

AMENDMENT No. 1 to the
RECEIPT SERVICE AGREEMENT

This AMENDMENT No. 1, dated November __, 2019, to the Receipt Service Agreement dated February 28, 2018, is entered into by and between Puget Sound Energy, Inc., a Washington corporation (“PSE”) and the City of Tacoma, a municipal corporation operating under the laws of the state of Washington, (“Customer”)(together the “Parties” or individually a “Party”).

RECITALS

WHEREAS, PSE and Customer are parties to that Engineering Services and Construction Agreement dated February 15, 2018 (the “ES&C Agreement”);

WHEREAS, PSE and Customer are also parties to a Safety Service Contract dated February 28, 2018 (Exhibit B to the ES&C Agreement) and parties to a Receipt Service Agreement dated February 28, 2018 (Exhibit C to the ES&C Agreement);

WHEREAS, PSE issued a letter to Customer regarding Quality Standards in Receipt Service Agreement - Siloxanes, dated December 5th, 2018 (the “Quality Standards Letter”);

WHEREAS, PSE and Customer have agreed to amend the Receipt Service Agreement to establish the protocol for sampling and testing siloxanes in the Biomethane to ensure the Biomethane delivered by Customer to PSE meets the Pipeline Integrity Protective Constituent Level for siloxanes in Subsection 12.g. of the Receipt Service Agreement;

WHEREAS, PSE and Customer wish to confirm that the Receipt Service Agreement, as amended by this Amendment No. 1, remains in full force and effect, and that there are no outstanding events of default, or events that, with the passage of time, or the giving of notice, or both, would mature into events of default;

NOW THEREFORE, in consideration of the mutual covenants and agreements contained herein, and subject to the terms and conditions set forth herein, the Parties agree as follows:

1. Article 1 Definitions: is amended by adding a new Subsection b.i and a new Subsection l.i.
 - b.i. **Break-Through** means the test results indicating total siloxane concentrations greater than the Lower Action Level in the table in subsection 12.g, and calculated according to subsection 12.k.iv.
 - l.i. **Siloxanes Monitoring Protocol** means the protocol established in Subsection 12.k. for ensuring the siloxane levels in the Biomethane conform to the level required by Subsection 12.g. prior to acceptance by PSE of the Biomethane for delivery into the Interconnecting Line.
2. The first and fourth lines in the Table in Subsection 12.g are revised to: add a note that neither a Trigger Level nor an Upper Level Action is applicable for Siloxanes given the sampling/testing requirements in Subsection 12.k; and in line 4, remove the measure of a Trigger Level for Siloxanes and add a measure for the Lower Action Level for Siloxanes.:

Constituent	Trigger Level(***)	Lower Action Level	Upper Action Level(***)
Siloxanes		0.1 mg silicon/m ³	

(***) Not applicable for Siloxanes given the sampling/testing requirements in Subsection 12.k of this Receipt Service Agreement.

3. Subsection 12.h. Biomethane Periodic Testing is amended to read
 - h. Biomethane Periodic Testing -- Other than Siloxane Testing. The periodic testing required by this Subsection 12.h. will not apply to siloxane testing and instead Subsection 12.k. will apply to siloxane testing.

4. Subsection 12.i. Biomethane Shut-Off and Restart Procedures is amended to read:
 - i. Biomethane Shut-Off and Restart Procedures -- Other than Siloxanes. The shut-off and restart procedures required by this Subsection 12.i. will not apply to ensure siloxane concentrations are within acceptable levels and instead, Subsection 12.k will govern the shut-off and restart process related to siloxanes concentrations.
 - i.iii. Notwithstanding other provisions in this Agreement, Biomethane deliveries following an automatic or manual shut-off as described in Sections 12.i.i or 12.i.ii above, may restart when the instrument is verified to be operating properly, by calibration or other means necessary, and the Biomethane meets Minimum Gas Quality.
 - i.iv. Biomethane deliveries from Customer may be shut-off when there is a change in the biogas source at the facility or the gas processing equipment that PSE or Customer determines will potentially increase the level of any constituent listed in Section 12.g over the previously measured baseline levels; including, among others, a shutdown of Customer's Facility that exceeds 6 months.
 - i.v. Biomethane deliveries from customer shall be shut-off when testing indicates a constituent listed in Section 12.g exceeds allowable concentration levels in the following situations:
 - vi. In order to restart Biomethane deliveries following a shut-off pursuant to Sections 12.i.iv or 12.i.v, Customer shall test the Biomethane using independent certified third party laboratories (ELAP certified where applicable). Deliveries can then resume, subject to the periodic testing requirements in Section 12.h, if the test indicates: (1) the Biomethane complies with the Minimum Gas Quality specifications contained in Section 12.b of the Agreement; and, if applicable, (2) the Pipeline Integrity Protective Constituents are below the Lower Action Level. Thereafter, constituents shall be reevaluated by PSE for eligibility for less frequent testing.

