difference between the “all-in” cost of the Dakota City
6 RNG project and conventional natural gas as explained above. The difference of
7 this calculation yields the incremental cost of the Dakota City RNG project, viewed
8 as annual costs over the life of the project. These costs are then discounted to the
9 present to determine what the incremental cost of the project is on a levelized \$/Dth
10 basis.

11 **Q. How is risk accounted for in evaluating incremental cost of an RNG**
12 **resource?**

13 A. The incremental cost of RNG is risk-adjusted using inputs that reflect the potential
14 upside and downside scenarios for things that can affect the “all-in” cost of RNG
15 or the conventional gas it is replacing. Risks to the cost of RNG include:

16 **[BEGIN CONFIDENTIAL]**

17 [REDACTED]

18 [REDACTED]

19 [REDACTED]

20 [REDACTED]

21 [REDACTED]

22 [REDACTED]

1 [REDACTED]

2 [REDACTED]

3 [REDACTED]

4 [REDACTED]

5 [REDACTED]

6 [REDACTED] [END

7 CONFIDENTIAL].

8 Risks to the costs avoided from the conventional gas the RNG is replacing include:

9 [BEGIN CONFIDENTIAL]

10 [REDACTED]

11 [REDACTED]

12 [REDACTED] [END CONFIDENTIAL].

13 These sources of risk are evaluated using a Monte Carlo simulation to

14 estimate the potential that the incremental cost of the RNG project could be higher

15 or lower than expected, where 500 different estimates for incremental cost are

16 estimated through the simulation process. Using the Company's risk-adjusted

17 metric for evaluating resources established in NW Natural's 2018 IRP, the risk-

18 adjusted incremental cost of the project is determined by multiplying the base case

19 incremental cost estimate times a weighting of 75 percent plus multiplying the 95

20 percent percentile of the incremental cost estimates from the Monte Carlo

21 simulations (i.e., the 25th most expensive of the 500 estimates) times a weighting

22 of 25 percent. It is important to note that the risk-adjusted incremental cost is

23 higher than the expected cost as the risk adjustment is always a "penalty" that

1 results in a higher cost than the expected (or base case) cost estimate. The risk-
2 adjusted incremental cost figure is used for comparing projects on an apples-to-
3 apples basis while accounting for the specific risks of any given project.

4 **Q. Since NW Natural made the investment decision to pursue the Dakota City**
5 **RNG project, has there been any changes to forecasted RNG production?**

6 A. Yes. After the investment decision was made, we asked Tyson to continue to
7 supply monthly data as available for the Dakota City facility. Since that time, NW
8 Natural has re-evaluated the amount of RNG the Dakota City project will produce
9 based on more recent production data. The more recent data show a **[BEGIN**

10 **CONFIDENTIAL]** [REDACTED]
11 [REDACTED]
12 [REDACTED]
13 [REDACTED]
14 [REDACTED]
15 [REDACTED]
16 [REDACTED] **[END CONFIDENTIAL]** during a ramp-up period, rising to about
17 **[BEGIN CONFIDENTIAL]** [REDACTED] **[END CONFIDENTIAL]** in Year 4.

18 Nonetheless, our discussions with Tyson indicate that it remains strongly
19 committed to its Dakota City facility and Tyson continues to make investments in
20 it. While our recent estimates are conservative in that we do not assume the facility
21 will reach pre-COVID levels of raw gas production, we do assume that the COVID-
22 related personnel challenges will abate at Tyson. **[BEGIN CONFIDENTIAL]**

1 [REDACTED]
2 [REDACTED]
3 [REDACTED]
4 [REDACTED]
5 [REDACTED]
6 [REDACTED]
7 [REDACTED]
8 [REDACTED]
9 [REDACTED] [END CONFIDENTIAL].

10 The Company has also begun to integrate lessons learned at the Lexington
11 RNG project, [BEGIN CONFIDENTIAL] [REDACTED]
12 [REDACTED] [END CONFIDENTIAL]. The Company has worked directly with the
13 wastewater processing team to better understand how the activities of the
14 upstream meat processing facilities have and will continue to impact raw biogas
15 production. The Company has already been working with Tyson’s wastewater
16 processing team at Dakota City to better forecast raw biogas production.

17 **Q. Did updating the production forecast change NW Natural’s decision to**
18 **pursue the Dakota City RNG project?**

19 **A.** No. Of the resources that continue to be evaluated since the time of investment
20 decision, the Dakota City RNG project has a lower projected risk-adjusted
21 incremental cost than all potential offtake agreements. In addition, the Dakota City
22 RNG project was scheduled to be developed in the very near term, due to the
23 previously discussed development work already undertaken by BioCarbN. This

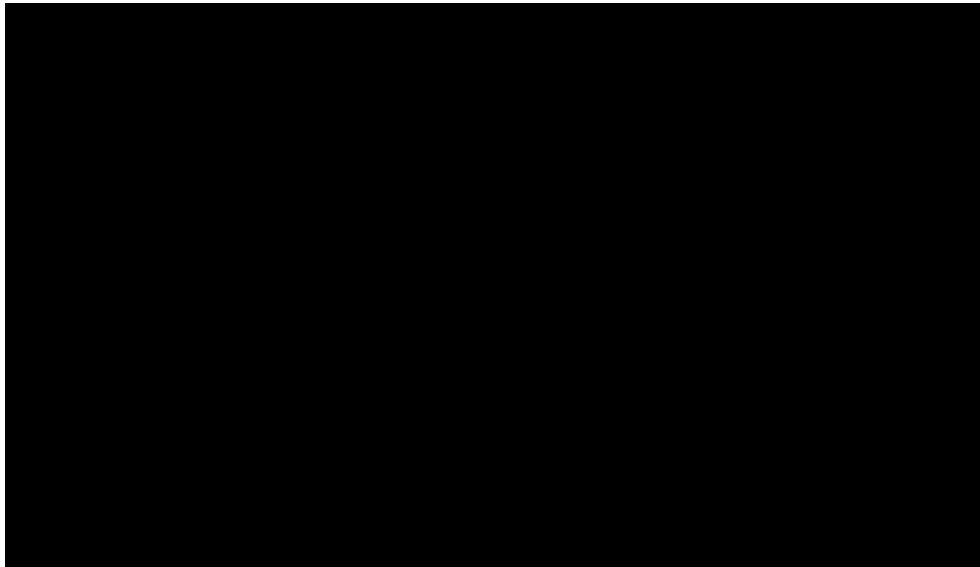
1 made the Dakota City RNG project the lowest cost of actionable (i.e., ready to
2 develop) RNG projects at that time, even when accounting for the risks associated
3 with the project.

4 While there were several development projects that were projected to have
5 slightly lower risk-adjusted incremental costs than the Dakota City RNG project,
6 and other projects that have been identified since the investment decision in
7 Dakota City was made, those projects were opportunities that were not actionable
8 at the time of the Dakota City decision, or are projects that the Company is still
9 pursuing but are not yet fully actionable. The Company is simultaneously working
10 on development of all the viable, lower-cost development project resources that
11 are available to be developed, and intends to develop them for our customers in
12 the near future. The Company will need all of these projects and more to reach
13 the RNG Statute's acquisition targets. The Company currently projects that it will
14 acquire RNG that is equivalent to 1.33 percent of its Oregon sales load in 2024.
15 The RNG Statute's acquisition target is 5 percent in that year and will increase to
16 10 percent in 2025. This means that NW Natural needs to pursue additional RNG
17 acquisitions to meet those targets. Doing so may include those RNG investments
18 that were initially identified to have a slightly lower cost than the Dakota City RNG
19 project but are not yet ready to construct, as well as additional RNG purchases.

20 In short, pursuing the Dakota City RNG project should not be viewed as a
21 choice that excludes future RNG acquisitions. Instead, NW Natural needs to
22 develop a portfolio of resources to meet RNG Statute's targets, and, as such, NW
23 Natural is first prioritizing RNG resources that can produce RNG in the near-term

1 while also continuing to investigate RNG acquisitions with a longer lead time. Both
2 types of resources will be necessary to satisfy RNG acquisition targets in the
3 coming years.

4 The chart below shows the updated volume and risk-adjusted first year
5 incremental cost of Dakota City and all the other RNG resources available to use
6 today that are actionable or near-actionable (e.g., we have initial non-binding
7 agreements in place, or a non-binding offer from an offtake resource). It reflects
8 the fact that Dakota City is one of many other projects that need to be pursued in
9 order to meet our RNG targets. **[BEGIN CONFIDENTIAL]**



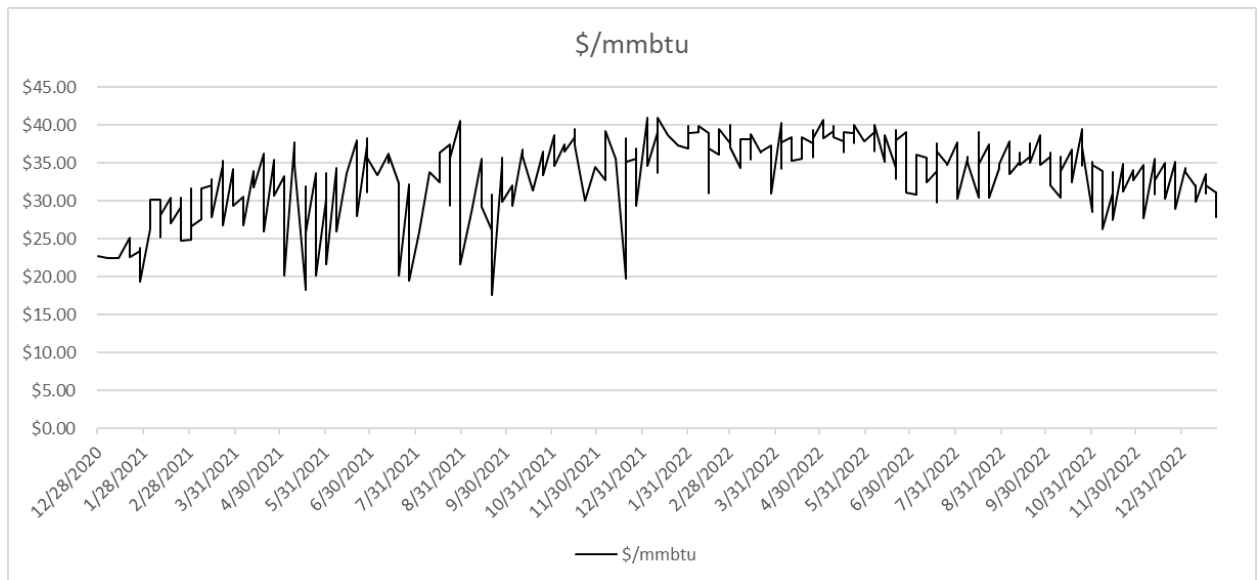
10 **[END CONFIDENTIAL]**

11 Additionally, the RNG market is still largely driven by the transportation fuel
12 market, including the federal Renewable Fuel Standard program, which allows for
13 the generation of tradeable RINs (Renewable Identification Numbers) when RNG
14 is used to fuel vehicles or integrated into fuel production. The current market for
15 D3 RINs, which is the type of RNG the majority of resources we would purchase

1 for RNG Statute and CPP Rule compliance would generate, is quite strong. The
2 chart below shows the value over the past 2 years, on a per-mmbtu basis, of RNG
3 that sells into the D3 RIN markets. While the market has experienced some
4 volatility during this time period, the overall value of RNG in these markets remain
5 strong, with a 2-year average of over \$33/mmbtu.

6

Weekly Transfer Prices of D3 RINs



7 The Company closely follows other markets that can influence the price of RNG,
8 such as the RIN markets, and finds that developing our own RNG projects is an effective
9 way to secure RNG resources over the long term and insulate our customers from the
10 price-inflating impact of these other RNG markets.

11 **IV. OVERVIEW OF THE DAKOTA CITY RNG PROJECT AND ITS**
12 **PARTICIPANTS**

13 **Q. What is the process for converting biogas to RNG?**

14 **A.** The process to convert biogas to RNG involves separating the primary biogas
15 constituents of methane and carbon dioxide (major gases) from other components

1 that must be removed prior to pipeline injection. **[BEGIN HIGHLY**

2 **CONFIDENTIAL]** [REDACTED]

3 [REDACTED] **[END HIGHLY**

4 **CONFIDENTIAL]** and pipes the resulting gas to the RNG facility location. At the

5 Dakota City RNG project, the biogas is then chilled and dehydrated. An

6 adsorbent media then traps the carbon dioxide, nitrogen, oxygen, and any

7 remaining moisture, allowing the clean and dry methane (the RNG) to be

8 injected into the MidAmerican Energy Company pipeline system, which is located

9 adjacent to the RNG facility. The media is regenerated and then reused.

10 **Q. Has this process been used extensively elsewhere?**

11 A. Yes. Pressure swing adsorption systems for oxygen production were first used in

12 the 1970s. A similar process is being used at the Eugene wastewater treatment

13 plant, which is currently producing RNG.²⁰

14 The Dakota City RNG project will utilize pressure swing adsorption
15 technology from Greenlane Renewables, sold under the Greenlane Biogas brand.

16 Greenlane Biogas is a biogas upgrading technology provider that specializes in
17 biogas upgrading and CO₂ recovery systems. It has more than 135 biogas

18 upgrading (RNG) systems installed in 19 countries, including installations in the
19 United States. Based in Burnaby, British Columbia, Canada, it has over 30 years

20 of experience in CO₂ equipment and recovery systems and provides cost-
21 effective, carbon reducing, sustainable biogas upgrading systems. Globally more

²⁰ NW Natural is purchasing the energy content of this gas, but not the underlying environmental attributes.

1 biogas is being upgraded into RNG using Greenlane systems than by any other
2 provider. Greenlane was selected as part of the Company's engineering,
3 procurement, and construction (EPC) arrangement with Miron. As described in
4 Section VII.B, NW Natural pays Miron a fixed amount to build the project and Miron
5 selected Greenlane. NW Natural also performed due diligence on Greenlane prior
6 to its selection, as further described in Section VI, and found that it had an excellent
7 reputation in providing biogas upgrading technology.

