

Diane Roy Vice President, Regulatory Affairs

Gas Regulatory Affairs Correspondence Email: <u>gas.regulatory.affairs@fortisbc.com</u>

Electric Regulatory Affairs Correspondence Email: <u>electricity.regulatory.affairs@fortisbc.com</u> FortisBC 16705 Fraser Highway Surrey, B.C. V4N 0E8 Tel: (604)576-7349 Cell: (604) 908-2790 Fax: (604) 576-7074 www.fortisbc.com

May 16, 2022

British Columbia Utilities Commission Suite 410, 900 Howe Street Vancouver, B.C. V6Z 2N3

Attention: Mr. Patrick Wruck, Commission Secretary

Dear Mr. Wruck:

Re: FortisBC Energy Inc. (FEI)

Revised Renewable Gas Program Application – Stage 2 (Application)

Response to the British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1

On December 17, 2021, FEI filed the Application referenced above. In accordance with the amended regulatory timetable established in BCUC Order G-103-22, FEI respectfully submits the attached response to BCUC IR No. 1.

FEI has retained John J. Reed, Chairman and Chief Executive Officer of Concentric Energy Advisors, Inc. (Concentric), to provide his independent, expert opinion in response to a number of IRs related to ratemaking principles and FEI's proposed pricing of Renewable Gas services in the Application. Please find attached to this cover letter the resume and testimony list of John J. Reed. In accordance with Section 14.02(e) of the BCUC's *Rules of Practice and Procedure*, FEI has identified the responses provided by Concentric.

For convenience and efficiency, FEI has occasionally provided an internet address for referenced reports instead of attaching lengthy documents to its IR responses. FEI intends for the referenced documents to form part of its IR responses and the evidentiary record in this proceeding.

If further information is required, please contact the undersigned.

Sincerely,

FORTISBC ENERGY INC.

Original signed:

Diane Roy

Attachments cc (email only): Registered Parties



JOHN J. REED

Chairman and Chief Executive Officer

Mr. Reed is a financial and economic consultant with more than 42 years of experience in the energy industry. Mr. Reed has also been the CEO of an NASD member securities firm, and Co-CEO of the nation's largest publicly traded management consulting firm (NYSE: NCI). He has provided advisory services in the areas of mergers and acquisitions, asset divestitures and purchases, strategic planning, project finance, corporate valuation, energy market analysis, rate and regulatory matters and energy contract negotiations to clients across North and Central America. Mr. Reed's comprehensive experience includes the development and implementation of nuclear, fossil, and hydroelectric generation divestiture programs with an aggregate valuation in excess of \$20 billion. Mr. Reed has also provided expert testimony on financial and economic matters on more than 400 occasions before the FERC, Canadian regulatory agencies, state utility regulatory agencies, various state and federal courts, and before arbitration panels in the United States and Canada. After graduation from the Wharton School of the University of Pennsylvania, Mr. Reed joined Southern California Gas Company, where he worked in the regulatory and financial groups, leaving the firm as Chief Economist in 1981. He served as an executive and consultant with Stone & Webster Management Consulting and R.J. Rudden Associates prior to forming REED Consulting Group (RCG) in 1988. RCG was acquired by Navigant Consulting in 1997, where Mr. Reed served as an executive until leaving Navigant to join Concentric as Chairman and Chief Executive Officer.

REPRESENTATIVE PROJECT EXPERIENCE

Executive Management

• As an executive-level consultant, worked with CEOs, CFOs, other senior officers, and Boards of Directors of many of North America's top electric and gas utilities, as well as with senior political leaders of the U.S. and Canada on numerous engagements over the past 25 years. Directed merger, acquisition, divestiture, and project development engagements for utilities, pipelines and electric generation companies, repositioned several electric and gas utilities as pure distributors through a series of regulatory, financial, and legislative initiatives, and helped to develop and execute several "roll-up" or market aggregation strategies for companies seeking to achieve substantial scale in energy distribution, generation, transmission, and marketing.

Financial and Economic Advisory Services

 Retained by many of the nation's leading energy companies and financial institutions for services relating to the purchase, sale or development of new enterprises. These projects included major new gas pipeline projects, gas storage projects, several non-utility generation projects, the purchase and sale of project development and gas marketing firms, and utility acquisitions. Specific services provided include the development of corporate expansion plans, review of acquisition candidates, establishment of divestiture standards, due diligence on



acquisitions or financing, market entry or expansion studies, competitive assessments, project financing studies, and negotiations relating to these transactions.

Litigation Support and Expert Testimony

- Provided expert testimony on more than 400 occasions in administrative and civil proceedings on a wide range of energy and economic issues. Clients in these matters have included gas distribution utilities, gas pipelines, gas producers, oil producers, electric utilities, large energy consumers, governmental and regulatory agencies, trade associations, independent energy project developers, engineering firms, and gas and power marketers. Testimony has focused on issues ranging from broad regulatory and economic policy to virtually all elements of the utility ratemaking process. Also frequently testified regarding energy contract interpretation, accepted energy industry practices, horizontal and vertical market power, quantification of damages, and management prudence. Has been active in regulatory contract and litigation matters on virtually all interstate pipeline systems serving the U.S. Northeast, Mid-Atlantic, Midwest, and Pacific regions.
- Also served on FERC Commissioner Terzic's Task Force on Competition, which conducted an industry-wide investigation into the levels of and means of encouraging competition in U.S. natural gas markets and served on a "Blue Ribbon" panel established by the Province of New Brunswick regarding the future of natural gas distribution service in that province.

Resource Procurement, Contracting and Analysis

- On behalf of gas distributors, gas pipelines, gas producers, electric utilities, and independent energy project developers, personally managed or participated in the negotiation, drafting, and regulatory support of hundreds of energy contracts, including the largest gas contracts in North America, electric contracts representing billions of dollars, pipeline and storage contracts, and facility leases.
- These efforts have resulted in bringing large new energy projects to market across North America, the creation of hundreds of millions of dollars in savings through contract renegotiation, and the regulatory approval of a number of highly contested energy contracts.