5. Article 12 Biomethane Delivery Specifications, is amended by adding a new Subsection 12.k. Siloxanes Monitoring Protocol, as follows.

k. Siloxanes Monitoring Protocol. The siloxane testing of Biomethane produced at Customer's Facility will be established through a two-phase process. Information and data gathered during Phase 1 will be used to establish the initial testing intervals, by volume, to be used in Phase 2.

i. Conditions:

- (a) Customer will pay for the siloxane sampling and testing described herein;
 - (b) Biomethane produced at Customer's Facility will pass through a canister intended to remove volatile organic compounds (VOCs) prior to siloxane-specific treatment.
 - (c) Following preliminary VOC removal; Biomethane will pass through 5 canisters designed to capture siloxanes before entering the Interconnecting Line;
 - (d) Canisters 4 and 5 will have the same media characteristics;
 - (e) Replacement of media will be performed at the same time for all five siloxane canisters and the VOC canister;
 - (f) Sampling of the Biomethane for siloxane concentration will be performed: at the inlet to the VOC Canister; at the outlet of Canister 4; and at the outlet of Canister 5; and
 - (g) Data recorded as part of the sampling includes date, time, metering flowrate, metering temperature and pressure, and cumulative corrected volume throughput. All data, including the laboratory reports, will be promptly shared between PSE and Customer.
- ii. Phase 1: Sampling and testing during Phase 1 will determine the maximum volume interval between successive samplings and testing of Biomethane at the outlet of Canister 4 during Phase 2.
- (a) Sampling at the inlet to the VOC Canister will be performed at the time the initial Biomethane is injected into the canisters for further delivery to the Interconnecting Line and subsequently at the time Biomethane is injected into the siloxane removal canisters just following media replacement.
 - (b) Sampling at the outlet of Canister 4 and Canister 5 will be performed at two-week intervals after occurrence of sampling at the inlet to the VOC Canister.
 - (c) Coincident with the initiation by Customer of Biomethane gas deliveries to PSE and any Biomethane sampling, cumulative Biomethane volume throughput will be measured and recorded using both a plant meter that measures the volume of

Biomethane that flows through the siloxane canisters and PSE's meter that measures the volume of Biomethane at the Point of Receipt. PSE and Customer's Facility personnel will work diligently to resolve discrepancies greater than 2.5 percent between the measurements.

- (d) Immediately upon a sample showing a Break-Through of siloxanes from the outlet of Canister 4:
 - (1) Biomethane will be diverted from delivery to PSE at a point downstream from the outlet of Canister 5 and upstream of the Point of Receipt;
 - (2) Sampling at the outlet of Canisters 4 and 5 will be performed immediately (within one week of the previous sampling) and at one-week intervals thereafter
 - (3) Coincident with the Biomethane sampling, flowrate and cumulative Biomethane volume throughput will be measured and recorded using a plant meter at Customer's Facility that measures Biomethane that has passed through the siloxane removal canisters;
 - (4) Sampling will be performed to determine the throughput volume at which siloxanes Break-Through Canister 5.
 - (5) Sampling will continue for a minimum of one additional interval after Break-Through at Canister 5.
 - (e) Before Biomethane is again allowed for delivery to PSE at the Point of Receipt, media in Canisters 1-5 and the VOC canister will be replaced.
 - (f) Upon completion of the media replacement in canisters 1-5 and the VOC canister required by subsection 12.k.ii(e), the Phase 1 procedures in subsections 12.k.ii(a) - (e) will be repeated.
 - (g) In the event PSE or Customer determine the data provided in two rounds of Phase 1 sampling and testing is not adequate to determine the volume levels needed for Phase 2 sampling and that one or more additional rounds of Phase 1 sampling and testing is necessary, the procedures in Subsections 12.k.ii(a) - (e) will be repeated.
- iii. Phase 2: Sampling and testing during Phase 2 are to ensure siloxane levels in the Biomethane injected into the Interconnecting Line are at all times below the Lower Action Level established in Subsection 12.g. of this Receipt Service Agreement.
- (a) Upon completion of the final round of sampling and testing in Phase 1 and
 - (1) determination of the Phase 2 volume interval at which sampling and testing of Biomethane at the outlet of Canister 4 must be conducted, and