8 **Q. Did NW Natural use pressure swing adsorption technology for the Lexington**
9 **RNG project?**

10 A. No. For Lexington, NW Natural used membrane gas upgrading technology, which
11 is a different technology to convert raw biogas into RNG.

12 **Q. Why is NW Natural using a different technology for the Dakota City project?**

13 A. There are four main types of gas cleaning equipment used in the RNG industry
14 today: membrane technology, pressure-swing adsorption technology, cryogenic
15 technology, and water wash technology. Each technology offers different technical
16 and economic benefits and considerations, and the use of one technology over
17 another is mostly dependent upon the underlying constituents of the raw gas and
18 site conditions. While all are proven technologies with long histories of successful
19 commercial applications, the Dakota City biogas differs from Lexington in its gas
20 composition because they process different cuts of meat. Due to the resultant
21 differences in gas composition, pressure swing adsorption technology was
22 recommended for the Dakota City RNG project by the engineering consultants on
23 the project.

1 and relationship with Tyson was one of the key reasons NW Natural was attracted
2 to a partnership with them. BioCarbN negotiated the original site license
3 agreement with Tyson that gave them the exclusive option to use Tyson’s raw gas
4 to produce RNG at multiple facilities and conducted initial technical evaluation of
5 RNG production potential at those facilities before they sought a partnership with
6 NW Natural.

7 Cross River Infrastructure Partners LLC (“Cross River”) is a sustainable
8 infrastructure business focused on developing projects and commercializing
9 sustainable technologies. It partners with developers and technology companies
10 to accelerate the deployment of projects focused on upcycling waste streams and
11 carbon emissions to produce valuable sources of renewable energy, hydrogen,
12 agricultural products and industrial materials. The principals of Cross River have
13 extensive project finance and project development backgrounds, including
14 investing in and/or arranging financing for billions of dollars for energy and clean
15 energy infrastructure projects, and developing renewable energy projects. These
16 projects include not only an existing NW Natural project (Lexington), but also

17 **[BEGIN HIGHLY CONFIDENTIAL]:** [REDACTED]

18 [REDACTED]

19 [REDACTED]

20 [REDACTED] **[END HIGHLY CONFIDENTIAL].** To participate in

21 this project, BioCarbN and Cross River formed a separate LLC, BioCarbN and
22 Cross River Biogas Dakota City LLC (colloquially referred to as “BioCross LLC”).

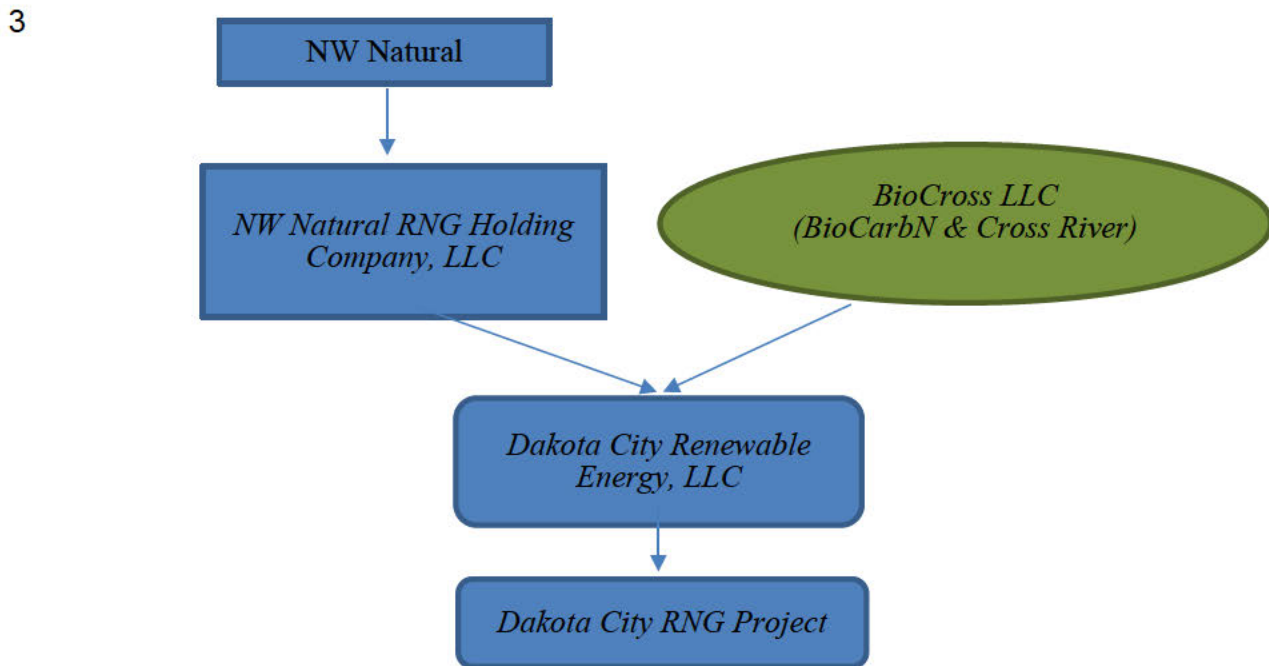
1 **Q. Was NW Natural originally involved in developing the Dakota City RNG**
2 **project?**

3 A. No. BioCross LLC brought the Dakota City RNG project to NW Natural for
4 consideration after its partnership with Tyson was already in place. At that time,
5 BioCross LLC already had a negotiated term sheet for the raw biogas from Tyson
6 and had performed site visits to perform initial due diligence and a technical
7 evaluation on the raw biogas. This is very typical of RNG project development,
8 where a developer brings a project that is partially developed to a funder to secure
9 funding for the project once key agreements are in place and initial economic and
10 technical assessments have been undertaken.

11 **Q. Did NW Natural form an affiliated subsidiary as part of developing the Dakota**
12 **City RNG project?**

13 A. Yes. NW Natural formed an affiliated subsidiary, Dakota City Renewable Energy
14 LLC. Dakota City Renewable Energy LLC is owned by NW Natural RNG Holding
15 Company, LLC and BioCross LLC. NW Natural RNG Holding Company, LLC is a
16 wholly-owned NW Natural subsidiary. The purpose of NW Natural RNG Holding
17 Company, LLC is to assist NW Natural with investing in RNG infrastructure to meet
18 RNG Statute targets and for CPP Rule compliance, such as the Lexington RNG
19 project and this project. NW Natural RNG Holding Company, LLC owns all Class
20 A membership interests in Dakota City Renewable Energy LLC, and BioCross LLC
21 owns all Class B membership interests. The purpose of Dakota City Renewable
22 Energy LLC is to invest in the Dakota City RNG project. This type of ownership

1 structure, which was also utilized for the Lexington RNG project, is shown in the
2 figure below.



4 **Q. Why did NW Natural rely on the project ownership structure specified above**
5 **rather than developing the project directly through the utility?**

6 A. NW Natural relied on the project ownership structure specified above for three
7 primary reasons. First, as stated above, NW Natural is developing the Dakota City
8 RNG project with two other RNG developers, BioCarbN and Cross River
9 Infrastructure Partners LLC (working together as “BioCross LLC”). Forming
10 Dakota City Renewable Energy LLC is necessary to facilitate the joint development
11 of the project. Specifically, this structure allows BioCross LLC to retain a direct
12 ownership interest in the project without having to take an ownership interest in
13 some part of NW Natural. This is, again, very representative of a typical RNG

1 project structure, where it is customary for the developer to expect, as was the
2 case here, that it will retain a direct ownership interest in the project.

3 Second, the organizational structure protects NW Natural and its
4 customers. Since Dakota City Renewable Energy LLC is its own legal entity, its
5 creditors and counterparties would only be able to access Dakota City Renewable
6 Energy LLC's assets and not the utility assets of NW Natural.

7 Finally, forming NW Natural RNG Holding Company, LLC will allow NW
8 Natural to govern multiple project LLCs in a more organized manner through its
9 own board, making it more efficient to invest in RNG. This creates a greater focus
10 on RNG investments and, as such, assists in ensuring that such investments are
11 well-managed. In this way, the structure promotes good corporate governance.

12 **Q. As the owners of Dakota City Renewable Energy LLC, what rights and**
13 **responsibilities do NW Natural RNG Holding Company, LLC and BioCross**
14 **LLC have?**

15 A. NW Natural RNG Holding Company, LLC and BioCross LLC entered into an LLC
16 Agreement that establishes the rights and responsibilities of each entity regarding
17 Dakota City Renewable Energy LLC.²¹ The LLC Agreement gives NW Natural
18 RNG Holding Company oversight over major business decisions of Dakota City
19 Renewable Energy LLC. NW Natural RNG Holding Company also contributes all
20 the capital for the project. The LLC Agreement specifies that BioCarbN LLC, a

²¹ Subject to a modified protective order in this proceeding, NW Natural will provide the LLC Agreement to parties through a response to a data request.

1 part owner of BioCross LLC, has management responsibilities for Dakota City
2 Renewable Energy, LLC. An affiliate of BioCarbN will manage the project day-to-
3 day during both the construction and operation periods. **[BEGIN CONFIDENTIAL]**

4 [REDACTED]
5 [REDACTED]
6 [REDACTED]
7 [REDACTED]
8 [REDACTED]
9 [REDACTED] **[END**

10 **CONFIDENTIAL].**

11 **Q. Does BioCross LLC bear any of the risks of the Dakota City RNG project?**

12 A. Yes. Per the LLC Agreement, BioCross LLC receives cash distributions from
13 Dakota City Renewable Energy LLC **[BEGIN CONFIDENTIAL]** [REDACTED]

14 [REDACTED]
15 [REDACTED]
16 [REDACTED]
17 [REDACTED]
18 [REDACTED]
19 [REDACTED]
20 [REDACTED]

²² **[BEGIN CONFIDENTIAL]** [REDACTED]
[END CONFIDENTIAL].

1 [REDACTED]

2 [REDACTED] [END CONFIDENTIAL]. It also ensures that Cross River, the other

3 owner of BioCross LLC, bears production risk as well. [BEGIN CONFIDENTIAL]

4 [REDACTED]

5 [REDACTED]

6 [REDACTED]

7 [REDACTED]

8 [REDACTED]

9 [REDACTED]

10 [REDACTED]

11 [REDACTED]

12 [REDACTED]

13 [REDACTED]

14 [REDACTED]

15 [REDACTED]

16 [REDACTED] [END CONFIDENTIAL]. In short, the

17 financial arrangement with BioCross LLC strongly encourages BioCarbN to

18 manage the project in a way that reduces costs and increases RNG production.

1 **Q. Without managing the project day-to-day, how will NW Natural ensure that it**
2 **is kept up to date with how the Dakota City RNG project is performing?**

3 A. Under the Management Services Agreement,²³ NW Natural RNG Holding
4 Company, LLC will receive monthly operational reports from the BioCarbN affiliate
5 that is managing the project day-to-day (BioCarbN Dakota City Management LLC).
6 BioCarbN Dakota City Management LLC also must provide prompt notice of any
7 material change or event that would impact production of RNG and is required to
8 meet with the Company at least quarterly (and on an ad hoc basis as necessary).
9 Additionally, NW Natural RNG Holding Company, LLC has weekly meetings with
10 the project manager during the development stage and, as stated above, we
11 anticipate having regular meetings during the operational phase. As issues
12 emerge from our regular meetings, we will remain closely involved in overall asset
13 management and will be encouraging strong performance under the Management
14 Services Agreement. NW Natural RNG Holding Company, LLC also has access
15 to the project site under the Biogas Processing Facility Site License Agreement,
16 which is described in the next section of my testimony. Company representatives
17 will be present during the initial commissioning phase of the project and will plan
18 to visit the site on an as-needed basis thereafter. Finally, NW Natural RNG Holding
19 Company, LLC may select a different manager if BioCarbN Dakota City
20 Management LLC materially fails to fulfill its management responsibilities.

²³ Subject to a modified protective order in this proceeding, NW Natural will provide the Management Services Agreement to parties through a response to a data request.

1 **Q. Please explain why NW Natural used this type of structure for the Dakota**
2 **City RNG project.**

3 A. The Dakota City RNG project structure, which has multiple equity partners
4 **[BEGIN CONFIDENTIAL]** [REDACTED]
5 [REDACTED] **[END CONFIDENTIAL]**, is typical,
6 customary, expected by a developer and not uniquely complex in the energy
7 industry. Additionally, using affiliates mitigates the potential liability risks
8 associated with the project, as well as facilitates the relationship with non-affiliated
9 developers, as explained above. Also, as explained above, this structure
10 incentivizes all parties, including Tyson and BioCross LLC, to produce as much
11 RNG as possible and to control and reduce expenses, by linking the benefits of
12 their equity stake to the success of the project. Further, the costs to customers are
13 the same as they would be if the project were developed without forming affiliates
14 but with additional risks and potential liabilities. If undertaken within the utility (and
15 not within an affiliate), the project would still need to pay BioCross LLC its
16 development fee, pay BioCross an ongoing fee to make up for its lack of equity
17 partner cash distributions, pay BioCarbN a management fee, and otherwise offer
18 BioCross LLC the same economics as the current structure. Furthermore, NW
19 Natural would lose the benefits that forming affiliates provides. As stated above,
20 this includes allowing BioCross LLC to own part of the project without owning some
21 part of NW Natural, liability protections, and better corporate governance.

1 **V. FINANCIAL STRUCTURE OF THE DAKOTA CITY RNG PROJECT**

2 **Q. Please explain how the Dakota City RNG project is funded.**

3 A. NW Natural first capitalizes NW Natural RNG Holding Company, LLC. NW Natural
4 RNG Holding Company, LLC then uses that capital to invest in Dakota City
5 Renewable Energy LLC and receives Class A membership interests. Dakota City
6 Renewable Energy LLC uses those funds to purchase all project assets, which it
7 also owns, and enters into the Biogas Processing Facility Site License
8 Agreement²⁴ with Tyson for the raw biogas that the project will turn into RNG.
9 BioCross LLC owns all Class B membership interests in Dakota City Renewable
10 Energy LLC. The graphics in NW Natural/105, Chittum/2-3 illustrate this. **[BEGIN**

11 **HIGHLY CONFIDENTIAL]** [REDACTED]

12 [REDACTED]

13 [REDACTED]

14 [REDACTED] **[END HIGHLY**
15 **CONFIDENTIAL].**

16 **Q. After the project is complete and is producing RNG, please explain how**
17 **Dakota City Renewable Energy LLC sells the RNG to NW Natural.**

18 A. Through the RNG sales agreement, Dakota City Renewable Energy LLC will sell
19 the bundled RNG (both the RTC and the physical gas) to NW Natural. **[BEGIN**

20 **CONFIDENTIAL]** [REDACTED]

²⁴ Subject to a modified protective order in this proceeding, NW Natural will provide the Biogas Processing Facility Site License Agreement to parties through a response to a data request.