Strategic Planning and Utility Restructuring

• Acted as a leading participant in the restructuring of the natural gas and electric utility industries over the past fifteen years, as an adviser to local distribution companies, pipelines, electric utilities, and independent energy project developers. In the recent past, provided services to most of the top 50 utilities and energy marketers across North America. Managed projects that frequently included the redevelopment of strategic plans, corporate reorganizations, the development of multi-year regulatory and legislative agendas, merger, acquisition and divestiture strategies, and the development of market entry strategies. Developed and supported merchant function exit strategies, marketing affiliate strategies, and detailed plans for the functional business units of many of North America's leading utilities.



PROFESSIONAL HISTORY

Concentric Energy Advisors, Inc. (2002 – Present) Chairman and Chief Executive Officer

CE Capital Advisors (2004 – Present) Chairman, President, and Chief Executive Officer

Navigant Consulting, Inc. (1997 - 2002)

President, Navigant Energy Capital (2000 – 2002) Executive Director (2000 – 2002) Co-Chief Executive Officer, Vice Chairman (1999 – 2000) Executive Managing Director (1998 – 1999) President, REED Consulting Group, Inc. (1997 – 1998)

REED Consulting Group (1988 - 1997)

Chairman, President and Chief Executive Officer

R.J. Rudden Associates, Inc. (1983 – 1988)

Vice President

Stone & Webster Management Consultants, Inc. (1981 - 1983)

Senior Consultant Consultant

Southern California Gas Company (1976 - 1981)

Corporate Economist Financial Analyst Treasury Analyst

EDUCATION

Wharton School, University of Pennsylvania

B.S., Economics and Finance, 1976 Licensed Securities Professional: NASD Series 7, 63, 24, 79 and 99 Licenses

BOARDS OF DIRECTORS (PAST AND PRESENT)

Concentric Energy Advisors, Inc. Navigant Consulting, Inc. Navigant Energy Capital Nukem, Inc. New England Gas Association R. J. Rudden Associates REED Consulting Group



AFFILIATIONS

American Gas Association Energy Bar Association Guild of Gas Managers International Association of Energy Economists Northeast Gas Association Society of Gas Lighters Society of Utility and Regulatory Financial Analysts

ARTICLES AND PUBLICATIONS

"Maximizing U.S. federal loan guarantees for new nuclear energy," Bulletin of the Atomic Scientists (with John C. Slocum), July 29, 2009 "Smart Decoupling – Dealing with unfunded mandates in performance-based ratemaking," Public Utilities Fortnightly, May 2012



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT	
Alaska Regulatory	Commis	sion			
Chugach Electric	12/86	Chugach Electric	U-86-11	Cost Allocation	
Chugach Electric	5/87	Enstar Natural Gas Company	U-87-2	Tariff Design	
Chugach Electric	12/87	Enstar Natural Gas Company	U-87-42	Gas Transportation	
Chugach Electric	11/87 2/88	Chugach Electric	U-87-35	Cost of Capital	
Anchorage Municipal Light & Power	9/17	Anchorage Municipal Light & Power	U-16-094 U-17-008	Project Prudence	
Municipality of Anchorage ("MOA") d/b/a Municipal Light and Power	8/19 10/19	Municipality of Anchorage ("MOA") d/b/a Municipal Light and Power	U-18-102 U-19-020 U-19-021	Merger Standard for Approval	
Alberta Utilities Co	ommissio	n			
Alberta Utilities (AltaLink, EPCOR, ATCO, ENMAX, FortisAlberta, AltaGas)	1/13	Alberta Utilities	Application 1566373, Proceeding ID 20	Stranded Costs	
Arizona Corporation Commission					
Tucson Electric Power	7/12	Tucson Electric Power	E-01933A-12- 0291	Cost of Capital	
UNS Energy and Fortis Inc.	1/14	UNS Energy, Fortis Inc.	E-04230A-00011 E-01933A-14- 0011	Merger	
California Energy	Commiss	ion			
Southern California Gas Co.	8/80	Southern California Gas Co.	80-BR-3	Gas Price Forecasting	



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
California Public U	Jtility Cor	nmission		-
Southern California Gas Co.	3/80	Southern California Gas Co.	TY 1981 G.R.C.	Cost of Service, Inflation
Pacific Gas Transmission Co.	10/91 11/91	Pacific Gas & Electric Co.	App. 89-04-033	Rate Design
Pacific Gas Transmission Co.	7/92	Southern California Gas Co.	A. 92-04-031	Rate Design
San Diego Gas & Electric Company	4/19 8/19	San Diego Gas & Electric Company	A. 19-04-017	Risk Premium, Return on Equity
Colorado Public U	tilities Co	ommission		
AMAX Molybdenum	2/90	Commission Rulemaking	89R-702G	Gas Transportation
AMAX Molybdenum	11/90	Commission Rulemaking	90R-508G	Gas Transportation
Xcel Energy	8/04	Xcel Energy	031-134E	Cost of Debt
Public Service Company of Colorado	6/17	Public Service Company of Colorado	17AL-0363G	Return on Equity (Gas)
CT Public Utilities	Regulato	ory Authority	•	1
Connecticut Natural Gas	12/88	Connecticut Natural Gas	88-08-15	Gas Purchasing Practices
United Illuminating	3/99	United Illuminating	99-03-04	Nuclear Plant Valuation
Southern Connecticut Gas	2/04	Southern Connecticut Gas	00-12-08	Gas Purchasing Practices
Southern Connecticut Gas	4/05	Southern Connecticut Gas	05-03-17	LNG/Trunkline
Southern Connecticut Gas	5/06	Southern Connecticut Gas	05-03-17PH01	LNG/Trunkline