- (2) replacement of media in Canisters 1-5 and the VOC canister, then

Customer will be allowed to begin injecting Biomethane from Customer's Facility through the canisters for delivery to PSE at the Point of Receipt. Coincident with Customer initiating Biomethane deliveries to PSE, cumulative Biomethane volume throughput will be measured and recorded using both a plant meter that measures the volume of Biomethane that flows through the siloxane removal canisters and PSE's meter that measures the volume of Biomethane at the Point of Receipt. PSE and Customer's Facility personnel will work diligently to resolve discrepancies greater than 2.5 percent between the measurements.

- (b) Sampling at the inlet to the VOC Canister will be performed at the time Customer begins Phase 2 injection of Biomethane into the canisters for further delivery to PSE at the Point of Receipt, and subsequently at the time Biomethane is injected into the canisters following media replacement.
- (c) Sampling at the outlet of Canister 4 will be performed at the volume interval determined by the Phase 1 sampling and testing. Meter reads of Biomethane throughput at both the plant meter and PSE's meter will be taken coincident with the sampling.
- (d) In the event testing results from sampling in Subsection 12.k.iii(c) show elevated siloxane levels at the outlet of Canister 4 earlier than had been indicated by the testing and sampling performed in Phase 1, Customer will initiate sampling at the outlet of Canister 5, divert Biomethane from the Point of Receipt and measure and record Biomethane volume throughput as required by Subsection 12.k.iii(e). Customer will have the option to:
 - (1) re-sample Biomethane at the outlet of Canister 4, and if the test results from both the sampling at Canister 5 and the re-sampling at Canister 4 are below the Lower Action Level for siloxanes, Customer can begin injecting Biomethane from Customer's Facility through the canisters for delivery to PSE at the Point of Receipt and resume sampling at the outlet of Canister 4 at the volume interval in Subsection 12.k.iii(c); or
 - (2) replace the media in canisters 1-5 and the VOC canister and then repeat the procedures in Subsections 12.k.iii(a)-(f). Based on the results of the previous testing, the volume interval at which sampling and testing of the Biomethane at the outlet of Canister is to be conducted may be revised.

If either of the sampling at Canister 5 or the re-sampling at Canister 4 is not below the Lower Action Level for siloxanes, Customer shall undertake the procedures in Subsection 12.k.iii(f).

- (e) Upon receiving test results indicating Break-Through at the outlet of Canister 4, Customer will initiate sampling at the outlet of Canister 5; test results from that sampling shall be available no later than 10 days following the receipt of test

results that indicated Break-Through at the outlet of Canister 4. Coincident with the Biomethane sampling at the outlet of Canister 5, cumulative Biomethane volume throughput will be measured and recorded using both a plant meter at Customer's Facility that measures the volume of Biomethane that flows through the siloxane canisters and PSE's meter that measures the volume of Biomethane at the Point of Receipt. Immediately following the sampling at the outlet of Canister 5, all Biomethane will be diverted from the Point of Receipt.

- (f) Media in canisters 1-5 and the VOC canister will be replaced following the Biomethane diversion described in Subsection 12.k.iii(e).
 - (g) Upon completion of the media replacement in canisters 1-5 and the VOC canister required by subsection 12.k.iii(f), the procedures in Subsections 12.k.iii(a) - (f) will be repeated. Based on the results of the previous testing, the volume interval at which sampling and testing of the Biomethane at the outlet of Canister 4 is to be conducted may be revised.
 - (h) In the event sampling at the outlet of Canister 5 shows a concentration of siloxanes greater than the Lower Action Level in Subsection 12.g. of this Receipt Service Agreement:
 - (1) the provisions of Subsections 5.a. and 5.b. of this Receipt Service Agreement shall apply;
 - (2) Customer shall determine the root cause of the concentration of siloxanes exceeding the Lower Action Level and provide a report to PSE that explains the root cause and the actions Customer is committed to take to prevent a reoccurrence of the exceedance; and
 - (3) Customer shall refrain from injecting Biomethane from Customer's Facility through the canisters for delivery to PSE at the Point of Receipt until PSE has approved the commitments made by Customer in the report required by subsection 12.k.iii(h)(2).
- iv. (a) The siloxane concentration will be measured, reported, and evaluated based on the mass density of silicon (in units of mg Si per cubic meter at 60F and 14.73 psia), where the silicon contributions are aggregated from the following species of siloxanes at a minimum:

Name	Abbreviation
Hexamethylcyclotrisiloxane	D3
Octamethylcyclotetrasiloxane	D4
Decamethylcyclopentasiloxane	D5
Dodecamethylcyclohexasiloxane	D6

Hexamethyldisiloxane	L2
Octamethyltrisiloxane	L3
Decamethyltetrasiloxane	L4
Dodecamethylpentasiloxane	L5
Pentamethyldisiloxane	--

- (b) Except as further described in this Subsection 12.k.iv, when aggregating the silicon contribution for any siloxane species that is below the laboratory or instrument reportable limit (RL), that species will be assumed to exist at one fifth (1/5) of the RL concentration, and the assumed silicon contribution for that species will be included in the total silicon concentration. Once calculated, the total silicon concentration will be compared to the threshold identified above for the Lower Action Level to determine the appropriate course of action.
- (1) Upon presentation by Customer to PSE of independent evidence that pentamethyldisiloxane is not present in the Biogas produced at Customer's Location, pentamethyldisiloxane will be counted as zero in determining the total silicon concentration, provided however, if pentamethyldisiloxane is detected in the Biogas at Customer's Location at the inlet to the VOC Canister, or at the outlet of Canister 4, it will be included in the aggregate silicon contribution.
 - (2) Once pentamethyldisiloxane is detected in the Biogas at Customer's Location at the inlet to the VOC Canister, or at the outlet of Canister 4, it will be included in the aggregate silicon contribution until it meets the requirements of Subsections 12.k.iv.(c)(1) and (2).
- (c) A siloxane species will be counted as zero in determining the total silicon concentration when both of following requirements are met:
- (1) The siloxane removal process is certified by the vendor of the siloxane removal media to remove at least ninety percent (90%) of that particular species; and
 - (2) The Biogas at Customer's Location has been sampled upstream of the VOC canister and tested 6 times at a frequency of not more than one time per month with no detection of the species, where the siloxane RL of such testing is consistent with RL of other siloxane testing.

If a species previously qualified to be counted as zero under this Subsection 12.k.iv(c) is detected in Biogas sampling or at the inlet of the VOC Canister or the outlet of Canister 4, that species will be counted toward the aggregate silicon contribution until it again meets the requirements in Subsections 12.k.iv(c)(1) and (2).

- v. In the event information or data is obtained during Phase 2 that indicates a revision to the sampling and testing procedures is necessary or desirable, PSE and Customer agree to meet and confer to determine mutually agreeable revisions to the procedures.
6. Quality Standards Letter: This Amendment No. 1 is intended to supersede and replace the Quality Standards Letter in its entirety.
7. Except as expressly modified herein, all provisions of the Receipt Service Agreement shall remain in full force and effect.
8. Any further modifications to the Receipt Service Agreement must be in writing and executed by both Parties. This Amendment No. 1 may be executed in two or more counterparts, all of which when taken together, shall constitute one and the same Amendment No. 1. Executed counterparts transmitted by facsimile or electronic means shall be binding on the Parties.

IN WITNESS WHEREOF, the Parties have caused this Amendment No. 1 to be signed by their duly authorized representatives as of the date first written above.

Signatures are on the following page

Customer:
City of Tacoma

PSE:
Puget Sound Energy, Inc.

By: _____

By:  _____

Name: Elizabeth A. Pauli
Title: City Manager

Name: Greg Zeller, P.E.
Title: Director -- Customer Care

By: _____

Address: BOT01G,
19900 North Creek Pkwy
Bothell, WA 98011

Name: Mike P. Slevin III, P.E.
Title: Environmental Services Director

By: _____

Date: NOVEMBER 1, 2019

Name: Andrew Cherullo
Title: Finance Director

By: _____

Attest:
By: _____
Name: Doris Sorum
Title: City Clerk

Approved as to Form:

By: _____
Name: Chris Bacha
Title: Chief Deputy City Attorney

Address: 326 East D Street, Tacoma, WA 98421

Date: _____