1 [REDACTED] [END CONFIDENTIAL].²⁵ Dakota City Renewable
2 Energy uses that revenue to pay for O&M, property taxes, a royalty to Tyson for
3 the raw biogas, the management fee, and a distribution to the Class B holder
4 (BioCross LLC). This is shown in NW Natural/105, Chittum/4. As explained above,
5 this structure incentivizes RNG production [BEGIN CONFIDENTIAL] [REDACTED]

6 [REDACTED]
7 [REDACTED]
8 [REDACTED]
9 [REDACTED]
10 [REDACTED]

11 [REDACTED] [END CONFIDENTIAL]. In this way, the risk of any
12 cost overruns is not solely borne by NW Natural and its customers but rather is
13 shared equitably with BioCross LLC.

14 After Dakota City has paid project costs, all the capital contributions to the
15 Class A holder (NW Natural RNG Holding Company, LLC) are credited to NW
16 Natural's customers and netted against the project cost experienced by customers,
17 thus lowering the price that our customers will ultimately pay in rates. This is
18 shown in NW Natural/105, Chittum/5.

²⁵ [BEGIN CONFIDENTIAL] [REDACTED] [END CONFIDENTIAL].

1 **Q. Please explain NW Natural's next steps after it acquires the RNG from Dakota**
2 **City Renewable Energy LLC.**

3 A. NW Natural sells the physical gas the project produces to a local gas marketer and
4 retains the RTC to retire on behalf of customers to meet the RNG Statute's portfolio
5 targets, as well as comply with the CPP Rule. Proceeds from the sale of the
6 physical gas also lower the costs that our customers will ultimately pay. This is
7 shown in NW Natural/105, Chittum/6.

8 **Q. Please summarize all of these steps.**

9 A. In summary, NW Natural initially pays **[BEGIN CONFIDENTIAL]** ██████████
10 ██████████ **[END CONFIDENTIAL]** to Dakota City Renewable Energy LLC for
11 RNG. After Dakota City Renewable Energy LLC pays all the operating costs of
12 the project, the remaining funds are distributed to NW Natural RNG Holding
13 Company, LLC and BioCross LLC. The distributions to NW Natural RNG Holding
14 Company, LLC directly offset the total cost that our customers pay for the RNG.
15 The cost is further reduced by NW Natural's sale of the physical gas from the
16 project. Then, NW Natural's depreciation expense, cost of capital, and income tax
17 are added, as shown in in NW Natural/105, Chittum/7, resulting in a risk adjusted
18 first year incremental cost of **[BEGIN CONFIDENTIAL]** ██████████ **[END**
19 **CONFIDENTIAL]** per dekatherm for the first year of project operations. This
20 results in the same cost that would have been incurred had the utility developed
21 the project without forming affiliates, and with lower risks to the Company and its
22 customers. We also note that the per dekatherm cost will be higher in the project's
23 initial years, which reflects the higher amount of undepreciated capital investment

1 in those years and lower production, which is expected to ramp up in subsequent
2 years.

3 **VI. NW NATURAL'S INVESTMENT IN THE DAKOTA CITY RNG PROJECT**

4 **Q. Please describe the capital costs of the Dakota City RNG project.**

5 A. Based on current projections, NW Natural expects that it will invest approximately
6 \$12.5 million in the Dakota City RNG project. NW Natural will provide the actual
7 costs to the parties after the project goes into service. The capital expenditures
8 fall into two general categories: 1) project costs under the engineering,
9 procurement, and construction ("EPC") agreement with Miron,²⁶ and 2) project
10 costs outside of the EPC agreement. The major capital expenditures are
11 summarized in the table below.

12 Main Capital Expenditure Components (millions): **[BEGIN CONFIDENTIAL]**

[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]

²⁶ Subject to a modified protective order in this proceeding, NW Natural will provide the EPC agreement to parties through a response to a data request.

[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]

[END CONFIDENTIAL]

1 **Q. Please describe the Greenlane Biogas Upgrading Equipment cost.**

2 A. As explained above, the Dakota City RNG project will utilize Greenlane Biogas
3 upgrading equipment to separate the methane component of the biogas from
4 carbon dioxide. This results in RNG that will be injected into the MidAmerican
5 Energy Company pipeline system. Greenlane Biogas is a pressure swing
6 adsorption technology provider that specializes in biogas upgrading and CO2
7 recovery systems and has extensive experience in the United States and
8 internationally.

9 **Q. Please describe the Balance of Plant and Sales Tax costs.**

10 A. Balance of plant costs include earthwork, foundations, interconnecting process
11 piping, electrical/control, and fencing. Sales tax costs are sales taxes associated
12 with major equipment procurement.

13 **Q. Please describe the EPC Construction, Design, and Engineering costs.**

14 A. EPC design and engineering is the design engineering included in the EPC
15 contract scope. Miron, as the EPC contractor, is compensated monthly for the
16 successful completion of Project Milestones as set forth in the Milestone Payment

1 Schedule of the EPC agreement. No payment is made for partial completion of a
2 Project Milestone.

3 **Q. Please describe the Site Conditions and Requirements costs.**

4 A. Site conditions and requirements include both permanent and temporary costs.
5 Permanent costs include earthwork, site concrete, miscellaneous concrete,
6 substructures, carpentry, joint sealants, doors and windows, glazing, painting,
7 flooring, fire protection, plumbing, HVAC, process piping, insulation, electrification
8 and instrumentation. Temporary costs include site security, third-party testing
9 services, temporary field office, temporary roads and site access, temporary
10 power, temporary toilets, temporary telephone, cleanup, housing/subsistence,
11 performance and payment bonds as well as project all-risk insurance.

12 **Q. Please describe non-EPC project costs.**

13 A. Non-EPC project costs include investor transaction fee, development fee, other
14 permitting costs, owner's engineer fees, legal fees, interconnection fee, annual
15 land lease, property taxes, insurance, management fees, risk and contingency
16 reserve, project management fees, gas sampling and testing expenses as well as
17 spares and consumables. The interconnection fee is **[BEGIN CONFIDENTIAL]**

18 

19  **[END**

20 **CONFIDENTIAL]**. This fee is distinct from the ongoing rate that the project will
21 pay MidAmerican Energy Company to odorize and transport the gas (see below).

22 The annual interconnection fee terminates once MidAmerican Energy Company

1 recovers [BEGIN CONFIDENTIAL] [REDACTED]
2 [END CONFIDENTIAL].

3 **Q. Please describe the operating costs of the Dakota City RNG project.**

4 A. The ongoing operational and management costs of the Dakota City RNG project
5 are comprised of the following:

6 Payments to Tyson Fresh Meats

7 [BEGIN CONFIDENTIAL] [REDACTED]
8 [REDACTED] [END CONFIDENTIAL]. If, at the end of each calendar year,

9 [BEGIN HIGHLY CONFIDENTIAL] [REDACTED]
10 [REDACTED]
11 [REDACTED]
12 [REDACTED]
13 [REDACTED]
14 [REDACTED]
15 [REDACTED]
16 [REDACTED]
17 [REDACTED]
18 [REDACTED] [END HIGHLY

19 CONFIDENTIAL].

20 RNG Upgrader Costs

21 Comprised of routine maintenance, the use of materials/consumables, and power
22 to run the RNG upgrader equipment, these costs will be variable and dependent
23 on the volumes of RNG produced.

1 Greenlane Biogas Service Level Agreement

2 At this time, Dakota City Renewable Energy LLC is expected to pay Greenlane
3 Biogas, the provider of the RNG upgrader equipment, **[BEGIN CONFIDENTIAL]**
4 **[REDACTED]** **[END CONFIDENTIAL]**.

5 MidAmerican Transportation and Interconnect Costs

6 Dakota City Renewable Energy LLC will pay MidAmerican Energy Company
7 **[BEGIN CONFIDENTIAL]** **[REDACTED]**
8 **[REDACTED]**
9 **[REDACTED]** **[END CONFIDENTIAL]**.

10 Management Fee

11 Dakota City Renewable Energy LLC will pay the BioCarbN affiliate managing the
12 project, BioCarbN Dakota City Management LLC **[BEGIN CONFIDENTIAL]** **[REDACTED]**
13 **[REDACTED]** **[END CONFIDENTIAL]**. This fee is specific
14 to the current agreement with BioCarbN Dakota City Management LLC and may
15 vary if a different management company is used in the future.

16 Other Costs

17 Additional costs to be incurred by Dakota City Renewable Energy LLC include the
18 wages of two part-time technicians, third-party sampling costs, equipment and
19 expendable materials for routine maintenance, land lease, property taxes, and
20 insurance.

1 **Q. What will the Company receive in return for paying the capital and operating**
2 **costs associated with the Dakota City RNG project?**

3 A. As stated above, NW Natural will receive all the RNG that the project produces. It
4 will sell the physical gas the project produces in the market, but retain the
5 environmental attributes associated with the gas—the RTCs—to meet the RNG
6 Statute acquisition targets and to comply with the CPP Rule.

7 **Q. Please further explain the benefits NW Natural expects to receive from the**
8 **federal Inflation Reduction Act, which will reduce the Dakota City RNG**
9 **project's cost to customers.**

10 A. As described in Section II, the Inflation Reduction Act was passed after the
11 investment decision for Dakota City was made, but the Company has now updated
12 its financial analysis to include the benefits of the Investment Tax Credit for RNG
13 equipment. Based on its evaluation of the IRA with external tax counsel, the
14 Company concluded that a 30 percent Investment Tax Credit is the appropriate
15 level of credit to assume at this time. It is possible that the credit could reach as
16 high as 50 percent if the project is determined to be located in a specific “energy
17 community.” The U.S. Treasury Department, however, has not yet issued
18 guidance on what constitutes an “energy community.” Therefore, we do not know
19 if Dakota City will be identified as an eligible community and have not assumed
20 that we would be able to access that additional bonus credit.

21 **Q. What costs does NW Natural seek to recover in rates?**

22 A. The Company seeks to recover in rates the costs of the project minus the offsetting
23 revenue the project produces. The costs of the project include depreciation on all

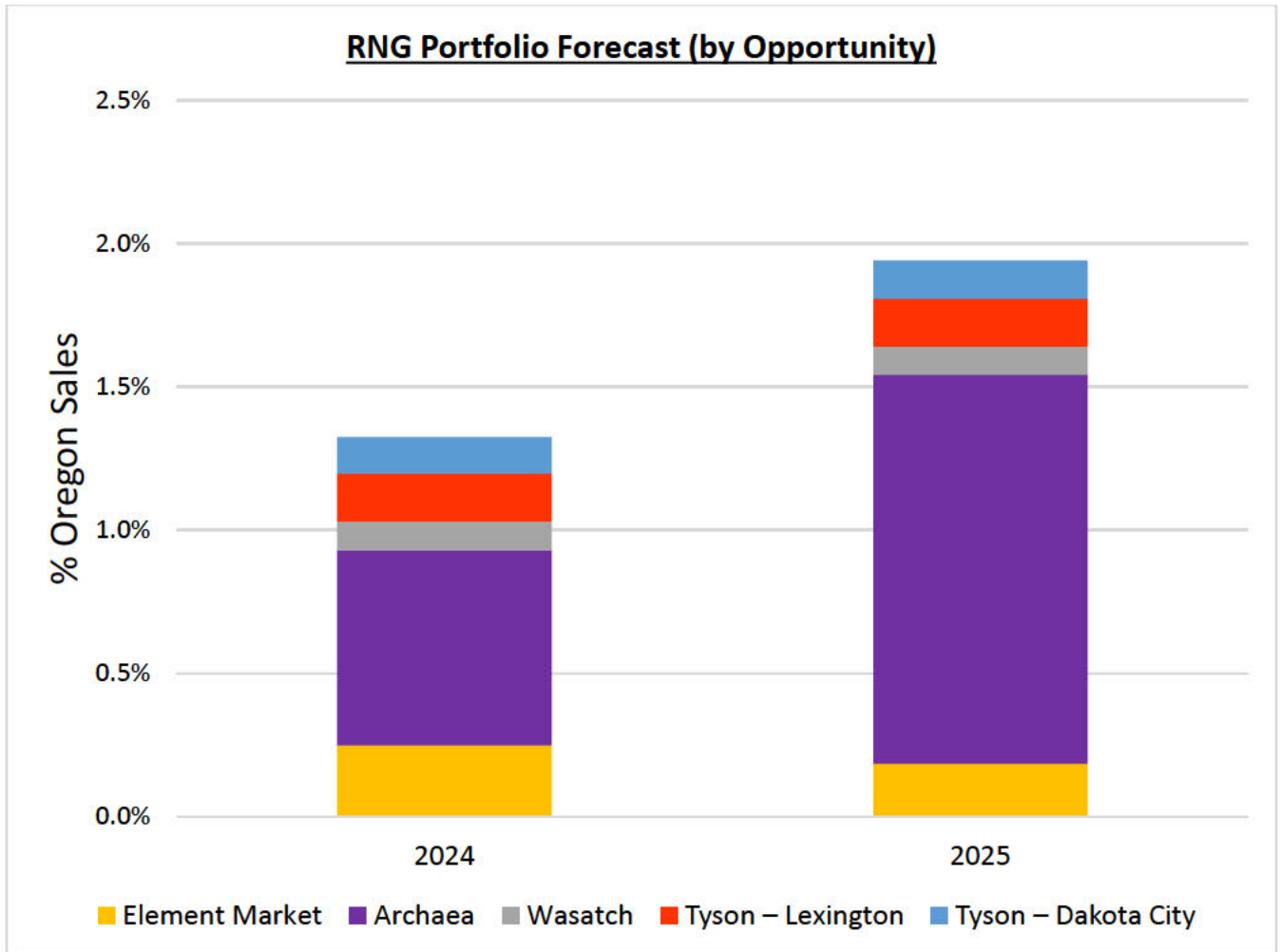
1 Dakota City assets, cost of capital, and income taxes, in addition to the operating
2 costs described above (O&M, property taxes, royalty to Tyson for the raw biogas,
3 management fee, and a distribution to the Class B holder, BioCross LLC). The
4 offsetting revenue the project produces is Dakota City Renewable Energy LLC's
5 distribution to the Class A holder, NW Natural RNG Holding Company, as well as
6 the sale of the physical gas the project produces. The rate treatment of the Dakota
7 City RNG project is further described in the Direct Testimony of Lora Bourdo and
8 Kyle Walker (NW Natural/200, Bourdo-Walker).