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT	
Southern Connecticut Gas	8/08	Southern Connecticut Gas	06-05-04	Peaking Service Agreement	
SJW Group and Connecticut Water Service	4/19	SJW Group and Connecticut Water Service	19-04-02	Customer Benefits, Public Interest	
District of Columb	ia PSC				
Potomac Electric	3/99	Potomac Electric	945	Divestiture of Gen. Assets &	
Power company	5/99	Power company		Purchase Power Contracts	
	7/99				
AltaGas Ltd./WGL	4/17	AltaGas Ltd./WGL	1142	Merger Standards, Public	
Holdings	8/17	Holdings		Interest Standard	
	10/17				
Federal Energy Regulatory Commission					
Safe Harbor Water Power Corp.	8/82	Safe Harbor Water Power Corp.	-	Wholesale Electric Rate Increase	
Western Gas Interstate Company	5/84	Western Gas Interstate Company	RP84-77	Load Forecast Working Capital	
Southern Union	4/87	El Paso Natural Gas	RP87-16-000	Take-or-Pay Costs	
Gas	5/87	Company			
Connecticut Natural Gas	11/87	Penn-York Energy Corporation	RP87-78-000	Cost Allocation/Rate Design	
AMAX Magnesium	12/88	Questar Pipeline	RP88-93-000	Cost Allocation/Rate Design	
	1/89	Company			
Western Gas Interstate Company	6/89	Western Gas Interstate Company	RP89-179-000	Cost Allocation/Rate Design, Open-Access Transportation	
Associated CD Customers	12/89	CNG Transmission	RP88-211-000	Cost Allocation/Rate Design	



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Utah Industrial Group	9/90	Questar Pipeline Company	RP88-93-000, Phase II	Cost Allocation/Rate Design
Iroquois Gas Trans. System	8/90	Iroquois Gas Transmission System	CP89-634- 000/001 CP89-815-000	Gas Markets, Rate Design, Cost of Capital, Capital Structure
Boston Edison Company	1/91	Boston Edison Company	ER91-243-000	Electric Generation Markets
Cincinnati Gas and Electric Co., Union Light,	7/91	Texas Gas Transmission Corp.	RP90-104-000 RP88-115-000 RP90-192-000	Cost Allocation, Rate Design, Comparability of Service
Heat and Power Company, Lawrenceburg Gas Company				
Ocean State Power II	7/91	Ocean State Power II	ER89-563-000	Competitive Market Analysis, Self-dealing
Brooklyn Union/PSE&G	7/91	Texas Eastern	RP88-67, et al	Market Power, Comparability of Service
Northern Distributor Group	9/92 11/92	Northern Natural Gas Company	RP92-1-000, et al	Cost of Service
Canadian Association of Petroleum Producers and Alberta Pet. Marketing Comm.	10/92 7/97	Lakehead Pipeline Co. L.P.	IS92-27-000	Cost Allocation, Rate Design
Colonial Gas, Providence Gas	7/93 8/93	Algonquin Gas Transmission	RP93-14	Cost Allocation, Rate Design
Iroquois Gas Transmission	94	Iroquois Gas Transmission	RP94-72-000	Cost of Service, Rate Design
Transco Customer Group	1/94	Transcontinental Gas Pipeline Corporation	RP92-137-000	Rate Design, Firm to Wellhead
Pacific Gas Transmission	2/94 3/95	Pacific Gas Transmission	RP94-149-000	Rolled-In vs. Incremental Rates, Rate Design



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Tennessee GSR Group	1/95 3/95 1/96	Tennessee Gas Pipeline Company	RP93-151-000 RP94-39-000 RP94-197-000 RP94-309-000	GSR Costs
PG&E and SoCal Gas	8/96 9/96	El Paso Natural Gas Company	RP92-18-000	Stranded Costs
Iroquois Gas Transmission System, L.P.	97	Iroquois Gas Transmission System, L.P.	RP97-126-000	Cost of Service, Rate Design
BEC Energy - Commonwealth Energy System	2/99	Boston Edison Company/ Commonwealth Energy System	EC99-33-000	Market Power Analysis – Merger
Central Hudson Gas & Electric, Consolidated Co. of New York, Niagara Mohawk Power Corporation, Dynegy Power Inc.	10/00	Central Hudson Gas & Electric, Consolidated Co. of New York, Niagara Mohawk Power Corporation, Dynegy Power Inc.	EC01-7-000	Market Power 203/205 Filing
Wyckoff Gas Storage	12/02	Wyckoff Gas Storage	CP03-33-000	Need for Storage Project
Indicated Shippers/Produce rs	10/03	Northern Natural Gas	RP98-39-029	Ad Valorem Tax Treatment
Maritimes & Northeast Pipeline	6/04	Maritimes & Northeast Pipeline	RP04-360-000	Rolled-In Rates
ISO New England	8/04 2/05	ISO New England	ER03-563-030	Cost of New Entry
Transwestern Pipeline Company, LLC	9/06	Transwestern Pipeline Company, LLC	RP06-614-000	Business Risk



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Portland Natural Gas Transmission System	6/08	Portland Natural Gas Transmission System	RP08-306-000	Market Assessment, Natural Gas Transportation, Rate Setting
Portland Natural Gas Transmission System	5/10 3/11 4/11	Portland Natural Gas Transmission System	RP10-729-000	Business Risks, Extraordinary and Non-recurring Events Pertaining to Discretionary
Morris Energy	7/10	Morris Energy	RP10-79-000	Impact of Preferential Rate
Gulf South Pipeline	10/14	Gulf South Pipeline	RP15-65-000	Business Risk, Rate Design
BNP Paribas Energy Trading, GP South Jersey Resource Group, LLC	2/15	Transcontinental Gas Pipeline Corporation	RP06-569-008 RP07-376-005	Regulatory Policy, Incremental Rates, Stacked Rate
Tallgrass Interstate Gas Transmission, LLC	10/15 12/15	Tallgrass Interstate Gas Transmission, LLC	RP16-137-000	Market Assessment, Rate Design, Rolled-in Rate Treatment
Tennessee Valley Authority	2/21 3/21	Athens Utility Board, Gibson Electric Membership Corp., Joe Wheeler Electric Membership Corp., and Volunteer Energy Cooperative v. Tennessee Valley Authority	EL21-40-000 TX21-01-000	Public Policy, Competition, Economic Harm