9 **Q. In addition to pursuing the Dakota City RNG project, has the Company**
10 **entered into any RNG offtake agreements with third parties or made any**
11 **other RNG investments?**

12 A. Yes. NW Natural currently has three RNG offtakes. The Commission has
13 reviewed all of these offtakes in PGA proceedings (Anew LLC (formerly Element
14 Markets Renewable Energy LLC) NYC and BP Products North America Inc., and
15 Archaea). In addition, the Company has made an RNG investment in the
16 Lexington RNG project, which the Commission found to be prudent in NW
17 Natural's most recent general rate case (UG 435).

18 **Q. Combined, what percentage of Oregon sales is RNG?**

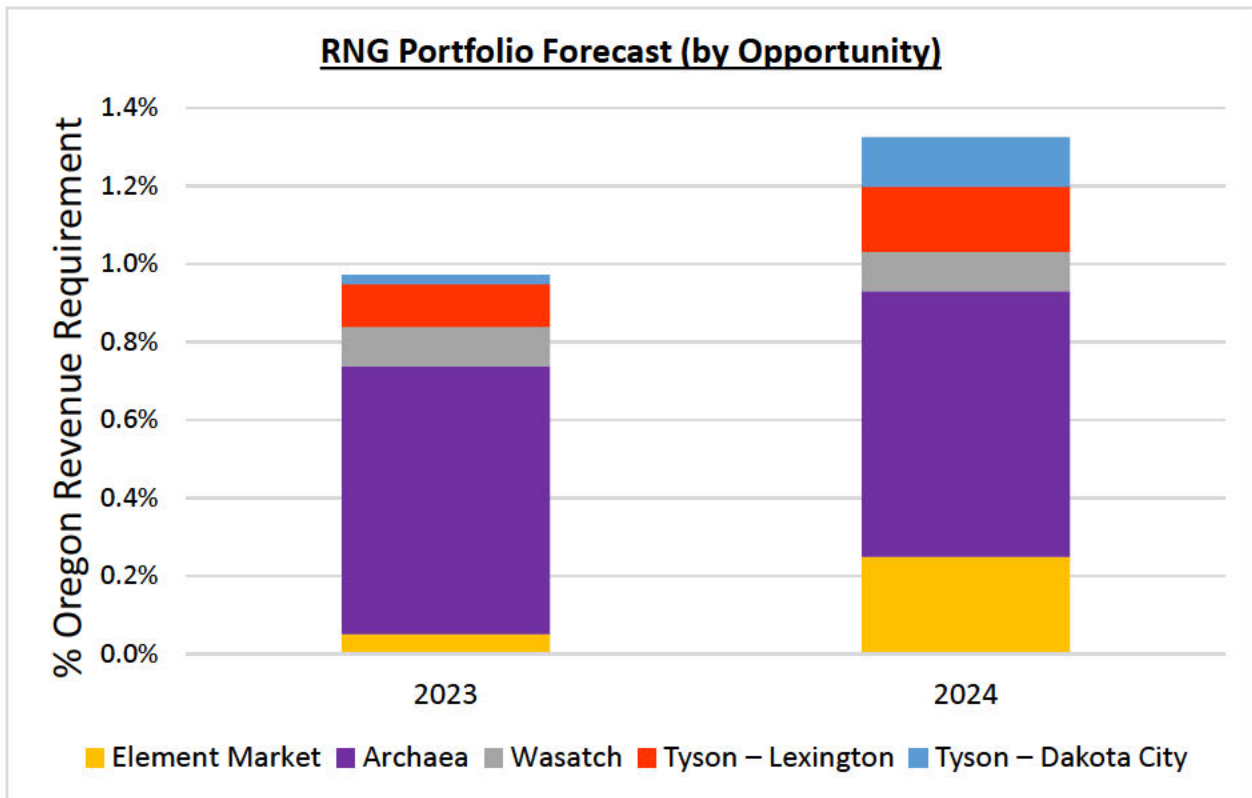
19 A. As shown in the graph below, we forecast that RNG will comprise 1.33 percent
20 and 1.94 percent of overall Oregon sales during the years 2024 and 2025,
21 respectively, with the beforementioned purchases, the Lexington RNG project, and
22 the Dakota City RNG project.



1 **Q. Does the Company use the Renewable Gas Supply Resource Evaluation**
2 **Methodology to calculate whether the incremental costs of its RNG**
3 **acquisitions are exceeding the ORS 757.396(5) incremental cost cap of 5**
4 **percent of a natural gas utility’s annual revenue requirement?**

5 A. Yes. The Company uses the Renewable Gas Supply Resource Evaluation
6 Methodology described in Section III above to determine whether the incremental
7 cost of its RNG portfolio (i.e., the difference between the all-in cost of RNG and
8 the all-in cost of conventional natural gas) exceeds the ORS 757.396(5) cost cap.

1 As shown in the graph below, NW Natural is well under the 5 percent cap in 2023
2 and 2024.



3 **Q. What due diligence has the Company performed in evaluating the Dakota**
4 **City RNG project?**

5 A. The Company conducted due diligence in the following main areas: 1)
6 Counterparty, 2) Technical, 3) Financial, and 4) Environmental.

7 In addition, during our initial evaluation of the opportunity, we found that
8 BioCarbN performed its own due diligence in selecting the equipment and EPC
9 contractor prior to the Company's involvement in the project. **[BEGIN HIGHLY**

10 **CONFIDENTIAL]** [REDACTED]
11 [REDACTED]

1 [REDACTED]
2 [REDACTED]
3 [REDACTED]
4 [REDACTED]
5 [REDACTED]
6 [REDACTED]
7 [REDACTED]
8 [REDACTED]
9 [REDACTED]
10 [REDACTED]

11 [REDACTED] [END HIGHLY
12 CONFIDENTIAL].

13 **Q. Please explain the counterparty due diligence the Company conducted.**

14 A. NW Natural utilized in-house resources to investigate Tyson Fresh Meats,
15 BioCarbN, Cross River Infrastructure Partners, LLC, Miron, Greenlane Biogas,
16 MidAmerican Energy Company, and Symmetry.

17 For Tyson Fresh Meats, NW Natural found that the Dakota City RNG plant
18 has been operational since 1966, employs over 4,300 people, and that Tyson
19 invested about \$237 million in upgrades to the plant over the last decade. This
20 indicates that Tyson's Dakota City facilities will continue in operation and provide
21 an ongoing source of biogas that can be converted into RNG. During the
22 development and construction of the Lexington RNG project, the Company
23 established relationships with key employees at Tyson Fresh Meats involved in the

1 wastewater systems, and developed additional strong relationships with new
2 executives that oversaw Tyson's partnerships with BioCarbN and NW Natural. We
3 continue to feel that Tyson is an excellent partner in these projects, and Tyson
4 better understands the kind of data and insight into their processes that we need
5 to improve the forecasting of our gas production at both Lexington and Dakota City.

6 For BioCarbN and Cross River Infrastructure Partners, LLC, NW Natural
7 found that BioCarbN had already completed a variety of wastewater-based
8 projects at different Tyson facilities around the country, indicating that they have a
9 proven track record in working with Tyson on similar projects. At the time of the
10 Dakota City investment decision in November 2021, the Lexington RNG project
11 was being built and both BioCarbN and Cross River Infrastructure Partners, LLC
12 were involved in completing the project on-time and without cost overruns. The
13 principals of Cross River Infrastructure Partners LLC also have a proven track
14 record in developing RNG facilities as described in Section III above. In addition,
15 since neither BioCarbN nor Cross River Infrastructure Partners LLC was providing
16 capital to the project and there was no reliance on their balance sheet to financially
17 support the project, there was no concern with these entities' creditworthiness.

18 For MidAmerican Energy, the Company found that they are rated A1/ Stable
19 by Moody's. This rating indicates a financially stable company. MidAmerican is a
20 subsidiary of Berkshire Hathaway, Inc. which holds a Moody's rating of Aa2/
21 Stable. See Confidential NW Natural/106, Chittum.

22 For Greenlane, the Company called multiple facilities that had implemented
23 Greenlane systems and spoke with the operators about their experience with

1 Greenlane equipment. Greenlane is not rated by ratings agencies but was found
2 to present a **[BEGIN CONFIDENTIAL]** [REDACTED]
3 [REDACTED] **[END**
4 **CONFIDENTIAL]**. See Confidential NW Natural/107, Chittum.

5 For Symmetry Energy, the Company evaluated them for the Lexington RNG
6 project previously, and again for the Dakota City RNG project. Symmetry is the
7 gas marketer for the energy content of the gas from the project. **[BEGIN**
8 **CONFIDENTIAL]** [REDACTED]
9 [REDACTED]
10 [REDACTED] **[END CONFIDENTIAL]**.

11 However, Symmetry was one of the marketers that could move the physical gas
12 on the MidAmerican system. Although NW Natural also considered other gas
13 marketers, we selected them because Symmetry has a good track record of
14 marketing the gas at the Lexington RNG project, and, as such, we have an
15 established relationship with them. In addition, Symmetry was attractive because
16 it is the primary provider of gas to the Tyson facility for a variety of uses. See
17 Confidential, NW Natural/108, Chittum.

18 Tyson Fresh Meats has been **[BEGIN HIGHLY CONFIDENTIAL]** [REDACTED]
19 **[END HIGHLY CONFIDENTIAL]** with its experience with Miron, which has
20 managed construction of other projects on Tyson sites, including Lexington.
21 **[BEGIN HIGHLY CONFIDENTIAL]** [REDACTED]
22 [REDACTED] **[END**
23 **HIGHLY CONFIDENTIAL]**.

1 **Q. Please explain the technical due diligence the Company conducted.**

2 A. NW Natural utilized both in-house resources and external resources to conduct the
3 technical due diligence. NW Natural and BioCarbN engaged Nexus and Biogas
4 Engineering during the due diligence process to evaluate the technology selection,
5 the quality of the construction and development team, and key risks of the Dakota
6 City RNG project.

7 Based on Biogas Engineering's assessment and the earlier work done by
8 Nexus, the Company reached definitive agreements for initial investments in the
9 project.

10 Biogas Engineering continues to serve as the technical consultant for the
11 development phase of the project and provides support to both Miron and
12 BioCarbN.

13 **Q. Please explain the financial due diligence the Company conducted.**

14 A. NW Natural received pro forma financial models from BioCarbN. We made some
15 key changes to BioCarbN's pro forma inputs to reflect more conservative
16 assumptions than BioCross LLC had initially made. We evaluated the assumed
17 operating costs and evaluated the risk with which capital cost overruns were likely
18 within the proposed construction contract. As previously discussed, we evaluated
19 the historical gas flow of the Dakota City lagoon based on Tyson-provided data,
20 and worked with Tyson to derive a reasonable estimate of overall production of the
21 RNG project and continued to update that assessment after the investment
22 decision was made in November 2021.

1 In addition, NW Natural evaluated the impact of selling the physical gas the
2 project produces for less than it expects. If NW Natural receives less than what it
3 expects for the physical gas that the Dakota City RNG project produces, it will
4 increase the price that customers must pay for the project.²⁷ In general, however,
5 natural gas markets move together directionally throughout the United States.
6 Therefore, if the prices of the sale of physical gas in Nebraska is reduced, we can
7 reasonably expect that the prices Oregon customers pay for physical gas will also
8 be reduced. Finally, we also utilized our tax expertise to ensure our tax
9 assumptions associated with a project of this type in Nebraska were well-founded.

10 **Q. Please explain the environmental diligence the Company conducted.**

11 A. NW Natural has conducted extensive diligence into the operating conditions and
12 environmental impacts of the Dakota City RNG project, including securing Clean
13 Energy Counsel's evaluation of the permits required and outstanding permit
14 requirements. NW Natural's internal Environmental and Sustainability
15 Management team reviewed and evaluated the Phase 1 environmental site
16 assessment conducted by NAQS at BioCarbN's request.

17 NW Natural will also continue to vet all contractors (construction firms,
18 operating firms, maintenance firms, etc.) to ensure they are competent and
19 operating the project at a high level of quality and integrity. The Company has
20 used industry standards and other contractual provisions that protect it from the

²⁷ As explained above, NW Natural intends to sell the physical gas that the Lexington RNG project produces and retain the environmental attributes of the gas—the RTCs—to meet RNG Statute acquisition targets and to comply with the CPP Rule.

1 negligence or unlawful acts of those contractors and will continue to work to ensure
2 the site complies with all local and state environmental quality regulations. In
3 addition, pursuant to the Biogas Processing Facility Site License Agreement,
4 neither NW Natural nor its affiliates are responsible for any pre-existing
5 contamination, contamination caused by Tyson, or contamination migrating from
6 other locations onto the Dakota City RNG project site. Finally, as explained above,
7 NW Natural has structured this transaction using affiliates, which means that
8 creditors and counterparties are only able to access the assets of those affiliates
9 to satisfy any debt or liability and not the utility assets of NW Natural.

10 **VII. ADDRESSING THE RISKS OF THE DAKOTA CITY RNG PROJECT**

11 **Q. Please describe the risks involved in the Dakota City RNG project.**

12 A. The key risks involved in the Dakota City RNG project are: A) the facility
13 produces less RNG than expected; B) operating costs are higher than expected;
14 C) capital costs are higher than expected; D) Tyson stops producing the raw gas
15 needed to produce RNG at the Dakota City site; and E) the potential bankruptcy
16 of BioCross LLC.

17 **A. Underproduction Risk**

18 **Q. Please describe the risk that the project produces less RNG than expected.**

19 A. In general, RNG projects can experience variations in their production numbers.
20 This can be due to several factors, including increases and decreases in the
21 underlying feedstock and its content, temperature changes in the outside weather,
22 changes in the composition of the raw biogas, and changes in equipment
23 efficiencies due to how it is being operated. Specific to the Dakota City RNG

1 project, BioCarbN conducted an analysis of historical gas production from Tyson,
2 and the Company and BioCarbN had many conversations with Tyson to
3 understand their expectations for the long-term operation of the Dakota City facility
4 and its likely impact on biogas production. Because many of the project's costs
5 are fixed regardless of production, if production goes down, the total cost of RNG
6 on a \$/mmbtu basis will increase.

7 **Q. How did NW Natural address underproduction risk?**

8 A. At the time of the investment decision in November 2021, Tyson shared its
9 historical production data with us. **[BEGIN CONFIDENTIAL]** [REDACTED]

10 [REDACTED]

11 [REDACTED]

12 [REDACTED]

13 [REDACTED]

14 [REDACTED]

15 [REDACTED]

16 [REDACTED]

17 [REDACTED]

18 [REDACTED]

19 [REDACTED]

20 [REDACTED]

21 [REDACTED] **[END CONFIDENTIAL].**

1 **Q. Did this lead to the Company changing its production forecast?**

2 A. Yes. As stated above, a critical way the Company addressed underproduction risk

3 was [BEGIN CONFIDENTIAL] [REDACTED]

4 [REDACTED]

5 [REDACTED]

6 [REDACTED]

7 [REDACTED] [END CONFIDENTIAL] during a ramp-up period,

8 rising to about [BEGIN CONFIDENTIAL] [REDACTED] [END CONFIDENTIAL].

9 As explained in Section III, even with this decline in production, the Dakota City
10 RNG project is still a very attractive relative to other opportunities.

11 **Q. As part of its risk-adjusted incremental cost model, did the Company**
12 **consider the risks of underproduction?**

13 A. Yes. NW Natural's risk adjusted incremental cost model incorporated this
14 underproduction risk by developing scenarios for the 5th and 95th percentile
15 cases. [BEGIN CONFIDENTIAL] [REDACTED]

16 [REDACTED]

17 [REDACTED] [END

18 CONFIDENTIAL]. This model has been updated to reflect the most current
19 production estimates and, again, it shows that the Dakota City RNG project is part
20 of a least cos/least risk portfolio to meet RNG Statute acquisition targets.

21 **Q. Are there any other ways that the Company mitigated production risk?**

22 A. Yes. The Company structured its agreements with Tyson and BioCarbN to
23 encourage as much RNG production as possible. Furthermore, the Dakota City

1 RNG project uses proven technology that has been utilized for decades in similar
2 projects as discussed above. Greenlane Biogas has also provided performance
3 guarantees including **[BEGIN HIGHLY CONFIDENTIAL]** [REDACTED]
4 [REDACTED]
5 [REDACTED] **[END HIGHLY**
6 **CONFIDENTIAL]**.

7 **Q. Does NW Natural solely bear the risk of underproduction?**

8 A. No. We have structured our agreements to encourage maximum RNG production
9 from Tyson and BioCross LLC. If the project produces less RNG, it reduces royalty
10 payments to Tyson for the raw biogas and reduces the distributions that BioCross
11 LLC receives from Dakota City Renewable Energy LLC. This partially mitigates
12 the impact of underproduction to our customers.

13 **B. Capital Cost Risk**

14 **Q. Please describe the risk that capital costs are higher than expected.**

15 A. There is a high demand for RNG equipment and construction equipment and
16 components in general. There is risk that any of the key components of this project
17 could increase to a cost higher than initially contemplated due to increasing
18 inflation and supply chain issues with some components. As discussed below, NW
19 Natural is well insulated from increases in much of the equipment costs within the
20 EPC contract due to the structure of the EPC agreement. Nevertheless, because
21 the Company cannot entirely eliminate all risk associated with potential increases
22 to capital costs, we modeled the impact of the remaining risk and included a
23 contingency in the financial model when making our investment decision. The

1 project is nearing commissioning, and we are anticipating capital costs to be lower
2 than forecasted due to no cost overruns and not using all of the budgeted
3 contingency funds.

4 **Q. How did the Company address this risk in its modeling?**

5 A. We evaluated the contract with our EPC contractor and understood the conditions
6 under which the Company would be exposed to increases in capital costs. We
7 also integrated potential increases in capital cost of [BEGIN CONFIDENTIAL] ■
8 ■ [END CONFIDENTIAL] in our risk-adjusted incremental cost model.

9 **Q. Does NW Natural solely bear the risk of higher-than-expected capital costs?**

10 A. No. The EPC agreement, which encompasses the majority of capital costs, is
11 structured as a “Lump-Sum Turnkey” contract. Accordingly, the construction
12 contractor bears the risk associated with ordinary cost increases (e.g., labor,
13 equipment and material costs). Notwithstanding the foregoing, the project owner
14 bears change order risk, pursuant to customary terms and conditions, in the event
15 of differing site conditions, unknown pre-existing hazardous materials, or force
16 majeure.

17 **C. Operating Cost Risk**

18 **Q. Please describe the risk that operating costs are higher than expected.**

19 A. RNG projects have many operating costs that are linked fairly directly to overall
20 production levels, but there are also costs that are not production-dependent. Any
21 of such costs could be higher than expected, including insurance, electricity or
22 labor.

1 **Q. How did the Company address this risk?**

2 A. We have evaluated many RNG projects over the past few years, and have
3 reviewed developer's pro forma financial models from all sorts of projects, with all
4 sorts of partners, in many parts of the country. Our team has extensive experience
5 evaluating these assumptions and comparing them to similar projects. During the
6 diligence process with BioCross LLC, we challenged many of the assumptions and
7 asked for explanations and justifications on assumptions on operating costs that
8 seemed unreasonable. Through various iterations of the pro forma with BioCross
9 LLC, we worked to better align assumed operating costs with what we have seen
10 in other projects. That said, we recognize there could be unexpected increases in
11 operating costs and have assumed a potential increase of **[BEGIN**
12 **CONFIDENTIAL]** [REDACTED] **[END CONFIDENTIAL]** on these costs in the
13 incremental cost calculator.

14 **Q. Does NW Natural solely bear the risk of higher-than-expected operating**
15 **costs?**

16 A. No. The distribution of cash flow share to BioCross LLC occurs after the operating
17 costs have been paid. Therefore, any increase in operating costs decreases the
18 cash distribution to BioCross LLC.

19 **Q. Does Schedule 198, Renewable Natural Gas Adjustment Mechanism, offer**
20 **any other protections to customers from higher-than-expected operating**
21 **costs?**

22 A. Yes. Under Schedule 198, the Commission established an earnings test for the
23 Company's forecasted operating costs. Under earnings test, NW Natural cannot

1 recover higher-than-expected operating costs to customers if the Company's
2 actual return on equity is within 50 basis points of its authorized ROE. This means
3 that even if the Company is under-earning by 50 basis points compared to its most
4 recently approved authorized return on equity, the Company cannot recover any
5 increases in its operating costs that year. As such, Schedule 198 shifts a
6 significant portion of the risk of higher-than-expected operating costs to the
7 Company.

8 **D. Risk of Tyson Stopping Raw Biogas Production**

9 **Q. Please describe the risk that the Tyson Foods' Dakota City facility stops**
10 **producing raw biogas.**

11 A. The Dakota City RNG project relies on a supply of raw biogas from the adjacent
12 Tyson Fresh Meats facility. The project processes RNG from this raw biogas and
13 if supply is stopped, then it will stop producing RNG.

14 **Q. How did the Company evaluate this risk?**

15 A. NW Natural has concluded that the risk that the Tyson facility will stop producing
16 biogas is very low. This is based on **[BEGIN CONFIDENTIAL]** [REDACTED]

17 [REDACTED]

18 [REDACTED]

19 [REDACTED]

20 [REDACTED]

21 [REDACTED] **[END CONFIDENTIAL]**. In

22 addition, the Company has researched the history of Tyson's investment in its

23 Dakota City facility and its growth expectations. Importantly, Tyson made a \$237

1 million reinvestment in the last decade in the facility, which demonstrates its
2 commitment to keeping this site operational. We assessed the chance that Tyson
3 would stop producing raw biogas at Dakota City at [BEGIN CONFIDENTIAL] [REDACTED]
4 [REDACTED] [END CONFIDENTIAL] annual risk t in our risk-adjusted incremental cost
5 analysis. Tyson has demonstrated its deep commitment to these projects, based
6 on subsequent discussions about future RNG projects at other Tyson sites.

7 **Q. Does NW Natural solely bear the risk of Tyson stopping raw biogas supply**
8 **at Dakota City?**

9 A. No. Similar to the risk of underproduction, we have structured our agreements to
10 encourage maximum RNG production from Tyson and BioCross LLC. Should
11 Tyson fail to provide the biogas to Lexington, Tyson would receive zero royalties,
12 and BioCross LLC similarly would receive zero cash distributions.

13 **E. Potential Bankruptcy of Developers**

14 **Q. Please describe the risk of a potential bankruptcy of BioCross LLC.**

15 A. While a potential bankruptcy or a similar event that impacts BioCarbN, Cross River
16 Infrastructure Partners, or BioCross LLC could disrupt project operations over the
17 short term, it would be expected to have little or no impact on project operations
18 over the long term. BioCross LLC (and its component partners) are providing no
19 financial capital to the project during construction or during on-going operations.

20 [BEGIN HIGHLY CONFIDENTIAL] [REDACTED]
21 [REDACTED]
22 [REDACTED]
23 [REDACTED]

1 [REDACTED]
2 [REDACTED] **[END HIGHLY CONFIDENTIAL]**. However, on a short-term basis,
3 there could be some operational disruption while NW Natural engages and on-
4 boards a new manager/operator for the Project. NW Natural expects that any
5 disruption would be minimal, and that it could likely be accomplished without
6 incurring substantial costs, such as would be incurred by a temporary facility shut
7 down. Therefore, it was not incorporated into the Company's risk adjusted
8 incremental cost model.

9 **Q. What actions would NW Natural take if BioCross LLC went bankrupt?**

10 A. As stated above, **[BEGIN HIGHLY CONFIDENTIAL]** [REDACTED]
11 [REDACTED]
12 [REDACTED] **[END HIGHLY CONFIDENTIAL]**.
13 The Company would issue an RFP for management services and secure a
14 manager that we believe would ensure continued performance of the Dakota City
15 RNG project.

16 **VIII. CONCLUSION**

17 **Q. What is your recommendation regarding the Dakota City RNG project**
18 **described in your testimony?**

19 A. I recommend the Commission find the costs associated with the Dakota City RNG
20 project are prudently incurred and approve cost recovery as described in the Direct
21 Testimony of Lora Bourdo and Kyle Walker (NW Natural/200, Bourdo-Walker).

22 **Q. Does this conclude your direct testimony?**

23 A. Yes.

BEFORE THE
PUBLIC UTILITY COMMISSION OF OREGON

UG 462

NW Natural

Exhibits of Anna K. Chittum

**DAKOTA CITY RNG PROJECT
EXHIBITS 101-108**

February 28, 2023

EXHIBITS 101-108 – DAKOTA CITY RNG PROJECT

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BEFORE THE
PUBLIC UTILITY COMMISSION OF OREGON

UG 462

NW Natural
Exhibit of Anna K. Chittum

DAKOTA CITY RNG PROJECT
EXHIBIT 101

REDACTED

Per General Protective Order No 23-063, this exhibit is Confidential in its entirety and has been redacted.

February 28, 2023

BEFORE THE
PUBLIC UTILITY COMMISSION OF OREGON

UG 462

NW Natural
Exhibit of Anna K. Chittum

DAKOTA CITY RNG PROJECT
EXHIBIT 102

REDACTED

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February 28, 2023

BEFORE THE
PUBLIC UTILITY COMMISSION OF OREGON

UG 462

NW Natural
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DAKOTA CITY RNG PROJECT
EXHIBIT 103