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Florida Impact Est	imating	Conference		
Florida Power and Light Co. on behalf of the Florida Investor- Owned Utilities	2/19 3/19	Florida Power and Light Co. on behalf of the Florida Investor- Owned Utilities	Right to Competitive Energy Market for Customers of Investor-Owned Utilities; Allowing Energy Choice	Economic and Financial Impact of Deregulation on Customers and Market Design and Function
Florida Public Serv	vice Com	mission		
Florida Power and Light Co.	10/07	Florida Power & Light Co.	070650-EI	Need for New Nuclear Plant
Florida Power and Light Co.	5/08	Florida Power & Light Co.	080009-EI	New Nuclear Cost Recovery, Prudence
Florida Power and Light Co.	3/09 8/09	Florida Power & Light Co.	080677-EI	Benchmarking in Support of ROE
Florida Power and Light Co.	3/09 5/09 8/09	Florida Power & Light Co.	090009-EI	New Nuclear Cost Recovery, Prudence
Florida Power and Light Co.	3/10 5/10 8/10	Florida Power & Light Co.	100009-EI	New Nuclear Cost Recovery, Prudence
Florida Power and Light Co.	3/11 7/11	Florida Power & Light Co.	110009-EI	New Nuclear Cost Recovery, Prudence
Florida Power and Light Co.	3/12 7/12	Florida Power & Light Co.	120009-EI	New Nuclear Cost Recovery, Prudence
Florida Power and Light Co.	3/12 8/12	Florida Power & Light Co.	120015-EI	Benchmarking in Support of ROE
Florida Power and Light Co.	3/13 7/13	Florida Power & Light Co.	130009	New Nuclear Cost Recovery, Prudence



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Florida Power and Light Co.	3/14	Florida Power & Light Co.	140009	New Nuclear Cost Recovery, Prudence
Florida Power and Light Co.	3/15 7/15	Florida Power & Light Co.	150009	New Nuclear Cost Recovery, Prudence
Florida Power and Light Co.	10/15	Florida Power and Light Co.	150001	Recovery of Replacement Power Costs
Florida Power and Light Co.	3/16	Florida Power & Light Co.	160021-EI	Benchmarking in Support of ROE
Florida Power and Light Co.	3/21 7/21	Florida Power & Light Co.	20210015-EI	Benchmarking in Support of ROE
Florida Senate Cor	nmittee (on Communication, Ener	rgy and Utilities	
Florida Power and Light Co.	2/09	Florida Power & Light Co.	-	Securitization
Hawai'i Public Util	ity Comn	nission		
Hawaiian Electric Light Company, Inc.	6/00	Hawaiian Electric Light Company, Inc.	99-0207	Standby Charge
NextEra Energy, Inc. Hawaiian Electric Companies	4/15 8/15 10/15	Hawaiian Electric Company, Inc.; Hawaii Electric Light Company, Inc., Maui Electric Company, Ltd., NextEra Energy, Inc.	2015-0022	Merger Application



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT	
Idaho Public Utilit	ies Comn	nission			
Hydro One Limited and Avista Corporation	9/18 11/18	Hydro One Limited and Avista Corporation	AVU-E-17-09 AVU-G-17-05	Governance, Financial Integrity and Ring-fencing Merger Commitments	
Illinois Commerce	Commis	sion		-	
Renewables Suppliers (Algonquin Power Co., EDP Renewables North America, Invenergy, NextEra Energy Resources)	3/14	Renewables Suppliers	13-0546	Application for Rehearing and Reconsideration, Long- term Purchase Power Agreements	
WE Energies	8/14	WE Energies/Integrys	14-0496	Merger Application	
orporation	12/14 2/15				
Indiana Utility Regulatory Commission					
Northern Indiana Public Service Company	10/01	Northern Indiana Public Service Company	41746	Valuation of Electric Generating Facilities	
Northern Indiana Public Service Company	1/08 3/08	Northern Indiana Public Service Company	43396	Asset Valuation	
Northern Indiana Public Service Company	8/08	Northern Indiana Public Service Company	43526	Fair Market Value Assessment	



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT	
Indianapolis Power & Light Company	12/14	Indianapolis Power & Light Company	44576	Asset Valuation	
Indianapolis Power & Light Company	12/16	Indianapolis Power & Light Company	44893	Rate Recovery for New Plant Additions, Valuation of Electric Generating Facilities	
Indianapolis Power & Light Company D/B/A AES Indiana	8/21	Indianapolis Power & Light Company D/B/A AES Indiana	45591	Power Project Development and PPA Evaluation	
Iowa Utilities Boar	rd		<u>+</u>		
Interstate Power and Light	7/05	Interstate Power and Light and FPL Energy Duane Arnold, LLC	SPU-05-15	Sale of Nuclear Plant	
Interstate Power and Light	5/07	City of Everly, Iowa	SPU-06-5	Municipalization	
Interstate Power and Light	5/07	City of Kalona, Iowa	SPU-06-6	Municipalization	
Interstate Power and Light	5/07	City of Wellman, Iowa	SPU-06-10	Municipalization	
Interstate Power and Light	5/07	City of Terril, Iowa	SPU-06-8	Municipalization	
Interstate Power and Light	5/07	City of Rolfe, Iowa	SPU-06-7	Municipalization	
Kansas Corporation Commission					
Great Plains Energy Kansas City Power and Light Company	1/17	Great Plains Energy, Kansas City Power & Light Company, and Westar Energy	16-KCPE-593- ACQ	Merger Standards, Acquisition Premium, Ring- Fencing, Public Interest Standard	