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BEFORE THE
PUBLIC UTILITY COMMISSION OF OREGON

UG 462

NW Natural
Exhibit of Anna K. Chittum

DAKOTA CITY RNG PROJECT
EXHIBIT 104

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February 28, 2023

BEFORE THE
PUBLIC UTILITY COMMISSION OF OREGON

UG 462

NW Natural
Exhibit of Anna K. Chittum

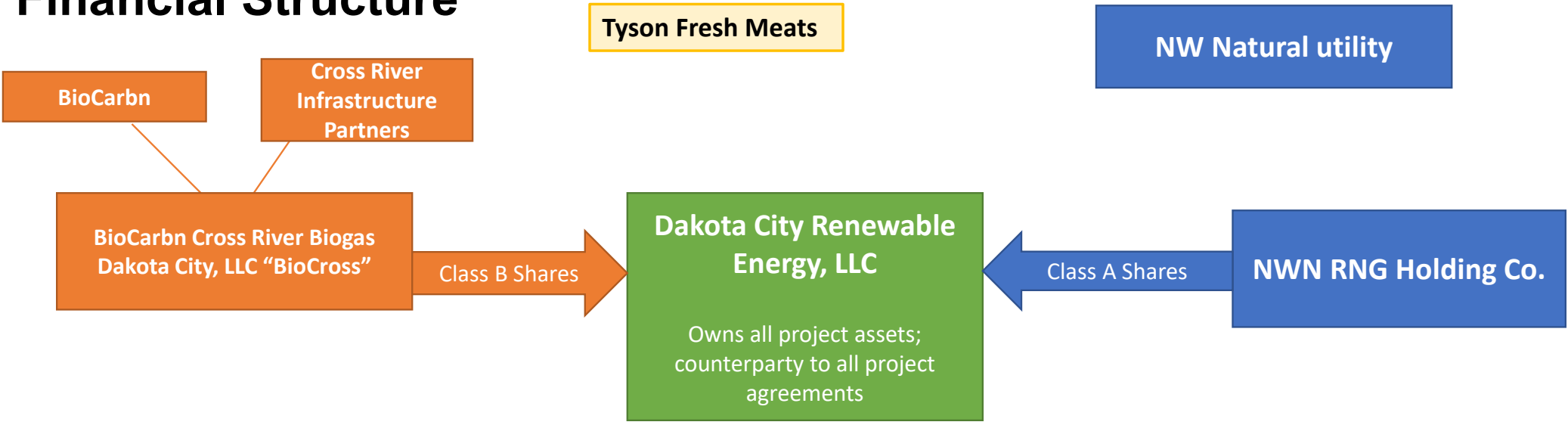
DAKOTA CITY RNG PROJECT
EXHIBIT 105

February 28, 2023

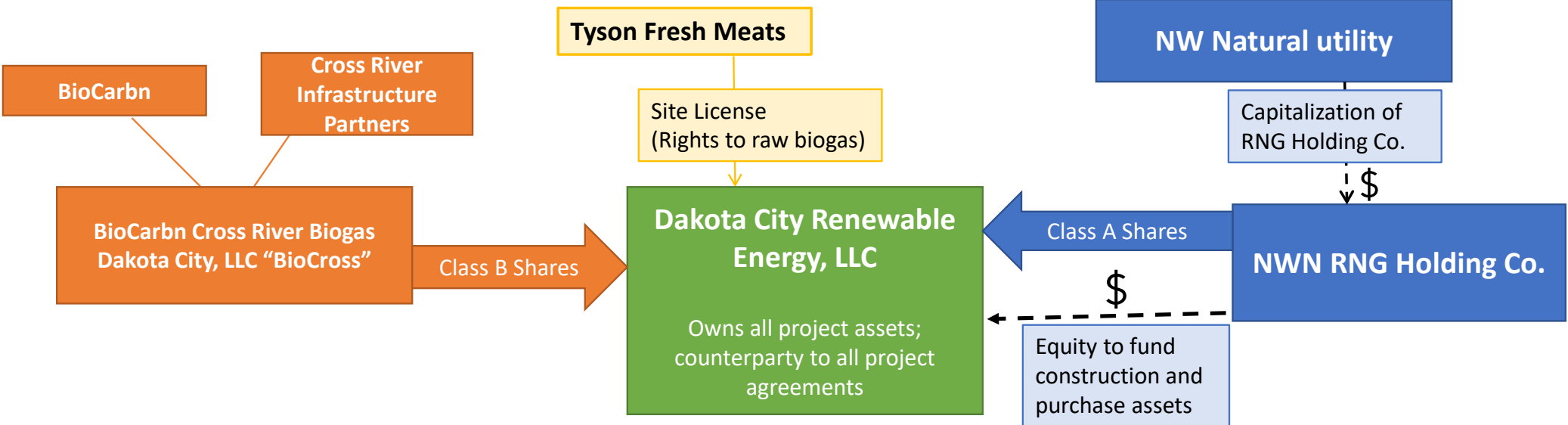
Tyson Dakota City: Structure



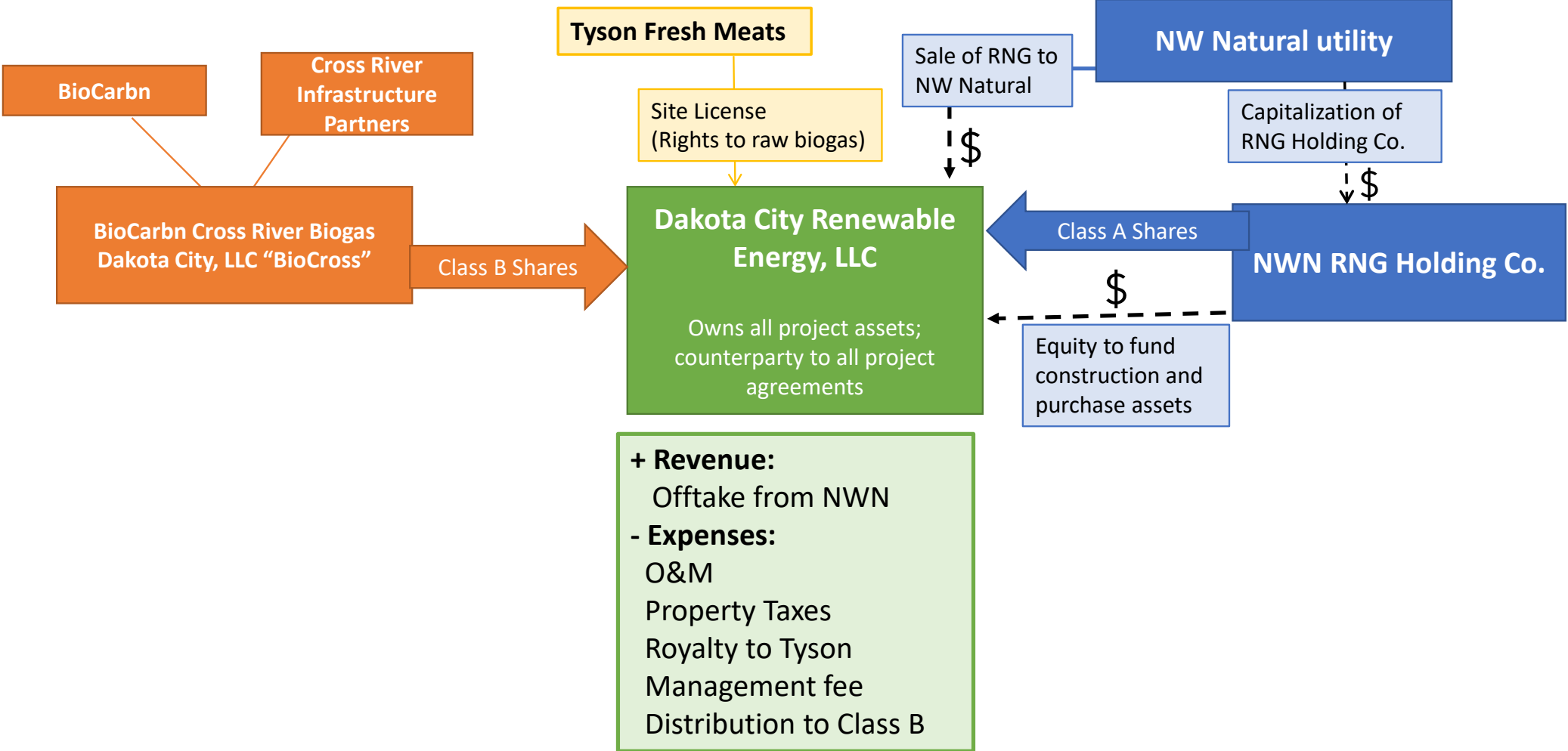
Financial Structure



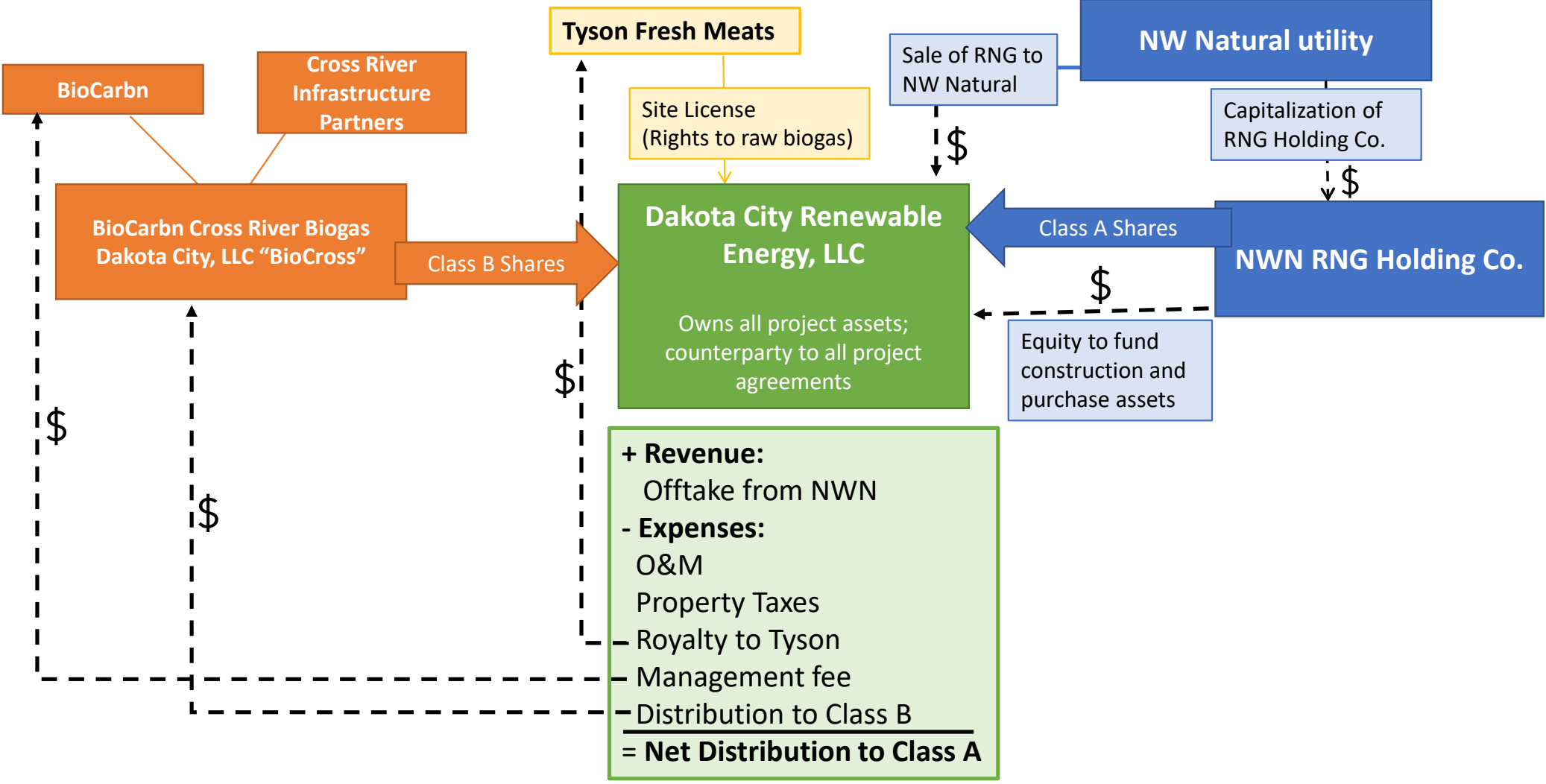
Flow of Transaction



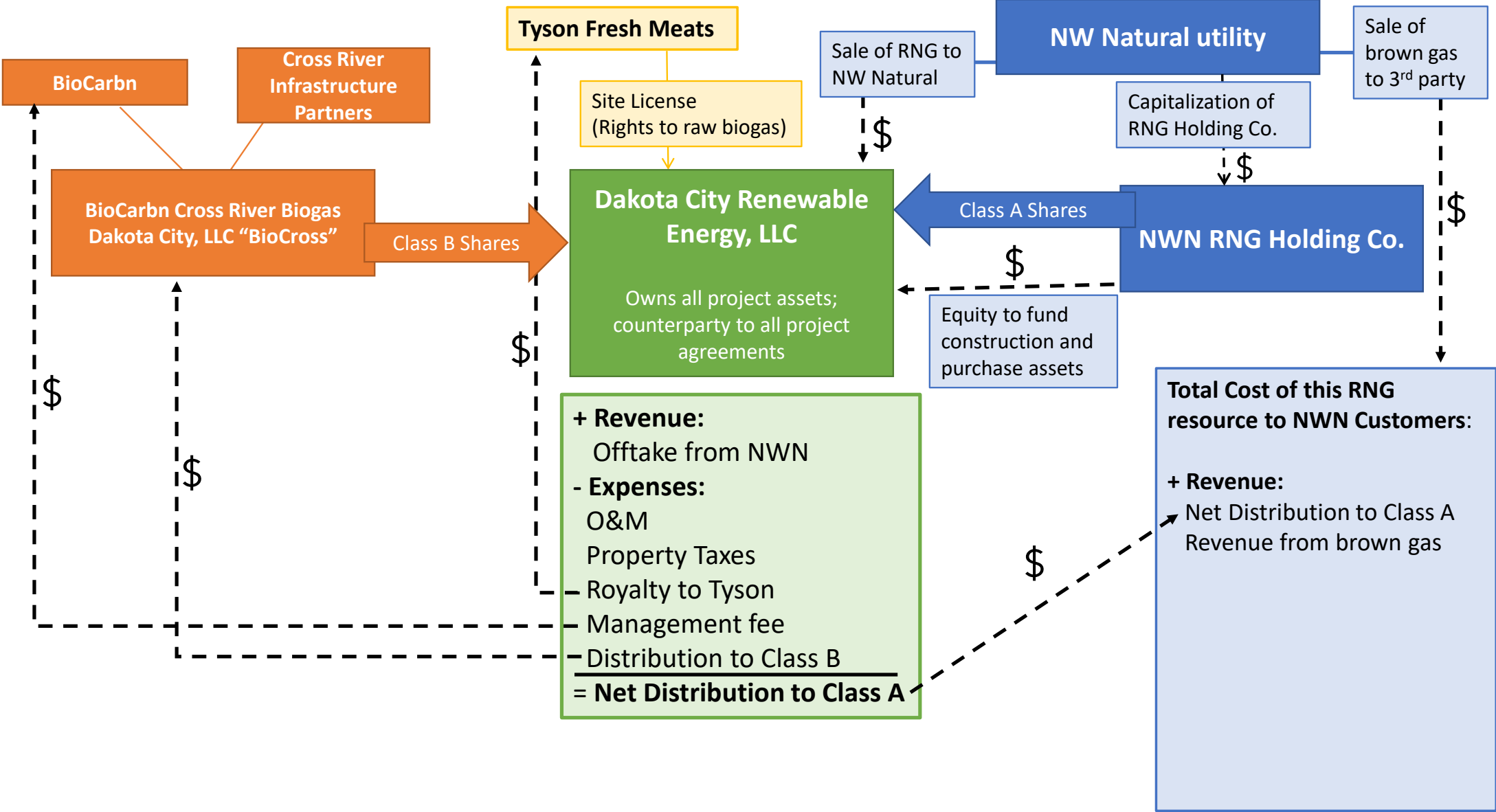
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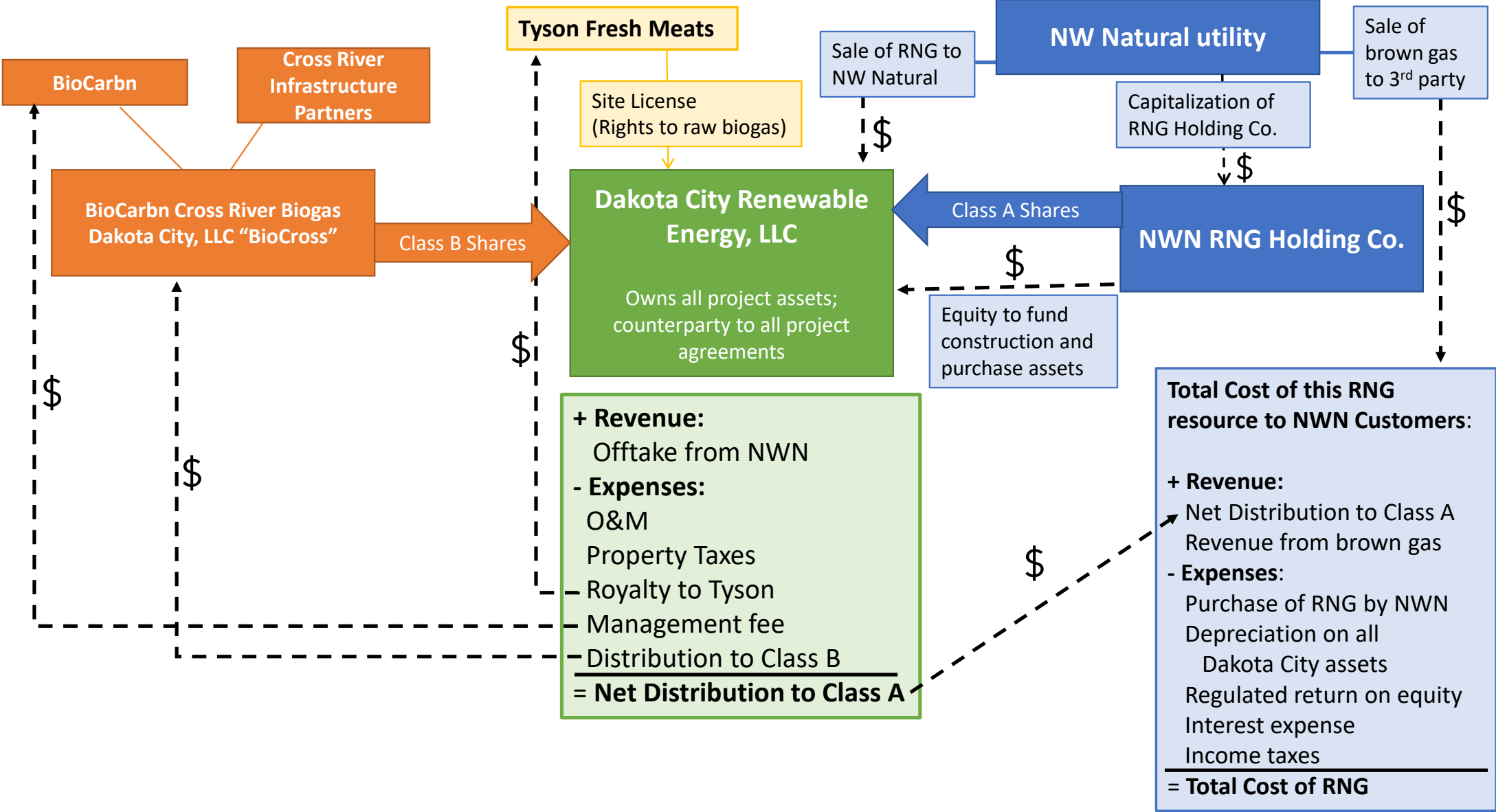
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Flow of Transaction



Flow of Transaction



BEFORE THE
PUBLIC UTILITY COMMISSION OF OREGON

UG 462

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DAKOTA CITY RNG PROJECT
EXHIBIT 106

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February 28, 2023

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DAKOTA CITY RNG PROJECT
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February 28, 2023

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PUBLIC UTILITY COMMISSION OF OREGON

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DAKOTA CITY RNG PROJECT
EXHIBIT 108

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February 28, 2023

BEFORE THE
PUBLIC UTILITY COMMISSION OF OREGON

UG 462

NW Natural

**Direct Testimony of Lora M. Bourdo and
Kyle T. Walker**

**DAKOTA CITY REVENUE REQUIREMENTS
EXHIBIT 200**

February 28, 2023

EXHIBIT 200 – DIRECT TESTIMONY – DAKOTA CITY REVENUE REQUIREMENTS

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1 I. **INTRODUCTION AND SUMMARY**

2 **Q. Please state your names and positions at Northwest Natural Gas Company**
3 **(“NW Natural” or the “Company”).**

4 A. My name is Kyle T. Walker. My current position is Manager of Rates and
5 Regulatory Affairs. My responsibilities include expert witness of the Company’s
6 revenue requirement, calculation of gas costs, derivation of depreciation expense,
7 rate base development, coordination of tax issues, and forecasting of
8 miscellaneous revenues and other taxes.

9 My name is Lora Bourdo. My current position is Rates and Regulatory
10 Analyst. My responsibilities are preparing the revenue requirement which includes
11 rate base expenses, cost of capital, taxes, and operation and maintenance
12 expenses.

13 **Q. Mr. Walker, please describe your education and employment background.**

14 A. I received a Bachelor of Science Degree in Business Administration with an
15 emphasis in Finance from Oregon State University and a Master of Business
16 Administration from Willamette University. In addition, I received an accounting
17 certificate from the University of Washington, and I am a licensed certified public
18 accountant in the State of Oregon. Prior to my employment with NW Natural, I
19 held positions at the Bonneville Power Administration (“BPA”), including Risk
20 Analyst, Derivative Accountant, Internal Auditor and Finance Analyst. Prior to
21 BPA, I was a Credit Manager for Wells Fargo. In early 2015, I started at NW
22 Natural as a Rates/Regulatory Analyst and was later promoted to Manager of
23 Rates.

1 **Q. Ms. Bourdo, please describe your education and employment background.**

2 A. I received my Bachelor of Science Degree in Accounting and a Master of Business
3 Administration from the University of Oregon. Prior to my employment with NW
4 Natural, I was an accountant for the University of Oregon Athletic Department
5 where I focused on payroll and revenue recognition. In 2019, I started at NW
6 Natural as a Rates and Regulatory Analyst. In this role I am responsible for
7 regulatory reporting, revenue requirement, the purchased gas adjustment (“PGA”)
8 and other regulatory duties as assigned.

9 **Q. Please summarize your testimony.**

10 A. In my testimony, I:

- 11 • Provide an overview of how revenue requirement is calculated for the
12 Dakota City renewable natural gas (“RNG”) project;
- 13 • Describe the cost recovery and rate spread of the Dakota City RNG project:

14 **Q. What is the revenue requirement for the Test Year of the Dakota City RNG**
15 **project?**

16 A. The revenue requirement for the period November 1, 2023 through October 31,
17 2024 (“Test Year”) of the Dakota City RNG project is \$2,377,169 million. Please
18 see NW Natural/201, Bourdo-Walker. The revenue requirement has been spread
19 and included within Schedule 198 in NW Natural/202, Bourdo-Walker and NW
20 Natural/203, Bourdo-Walker¹.

¹ NW Natural/203, Bourdo-Walker, Schedule 198, is for illustrative purposes only and includes only the cost of Dakota City.

1 **Q. What is Schedule 198 of NW Natural’s tariff?**

2 A. Schedule 198 is an automatic adjustment clause that authorizes the “recovery of
3 the revenue requirement of qualified investments, as defined by ORS 757.392(5),
4 in renewable natural gas (“RNG”) infrastructure.”²

5 **Q. Is NW Natural currently recovering the costs of any RNG project through
6 Schedule 198?**

7 A. Yes. NW Natural is recovering the costs of the Lexington RNG project through
8 Schedule 198. In this proceeding, NW Natural is not seeking to make any changes
9 to the revenue requirement of the Lexington RNG project. The annual filing for
10 updating revenue requirements for existing RNG projects recovered under
11 Schedule 198 will be filed by August 1. Rather, NW Natural is seeking to recover
12 the revenue requirement of the Dakota City RNG project. With respect to Schedule
13 198, the Dakota City RNG revenue requirement is reflected in the revised
14 Schedule 198 in NW Natural/203, Bourdo-Walker.

15 **II. COST OF SERVICE**

16 **Q. What are the elements that make up the cost of service for the Dakota City