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Great Plains Energy Kansas City Power and Light Company	8/17 2/18	Great Plains Energy, Kansas City Power & Light Company, and Westar Energy	18-KCPE-095- MER	Merger Standards, Transaction Value, Merger Benefits, Ring-Fencing,
Maine Public Utilit	ty Commi	ssion		
Northern Utilities	5/96	Granite State and PNGTS	95-480 95-481	Transportation Service and PBR
Maine Water	7/19	Maine Water	2019-00096	Merger Standards, Net
Company	8/19	Company		Benefits to Customers, Ring- fencing
Maryland Public S	ervice Co	mmission		
Eastalco Aluminum	3/82	Potomac Edison	7604	Cost Allocation
Potomac Electric Power Company	8/99	Potomac Electric Power Company	8796	Stranded Cost & Price Protection
AltaGas Ltd./WGL	4/17	AltaGas Ltd./WGL	9449	Merger Standards, Public
Holdings	9/17	Holdings		Interest Standard
	1/18			
	2/18			
Washington Gas Light Company	8/20	Washington Gas Light Company	9622	Regulatory Policy
Mass. Department	of Public	Utilities		
Haverhill Gas	5/82	Haverhill Gas	DPU #1115	Cost of Capital
New England Energy Group	1/87	Commission Investigation	-	Gas Transportation Rates
Energy Consortium of Mass.	9/87	Commonwealth Gas Company	DPU-87-122	Cost Allocation, Rate Design
Mass. Institute of Technology	12/88	Middleton Municipal Light	DPU #88-91	Cost Allocation, Rate Design



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Energy Consortium of Mass.	3/89	Boston Gas	DPU #88-67	Rate Design
PG&E Bechtel Generating Co./ Constellation	10/91	Commission Investigation	DPU #91-131	Valuation of Environmental Externalities
Holdings				
Coalition of Non- Utility Generators		Cambridge Electric Light Co. & Commonwealth Electric Co.	DPU 91-234 EFSC 91-4	Integrated Resource Management
The Berkshire Gas Company	5/92	The Berkshire Gas Company	DPU #92-154	Gas Purchase Contract Approval
Essex County Gas Company		Essex County Gas Company		
Fitchburg Gas and Elec. Light Co.		Fitchburg Gas & Elec. Light Co.		
Boston Edison Company	7/92	Boston Edison	DPU #92-130	Least Cost Planning
Boston Edison Company	7/92	The Williams/Newcorp Generating Co.	DPU #92-146	RFP Evaluation
Boston Edison Company	7/92	West Lynn Cogeneration	DPU #92-142	RFP Evaluation
Boston Edison Company	7/92	L'Energia Corp.	DPU #92-167	RFP Evaluation
Boston Edison Company	7/92	DLS Energy, Inc.	DPU #92-153	RFP Evaluation
Boston Edison Company	7/92	CMS Generation Co.	DPU #92-166	RFP Evaluation
Boston Edison Company	7/92	Concord Energy	DPU #92-144	RFP Evaluation



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
The Berkshire Gas Company	11/93	The Berkshire Gas Company	DPU #93-187	Gas Purchase Contract Approval
Colonial Gas Company Essex County Gas		Colonial Gas Company Essex County Gas Company		
Company Fitchburg Gas and Electric Company		Fitchburg Gas and Electric Co.		
Bay State Gas Company	10/93	Bay State Gas Company	93-129	Integrated Resource Planning
Boston Edison Company	94	Boston Edison	DPU #94-49	Surplus Capacity
Hudson Light & Power Department	4/95	Hudson Light & Power Dept.	DPU #94-176	Stranded Costs
Essex County Gas Company	5/96	Essex County Gas Company	96-70	Unbundled Rates
Boston Edison Company	8/97	Boston Edison Company	97-63	Holding Company Corporate Structure
Berkshire Gas Company	6/98	Berkshire Gas Mergeco Gas Co.	D.T.E. 98-87	Merger Approval
Eastern Edison Company	8/98	Montaup Electric Company	D.T.E. 98-83	Marketing for Divestiture of its Generation Business
Boston Edison Company	98	Boston Edison Company	D.T.E. 97-113	Fossil Generation Divestiture
Boston Edison Company	2/99	Boston Edison Company	D.T.E. 98-119	Nuclear Generation Divestiture
Eastern Edison Company	12/98	Montaup Electric Company	D.T.E. 99-9	Sale of Nuclear Plant
NStar	9/07 12/07	NStar, Bay State Gas, Fitchburg G&E, NE Gas, W. MA Electric	DPU 07-50	Decoupling, Risk



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
NStar	6/11	NStar, Northeast Utilities	DPU 10-170	Merger Approval
Town of Milford	1/19	Milford Water	DPU 18-60	Valuation Analysis
	3/19	Company		
	5/19			
Mass. Energy Facil	ities Sitir	ng Council		
Mass. Institute of Technology	1/89	M.M.W.E.C.	EFSC-88-1	Least-Cost Planning
Boston Edison Company	9/90	Boston Edison	EFSC-90-12	Electric Generation Markets
Silver City Energy Ltd. Partnership	11/91	Silver City Energy	D.P.U. 91-100	State Policies, Need for Facility
Michigan Public Se	ervice Co	mmission	•	
Detroit Edison Company	9/98	Detroit Edison Company	U-11726	Market Value of Generation Assets
Consumers Energy Company	8/06 1/07	Consumers Energy Company	U-14992	Sale of Nuclear Plant
WE Energies	12/11	Wisconsin Electric Power Co	U-16830	Economic Benefits, Prudence
Consumer Energy Company	7/13	Consumers Energy Company	U-17429	Certificate of Need, Integrated Resource Plan
WE Energies	8/14	WE Energies/Integrys	U-17682	Merger Application
	3/15			
Minnesota Public	Utilities (Commission		·
Xcel Energy/No. States Power	9/04	Xcel Energy/No. States Power	G002/GR-04- 1511	NRG Impacts
Interstate Power and Light	8/05	Interstate Power and Light and FPL Energy Duane Arnold, LLC	E001/PA-05- 1272	Sale of Nuclear Plant