17 RNG project?**

18 A. The cost of service, or revenue requirement, represents the Dakota City RNG
19 project’s total annual cost to serve its customers. These costs primarily consist of:
20 A) rate base, B) cost of capital (i.e. return on investment), C) taxes (income tax,

² See Schedule 198, Renewable Natural Gas Adjustment Mechanism, available at:
<https://www.nwnatural.com/about-us/rates-and-regulations/oregon-tariff-book>.

1 corporate activity tax, and property tax), D) operation and maintenance expense,
2 and E) depreciation expense.

3 **A. Rate Base**

4 **Q. Please describe rate base.**

5 A. Rate base consists of three primary components: 1) gross plant, 2) accumulated
6 depreciation and 3) cumulative deferred taxes. Each of these components is
7 categorized into the following: capital costs, transaction costs, and interconnection.

8 **Q. Please describe the first component of rate base, gross plant.**

9 A. Gross plant is the original capital cost of the Dakota City RNG assets prior to
10 depreciation. For this filing, there is \$12,501,543 of gross plant included in revenue
11 requirement. As stated above, the assets are categorized into capital costs,
12 transaction costs, and interconnection. Capital costs include scrubbing and gas
13 conditioning equipment to ensure RNG is upgraded to pipeline specifications.
14 Capital costs accounts for \$10,072,998 of gross plant. Transaction costs include
15 payment for Biogas Engineering and developer fees. Transaction costs make up
16 \$612,500. Last, interconnection costs are incurred to construct and install pipeline
17 connections from Dakota City to the adjacent natural gas system. Interconnection
18 costs make up \$1,816,045 of total gross plant. The project also incurred \$340,568
19 of capitalized interest during the construction phase of the project. Please see the
20 Direct Testimony of Anna Chittum (NW Natural/100, Chittum/Page 38) for more
21 details on these costs.

1 **Q. Please describe the second component of rate base, accumulated**
2 **depreciation.**

3 A. Accumulated depreciation is the total amount of depreciation expense generated
4 from the Dakota City RNG gross plant since it was put into service. The
5 accumulation is determined by the life of the Dakota City RNG project, which is 30
6 years. Therefore, the Dakota City RNG project will depreciate at a rate of 3.33
7 percent. Accumulated depreciation at the end of the Test Year is \$677,167.

8 **Q. Please describe the third component of rate base expenses, cumulative**
9 **deferred taxes.**

10 A. Accumulated deferred income tax assets and liabilities (“ADIT”) generally
11 represent the cumulative difference between total income tax expense included in
12 utility ratemaking versus income taxes actually paid to the government by the utility
13 (total income tax expense = current income taxes + deferred income taxes). ADIT
14 primarily arises when accelerated tax depreciation provides for a temporary delay
15 of a portion of income taxes payable until later in an asset’s operating life. To the
16 extent that the payment of income taxes by the utility is deferred until a later period,
17 the full benefit of that deferral—the ADIT—is subtracted from rate base on which
18 customer rates are based. The benefits of ADIT are passed on to customers
19 through a recognition that they provide the utility with interest-free financing for a
20 time, and therefore they warrant an offset to rate base.

1 **B. Cost of Capital**

2 **Q. For Schedule 198 investments, how is the cost of capital determined?**

3 A. Schedule 198 specifies that “capital structure and the cost of capital to be used in
4 the calculation of return on rate base will be that adopted by the Commission in
5 the Company’s most recent general rate case.” In the most recent general rate
6 case (UG 435), the Commission adopted a capital structure of 50 percent equity
7 and 50 percent debt with a cost of capital of 6.836 percent. Per Schedule 198,
8 NW Natural is applying that capital structure and cost of capital to the Dakota
9 City RNG project.

10 **C. Taxes**

11 **Q. Please describe how income taxes were determined.**

12 A. Income tax reflects the anticipated federal and Oregon income tax expense, at
13 currently enacted rates, expected to be incurred based on the revenues, expenses,
14 and rate base included in the revenue requirement model. Income tax expense
15 also reflects the estimated net benefit of an Investment Tax Credit (ITC) which we
16 anticipate will be available for this investment under Internal Revenue Code §48
17 for qualified biogas property. The estimated net benefit for the ITC is \$2.15 million
18 over the life of the project.

19 **Q. Please describe how Corporate Activity Tax (“CAT”) was determined.**

20 A. The Oregon CAT is a tax on revenue arising from activity in the regular course of
21 a trade or business. The CAT reflects the 0.57 percent tax on gross revenue in
22 the revenue requirement, less allowed exclusions for revenue providing for the
23 recovery of certain taxes and fees.

1 **Q. Please explain how the property tax was determined.**

2 A. Property tax reflects the anticipated tax liability for Oregon centrally assessed utility
3 property taxes allocable to this investment. The liability is estimated at 1.5 percent
4 of the net book investment which results in a declining liability over time as the
5 investment depreciates.

6 **D. Operations and Maintenance Expense**

7 **Q. Please describe operations and maintenance expense.**

8 A. Operations and maintenance expense is the cost to operate and maintain the
9 Dakota City RNG project. In the Test Year, operations and maintenance expense
10 is \$849,898 (see NW Natural/201, Bourdo-Walker). Please see the Direct
11 Testimony of Anna Chittum (NW Natural/100, Chittum/41-45), which describes the
12 different categories of operations and maintenance expense.