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT	
Northern States Power Company	11/05	Northern States Power Company	E002/GR-05- 1428	NRG Impacts on Debt Costs	
d/b/a Xcel Energy					
Northern States Power Company	09/06 10/06	NSP v. Excelsior	E6472/M-05- 1993	PPA, Financial Impacts	
d/b/a Xcel Energy	11/06				
Northern States Power Company	11/06	Northern States Power Company	G002/GR-06- 1429	Return on Equity	
d/b/a Xcel Energy					
Northern States Power	11/08 05/09	Northern States Power Company	E002/GR-08- 1065	Return on Equity	
Northern States Power	11/09 6/10	Northern States Power Company	G002/GR-09- 1153	Return on Equity	
Northern States Power	11/10 5/11	Northern States Power Company	E002/GR-10-971	Return on Equity	
Northern States Power Company	1/16	Northern States Power Company	E002/GR-15-826	Industry Perspective	
Northern States Power Company	11/19	Northern States Power Company	E002/GR-19-564	Return on Equity	
CenterPoint Energy	10/21 1/22	CenterPoint Energy	G008/M-21-138 71-2500-37763	Prudence, Gas Purchasing Decisions	
Missouri House Committee on Energy and the Environment					
Ameren Missouri	3/16	Ameren Missouri	HB 2816	Performance Based Ratemaking	
Missouri Public Se	rvice Cor	nmission		·	
Missouri Gas Energy	1/03 04/03	Missouri Gas Energy	GR-2001-382	Gas Purchasing Practices, Prudence	



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Aquila Networks	2/04	Aquila-MPS, Aquila L&P	ER-2004-0034 HR-2004-0024	Cost of Capital, Capital Structure
Aquila Networks	2/04	Aquila-MPS, Aquila L&P	GR-2004-0072	Cost of Capital, Capital Structure
Missouri Gas Energy	11/05	Missouri Gas Energy	GR-2002-348 GR-2003-0330	Capacity Planning
	2/06			
	7/06			
Missouri Gas	11/10	KCP&L	ER-2010-0355	Natural Gas DSM
Energy	1/11			
Missouri Gas	11/10	KCP&L GMO	ER-2010-0356	Natural Gas DSM
Energy	1/11			
Laclede Gas Company	5/11	Laclede Gas Company	CG-2011-0098	Affiliate Pricing Standards
Union Electric	2/12	Union Electric	ER-2012-0166	Return on Equity, Earnings
Company d/b/a Ameren Missouri	8/12	Company		Attrition, Regulatory Lag
Union Electric	6/14	Noranda Aluminum	EC-2014-0223	Ratemaking, Regulatory and Economic Policy
Ameren Missouri				
Union Electric	1/15	Union Electric	ER-2014-0258	Revenue Requirements,
Company d/b/a Ameren Missouri	2/15	Company		Ratemaking Policies
Great Plains	8/17	Great Plains Energy,	EM-2018-0012	Merger Standards, Transaction Value, Morgor
Kanaga Cita	2/18	Light Company, and		Benefits, Ring-Fencing,
Power and Light Company	3/18	Westar Energy		
Union Electric Company d/b/a Ameren Missouri	6/19	Union Electric Company d/b/a Ameren Missouri	EO-2017-0176	Affiliate Transactions, Cost Allocation Manual



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Union Electric Company d/b/a Ameren Missouri	7/19 1/20 2/20	Union Electric Company d/b/a Ameren Missouri	ER-2019-0335	Reasonableness of Affiliate Services and Costs
Union Electric Company d/b/a Ameren Missouri	3/21	Union Electric Company d/b/a Ameren Missouri	GR-2021-0241	Affiliate Transactions
Union Electric Company d/b/a Ameren Missouri	3/21 10/21	Union Electric Company d/b/a Ameren Missouri	ER-2021-0240	Affiliate Transactions, Prudence Standard, Used and Useful Principle
Empire District Electric Company	5/21 12/21 1/22	Empire District Electric Company	ER-2021-0312	Return on Equity
Empire District Gas Company	8/21 3/22	Empire District Gas Company	GR-2021-0320	Return on Equity
Missouri Senate Co	ommittee	on Commerce, Consum	er Protection, Ener	rgy and the Environment
Ameren Missouri	3/16	Ameren Missouri	SB 1028	Performance Based Ratemaking
Montana Public Se	rvice Co	nmission		
Great Falls Gas Company	10/82	Great Falls Gas Company	82-4-25	Gas Rate Adjustment Clause
National Energy B	oard (no	w the Canada Energy Re	gulator)	
Alberta-Northeast	2/87	Alberta Northeast Gas Export Project	GH-1-87	Gas Export Markets
Alberta-Northeast	11/87	TransCanada Pipeline	GH-2-87	Gas Export Markets
Alberta-Northeast	1/90	TransCanada Pipeline	GH-5-89	Gas Export Markets
Independent Petroleum Association of Canada	1/92	Interprovincial Pipeline, Inc.	RH-2-91	Pipeline Valuation, Toll