13 **Q. Is a portion of the operations and maintenance expense offset by revenue**
14 **the project receives?**

15 A. Yes. As explained in the Direct Testimony of Anna Chittum (NW Natural/100,
16 Chittum), Dakota City sells the energy content of the gas to a marketer, Symmetry,
17 and retains the environmental attributes of the gas to meet SB 98 targets and for
18 Climate Protection Program (“CPP”) compliance. Revenue from the sale of the
19 energy content of the gas offsets the cost of the Dakota City RNG project. The
20 revenue has been forecasted using the forward curve for the market in the Dakota
21 City region and is expected to be \$390,381, over the Test Year, starting November
22 1, 2023.

1 **E. Depreciation Expense**

2 **Q. Explain the Depreciation Expenses included in the filing.**

3 A. Depreciation expenses, or return of capital investments, are determined by
4 depreciating gross plant over the 30-year contract life. As stated prior, the Dakota
5 City RNG project will depreciate at an annual rate of 3.33 percent.

6 **V. RATE SPREAD**

7 **Q. Is NW Natural pursuing the Dakota City RNG project under Senate Bill 98**
8 **(“RNG Statute”)³?**

9 A. Yes. NW Natural is pursuing the Dakota City RNG project to meet the RNG
10 Statute’s acquisition targets in ORS 757.396.

11 **Q. Are there other benefits to the Dakota City RNG project?**

12 A. Yes. As described in the Direct Testimony of Anna Chittum (NW Natural/100,
13 Chittum), the Dakota City RNG project helps NW Natural comply with the CPP
14 Rule by reducing its covered emissions under the program.

15 **Q. Do all non-storage customers benefit from the Dakota City RNG project?**

16 A. Yes. Sales customers benefit from the Dakota City RNG project because it helps
17 NW Natural meet RNG Statute acquisition targets and comply with the CPP Rule.
18 Since NW Natural is the point of regulation for its transport customers emissions
19 under the CPP, transport customers also receive benefits from the project as it
20 reduces covered emissions.

³ ORS 757.390-398.

1 **Q. Given that all non-storage customers benefit from the Dakota City RNG**
2 **project, how does NW Natural propose to allocate the project's costs?**

3 A. The Company proposes to use the same methodology that the Commission used
4 to allocate the costs of the Lexington RNG project in Order No. 23-046. Dakota
5 City, like Lexington, benefits all non-storage customers and, therefore, the
6 Company believes it is appropriate to allocate the revenue requirement on an
7 equal cents per therm basis. This results in a 0.2 percent increase, or \$0.12, for
8 residential customers using on average 54 therms a month.

9 **Q. Please explain the Commission's cost allocation methodology.**

10 A. On February 21, 2023, the Commission issued Order No. 23-046, which amended
11 Order No. 22-388. Order No. 23-046 states that "direct costs will be allocated to
12 all non-storage customers on an equal cents per therm basis, unless and until a
13 new cost allocation methodology is approved." NW Natural has followed this
14 allocation approach for the Dakota City RNG project.

15 **Q. Does this conclude your Direct Testimony?**

16 A. Yes.

BEFORE THE
PUBLIC UTILITY COMMISSION OF OREGON

UG 462

NW Natural

Exhibits of Lora M. Bourdo and Kyle T. Walker

**DAKOTA CITY REVENUE REQUIREMENTS
EXHIBITS 201-203**

February 28, 2023

EXHIBITS 201-203 – DAKOTA CITY REVENUE REQUIREMENTS

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Exhibit 201 – Determination of Cost of Service	1
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BEFORE THE
PUBLIC UTILITY COMMISSION OF OREGON

UG 462

NW Natural
Exhibit of Lora M. Bourdo and Kyle T. Walker

DAKOTA CITY REVENUE REQUIREMENTS
EXHIBIT 201

February 28, 2023

NW Natural
Determination of Cost of Service
Dakota City RNG Costs from Nov 2023 - Oct 2024

NW Natural/Exhibit 201
Bourdo-Walker / Page 1

	<u>Year 1</u>
Depreciation	416,718
O&M	849,898
Property Taxes	180,231
Taxes on Equity Return	
State and Federal Income Taxes	72,299
Total Taxes	<u>72,299</u>
Return on Rate Base	
Debt and Equity Return	792,870
Total Return	<u>792,870</u>
Subtotal Cost of Service	2,312,016
Revenue Sensitive Items	<u>65,153</u>
Total Cost of Service - Annual	<u><u>\$2,377,169</u></u>

Combined Overall Tax Rate (OR & Fed)	27.004%		
Property Tax Rate	1.500%		
Franchise Taxes	2.291%		
Commission Fee	0.430%		2.818% '---> (rev sens rate)
Uncollectible Rate	0.097%		
		Capital	
		Structure	Rates
			Post-Tax
Long-Term Debt	50.000%	4.271%	2.136%
Common Equity	50.000%	9.400%	<u>4.700%</u>
ROR			6.836%
Bonus Depreciation?	NO	0%	--> At 0%, no bonus depreciation.
Non-Bonus		100%	

BEFORE THE
PUBLIC UTILITY COMMISSION OF OREGON

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NW Natural
Exhibit of Lora M. Bourdo and Kyle T. Walker

DAKOTA CITY REVENUE REQUIREMENTS
EXHIBIT 202

February 28, 2023

NW Natural
Rates & Regulatory Affairs
Test Year Ending October 31, 2024
Calculation of Dakota City RNG Project

				Dakota City RNG Project			
2	UG 435	Proposed Amount:		2,377,169	Base Rate Adjustment		
3	OR GRC	Revenue Sensitive Multiplier:		< n/a >	rev sensitive factor is built in		
4	Volumes	Amount to Amortize:		2,377,169	to all customers		
Schedule	Block	A	Multiplier E	Volumes F	Increment G	Rate H	
8	2 R	405,331,797	1.0	405,331,797	\$ 944,423	\$0.00233	
9	3 CFS	169,645,064	1.0	169,645,064	\$ 395,273	\$0.00233	
10	3 IFS	5,085,467	1.0	5,085,467	\$ 11,849	\$0.00233	
11	27	791,922	1.0	791,922	\$ 1,845	\$0.00233	
12	31C Firm Sales	Block 1 11,937,946	1.0	11,937,946	\$ 27,815	\$0.00233	
13		Block 2 9,663,405	1.0	9,663,405	\$ 22,516	\$0.00233	
14	31C Firm Transpt	Block 1 1,197,319	1.0	1,197,319	\$ 2,790	\$0.00233	
15		Block 2 1,398,405	1.0	1,398,405	\$ 3,258	\$0.00233	
16	31I Firm Sales	Block 1 3,902,829	1.0	3,902,829	\$ 9,094	\$0.00233	
17		Block 2 8,292,255	1.0	8,292,255	\$ 19,321	\$0.00233	
18	31I Firm Transpt	Block 1 135,565	1.0	135,565	\$ 316	\$0.00233	
19		Block 2 370,003	1.0	370,003	\$ 862	\$0.00233	
20	32C Firm Sales	Block 1 34,405,848	1.0	34,405,848	\$ 80,166	\$0.00233	
21		Block 2 8,996,941	1.0	8,996,941	\$ 20,963	\$0.00233	
22		Block 3 1,505,090	1.0	1,505,090	\$ 3,507	\$0.00233	
23		Block 4 421,439	1.0	421,439	\$ 982	\$0.00233	
24		Block 5 -	1.0	0	\$ -	\$0.00233	
25		Block 6 -	1.0	0	\$ -	\$0.00233	
26	32I Firm Sales	Block 1 6,124,832	1.0	6,124,832	\$ 14,271	\$0.00233	
27		Block 2 5,730,496	1.0	5,730,496	\$ 13,352	\$0.00233	
28		Block 3 1,686,931	1.0	1,686,931	\$ 3,931	\$0.00233	
29		Block 4 347,849	1.0	347,849	\$ 810	\$0.00233	
30		Block 5 -	1.0	0	\$ -	\$0.00233	
31		Block 6 -	1.0	0	\$ -	\$0.00233	
32	32C Firm Transpt	Block 1 2,540,213	1.0	2,540,213	\$ 5,919	\$0.00233	
33		Block 2 2,049,162	1.0	2,049,162	\$ 4,775	\$0.00233	
34		Block 3 949,358	1.0	949,358	\$ 2,212	\$0.00233	
35		Block 4 949,827	1.0	949,827	\$ 2,213	\$0.00233	
36		Block 5 17,547	1.0	17,547	\$ 41	\$0.00233	
37		Block 6 -	1.0	0	\$ -	\$0.00233	
38	32I Firm Transpt	Block 1 9,361,047	1.0	9,361,047	\$ 21,811	\$0.00233	
39		Block 2 13,921,392	1.0	13,921,392	\$ 32,437	\$0.00233	
40		Block 3 9,497,411	1.0	9,497,411	\$ 22,129	\$0.00233	
41		Block 4 21,833,039	1.0	21,833,039	\$ 50,871	\$0.00233	
42		Block 5 19,320,860	1.0	19,320,860	\$ 45,018	\$0.00233	
43		Block 6 8,213,069	1.0	8,213,069	\$ 19,136	\$0.00233	
44	32C Interr Sales	Block 1 4,230,356	1.0	4,230,356	\$ 9,857	\$0.00233	
45		Block 2 5,471,563	1.0	5,471,563	\$ 12,749	\$0.00233	
46		Block 3 3,207,435	1.0	3,207,435	\$ 7,473	\$0.00233	
47		Block 4 7,046,824	1.0	7,046,824	\$ 16,419	\$0.00233	
48		Block 5 5,054,642	1.0	5,054,642	\$ 11,777	\$0.00233	
49		Block 6 -	1.0	0	\$ -	\$0.00233	
50	32I Interr Sales	Block 1 5,956,730	1.0	5,956,730	\$ 13,879	\$0.00233	
51		Block 2 8,077,570	1.0	8,077,570	\$ 18,821	\$0.00233	
52		Block 3 4,456,220	1.0	4,456,220	\$ 10,383	\$0.00233	
53		Block 4 10,249,052	1.0	10,249,052	\$ 23,880	\$0.00233	
54		Block 5 7,342,584	1.0	7,342,584	\$ 17,108	\$0.00233	
55		Block 6 -	1.0	0	\$ -	\$0.00233	
50	32C Inter Transpt	Block 1 995,681	1.0	995,681	\$ 2,320	\$0.00233	
51		Block 2 1,519,237	1.0	1,519,237	\$ 3,540	\$0.00233	
52		Block 3 877,075	1.0	877,075	\$ 2,044	\$0.00233	
53		Block 4 3,005,603	1.0	3,005,603	\$ 7,003	\$0.00233	
54		Block 5 462,553	1.0	462,553	\$ 1,078	\$0.00233	
55		Block 6 -	1.0	0	\$ -	\$0.00233	
56	32I Inter Transpt	Block 1 5,656,512	1.0	5,656,512	\$ 13,180	\$0.00233	
57		Block 2 9,633,242	1.0	9,633,242	\$ 22,445	\$0.00233	
58		Block 3 7,305,771	1.0	7,305,771	\$ 17,022	\$0.00233	
59		Block 4 22,439,448	1.0	22,439,448	\$ 52,284	\$0.00233	
60		Block 5 44,236,972	1.0	44,236,972	\$ 103,072	\$0.00233	
61		Block 6 99,230,818	1.0	99,230,818	\$ 231,208	\$0.00233	
56	33 Transpt	-	0.0	0	\$ -	\$0.00000	
57	Intentionally blank						
58	Intentionally blank						
59	TOTALS	1,022,080,218		1,022,080,218	\$ 2,381,447	\$ 0.00233	

Sources for line 2 above:

Inputs page
Tariff Schedules
Rate Adjustment Schedule

65

BEFORE THE
PUBLIC UTILITY COMMISSION OF OREGON

UG 462

NW Natural

Exhibit of Lora M. Bourdo and Kyle T. Walker

**DAKOTA CITY REVENUE REQUIREMENTS
EXHIBIT 203**

February 28, 2023

NORTHWEST NATURAL GAS COMPANY

P.U.C. Or. 25

First Revision of Sheet 198-1
 Cancels Original Sheet 198-1

**SCHEDULE 198
 RENEWABLE NATURAL GAS ADJUSTMENT MECHANISM**

PURPOSE:

The purpose of this Schedule is to identify adjustments to rates in the Rate Schedules listed below for the recovery of the revenue requirement of qualified investments, as defined by ORS 757.392(5), in renewable natural gas (RNG) infrastructure.

This adjustment mechanism will recover the revenue requirement associated with the prudently incurred qualified investments that contribute to the Company meeting the targets set forth in ORS 757.396. For purposes of this Schedule, "qualified investment" has the meaning given that term in ORS 757.392. This Adjustment Schedule is implemented as an automatic adjustment clause as provided for under ORS 757.210 and Oregon Senate Bill 98 (2019) codified as ORS 757.396.

APPLICABLE:

To All Customers on the Rate Schedules of this Tariff listed below:

Rate Schedule 2	Rate Schedule 31
Rate Schedule 3	Rate Schedule 32
Rate Schedule 27	Rate Schedule 33

Application to Rates:

The per-therm Base Adjustment in the applicable Rate Schedules include the following adjustment:

	All Customers	Effective Date:
Schedule 198	\$0.00233	November 1, 2023

(T)(D)(I)(C)
(D)

SPECIAL CONDITIONS:

1. The Company will file this Schedule by August 1 of each year as necessary to update all charges already included on this schedule as needed. Updating of charges will include updating for the relevant vintage of the revenue requirement for previously included investments and a true-up for actual costs and volumes of previously included costs. This updating of charges will be supported by a deferral application (Schedule 198 Deferral) that will apply to costs recovered through this Schedule 198. The amortization of the Schedule 198 Deferral amount will be subject to to an earnings test deadband. Per Order No. 22-388, the deadband is set at at 50 basis points below and 50 basis points above authorized ROE.

(continue to Sheet 198-2)

Issued February 28, 2023
 UG 462

Effective with service on
 and after November 1, 2023