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
The Canadian Association of Petroleum Producers	11/93	Trans Mountain Pipeline	RH-1-93	Cost of Capital
Alliance Pipeline L.P.	6/97	Alliance Pipeline L.P.	GH-3-97	Market Study
Maritimes & Northeast Pipeline	97	Sable Offshore Energy Project	GH-6-96	Market Study
Maritimes & Northeast Pipeline	2/02	Maritimes & Northeast Pipeline	GH-3-2002	Natural Gas Demand Analysis
TransCanada Pipelines	8/04	TransCanada Pipelines	RH-3-2004	Toll Design
Brunswick Pipeline	5/06	Brunswick Pipeline	GH-1-2006	Market Study
TransCanada Pipelines Ltd.	12/06 4/07	TransCanada Pipelines Ltd.: Gros Cacouna Receipt Point Application	RH-1-2007	Toll Design
Repsol Energy Canada Ltd	3/08	Repsol Energy Canada Ltd	GH-1-2008	Market Study
Maritimes & Northeast Pipeline	7/10	Maritimes & Northeast Pipeline	RH-4-2010	Regulatory Policy, Toll Development
TransCanada Pipelines Ltd	9/11 5/12	TransCanada Pipelines Ltd.	RH-3-2011	Business Services and Tolls Application
Trans Mountain Pipeline LLC	6/12 1/13	Trans Mountain Pipeline LLC	RH-1-2012	Toll Design
TransCanada Pipelines Ltd	8/13	TransCanada Pipelines Ltd	RE-001-2013	Toll Design
NOVA Gas Transmission Ltd	11/13	NOVA Gas Transmission Ltd	OF-Fac-Gas- N081-2013-10 01	Toll Design



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Trans Mountain Pipeline LLC	12/13	Trans Mountain Pipeline LLC	OF-Fac-Oil- T260-2013-03 01	Economic and Financial Feasibility, Project Benefits
Energy East Pipeline Ltd.	10/14	Energy East Pipeline	Of-Fac-Oil-E266- 2014-01 02	Economic and Financial Feasibility, Project Benefits
NOVA Gas Transmission Ltd	5/16	NOVA Gas Transmission Ltd	GH-003-2015	Certificate of Public Convenience and Necessity
TransCanada PipeLines Limited	4/17 9/17	TransCanada PipeLines Limited	Dawn LTFP Service Application	Public Interest, Toll Design
NOVA Gas Transmission Ltd	10/17	NOVA Gas Transmission Ltd	MH-031-2017	Toll Design
NOVA Gas Transmission Ltd	3/19 11/19	NOVA Gas Transmission Ltd	RH-001-2019	Tolling Changes
Enbridge Pipelines Inc.	12/19 6/20 8/20 4/21	Enbridge Pipelines Inc.	RH-001-2020	Market and Scarcity Conditions; Reasonableness of Tolls, Terms, and Conditions; Public Interest; Open Season Process
NOVA Gas Transmission LTD.	5/21 12/21	NOVA Gas Transmission LTD.	Service Application	Toll Design
New Brunswick Er	nergy and	l Utilities Board		
Atlantic Wallboard/JD Irving Co	1/08	Enbridge Gas New Brunswick	MCTN #298600	Rate Setting for EGNB
Atlantic Wallboard/Flakeb oard	9/09 6/10 7/10	Enbridge Gas New Brunswick	NBEUB 2009- 017	Rate Setting for EGNB
Atlantic Wallboard/Flakeb oard	1/14	Enbridge Gas New Brunswick	NBEUB Matter 225	Rate Setting for EGNB



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
New Hampshire P	ublic Util	ities Commission		1
Bus & Industry Association	6/89	P.S. Co. of New Hampshire	DR89-091	Fuel Costs
Bus & Industry Association	5/90	Northeast Utilities	DR89-244	Merger & Acquisition Issues
Eastern Utilities Associates	6/90	Eastern Utilities Associates	DF89-085	Merger & Acquisition Issues
EnergyNorth Natural Gas	12/90	EnergyNorth Natural Gas	DE90-166	Gas Purchasing Practices
EnergyNorth Natural Gas	7/90	EnergyNorth Natural Gas	DR90-187	Special Contracts, Discounted Rates
Northern Utilities, Inc.	12/91	Commission Investigation	DR91-172	Generic Discounted Rates
Public Service Co. of New Hampshire	7/14	Public Service Co. of NH	DE 11-250	Prudence
Public Service Co. of New Hampshire	7/15 11/15	Public Service Co. of NH	14-238	Restructuring and Rate Stabilization
New Jersey Board	of Public	Utilities		
Hilton/Golden Nugget	12/83	Atlantic Electric	BPU 832-154	Line Extension Policies
Golden Nugget	3/87	Atlantic Electric	BPU 837-658	Line Extension Policies
New Jersey Natural Gas	2/89	New Jersey Natural Gas	BPU GR89030335J	Cost Allocation, Rate Design
New Jersey Natural Gas	1/91	New Jersey Natural Gas	BPU GR90080786J	Cost Allocation, Rate Design
New Jersey Natural Gas	8/91	New Jersey Natural Gas	BPU GR91081393J	Rate Design, Weather Normalization Clause
New Jersey Natural Gas	4/93	New Jersey Natural Gas	BPU GR93040114J	Cost Allocation, Rate Design



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT	
South Jersey Gas	4/94	South Jersey Gas	BRC Dock No. GR080334	Revised Levelized Gas Adjustment	
New Jersey Utilities Association	9/96	Commission Investigation	BPU AX96070530	PBOP Cost Recovery	
Morris Energy Group	11/09	Public Service Electric & Gas	BPU GR 09050422	Discriminatory Rates	
New Jersey American Water Co.	4/10	New Jersey American Water Co.	BPU WR 1040260	Tariff Rates and Revisions	
Electric Customer Group	1/11	Generic Stakeholder Proceeding	BPU GR10100761 ER10100762	Natural Gas Ratemaking Standards and pricing	
New Mexico Public	c Service	Commission			
Gas Company of New Mexico	11/83	Public Service Co. of New Mexico	1835	Cost Allocation, Rate Design	
Southwestern Public Service Co., New Mexico	12/12	SPS New Mexico	12-00350-UT	Rate Case, Return on Equity	
PNM Resources	12/13 10/14 12/14	Public Service Co. of New Mexico	13-00390-UT	Nuclear Valuation, In Support of Stipulation	
New York State Public Service Commission					
Iroquois Gas Transmission	12/86	Iroquois Gas Transmission System	70363	Gas Markets	
Brooklyn Union Gas Company	8/95	Brooklyn Union Gas Company	95-6-0761	Panel on Industry Directions	
Central Hudson, ConEdison and Niagara Mohawk	9/00	Central Hudson, ConEdison and Niagara Mohawk	96-E-0909 96-E-0897 94-E-0098 94-E-0099	Section 70, Approval of New Facilities	



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Central Hudson, New York State Electric & Gas, Rochester Gas & Electric	5/01	Joint Petition of NiMo, NYSEG, RG&E, Central Hudson, Constellation and Nine Mile Point	01-E-0011	Section 70, Rebuttal Testimony
Rochester Gas & Electric	12/03	Rochester Gas & Electric	03-E-1231	Sale of Nuclear Plant
Rochester Gas & Electric	1/04	Rochester Gas & Electric	03-E-0765 02-E-0198 03-E-0766	Sale of Nuclear Plant; Ratemaking Treatment of Sale
Rochester Gas and Electric and NY State Electric & Gas Corp	2/10	Rochester Gas & Electric NY State Electric & Gas Corp	09-E-0715 09-E-0716 09-E-0717 09-E-0718	Depreciation Policy
National Fuel Gas Corporation	9/16 9/16	National Fuel Gas Corporation	16-G-0257	Ring-fencing Policy
NextEra Energy Transmission New York	8/18	NextEra Energy Transmission New York	18-T-0499	Certificate of Need for Transmission Line, Vertical Market Power
NextEra Energy Transmission New York	2/19 8/19	NextEra Energy Transmission New York	18-E-0765	Certificate of Need for Transmission Line, Vertical Market Power
Nova Scotia Utility	and Rev	iew Board		
Nova Scotia Power	9/12	Nova Scotia Power	P-893	Audit Reply
Nova Scotia Power	8/14	Nova Scotia Power	P-887	Audit Reply
Nova Scotia Power	5/16	Nova Scotia Power	2017-2019 Fuel Stability Plan	Used and Useful Ratemaking
NSP Maritime Link ("NSPML")	12/16 2/17 5/17	NSP Maritime Link ("NSPML")	M07718 NSPML Interim Cost Assessment Application	Used and Useful Ratemaking



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
NSP Maritime Link ("NSPML")	10/19	NSP Maritime Link ("NSPML")	M09277 NSPML 2020 Interim Assessment Application	Recovery of Depreciation and Return, Costs and Customer Benefits, Debt Service Coverage Ratio
Nova Scotia Power	2/21	Nova Scotia Power	M10013 Annapolis Tidal Generation Station Retirement: Request for Accounting Treatment and Net Book Value Recovery	Generation Plant Cost Recovery
NSP Maritime Link ("NSPML")	8/21	NSP Maritime Link ("NSPML")	M10206 NSPML Final Cost Assessment Application	Prudence Review
Nova Scotia Power	1/22	Nova Scotia Power	2022-2024 General Rate Application	Decarbonization Policy, Recovery of Energy Transition Costs
Oklahoma Corpora	ation Con	nmission		
Oklahoma Natural Gas Company	6/98	Oklahoma Natural Gas Company	PUD 980000177	Storage Issues
Oklahoma Gas & Electric Company	5/05 9/05	Oklahoma Gas & Electric Company	PUD 200500151	Prudence of McLain Acquisition
Oklahoma Gas & Electric Company	3/08	Oklahoma Gas & Electric Company	PUD 200800086	Acquisition of Redbud Generating Facility
Oklahoma Gas & Electric Company	8/14 1/15	Oklahoma Gas & Electric Company	PUD 201400229	Integrated Resource Plan
Ontario Energy Bo	ard			
Market Hub Partners Canada, L.P.	5/06	Natural Gas Electric Interface Roundtable	File No. EB- 2005-0551	Market-based Rates for Storage



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Ontario Power Generation	9/13 2/14 5/14	Ontario Power Generation	EB-2013-0321	Prudence Review of Nuclear Project Management Processes
Oregon Public Util	ities Con	imission		
Hydro One Limited and Avista Corporation	8/18 10/18	Hydro One Limited and Avista Corporation	UM 1897	Reasonableness and Sufficiency of the Governance, Bankruptcy, and Financial Ring-Fencing Stipulated Settlement Commitments
Pennsylvania Pub	lic Utility	Commission		l
АТОС	4/95	Equitrans	R-00943272	Rate Design, Unbundling
ATOC	3/96 4/96	Equitrans	P-00940886	Rate Design, Unbundling
Rhode Island Publ	ic Utilitie	es Commission		
Newport Electric	7/81	Newport Electric	1599	Rate Attrition
South County Gas	9/82	South County Gas	1671	Cost of Capital
New England Energy Group	7/86	Providence Gas Company	1844	Cost Allocation, Rate Design
Providence Gas	8/88	Providence Gas Company	1914	Load Forecast, Least-Cost Planning
Providence Gas Company and The Valley Gas Company	1/01 3/02	Providence Gas Company and The Valley Gas Company	1673 1736	Gas Cost Mitigation Strategy
The New England Gas Company	3/03	New England Gas Company	3459	Cost of Capital
PPL Corporation and PPL Rhode Island Holdings, LLC	11/21	PPL Corporation, PPL Rhode Island Holdings, LLC, National Grid USA, and The Narragansett Electric Company	21-09	Merger Approval Issues



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT	
Texas Public Utility Commission					
Southwestern Electric	5/83	Southwestern Electric	-	Cost of Capital, CWIP	
P.U.C. General Counsel	11/90	Texas Utilities Electric Company	9300	Gas Purchasing Practices, Prudence	
Oncor Electric Delivery Company	8/07	Oncor Electric Delivery Company	34040	Regulatory Policy, Rate of Return, Return of Capital and Consolidated Tax Adjustment	
Oncor Electric Delivery Company	6/08	Oncor Electric Delivery Company	35717	Regulatory policy	
Oncor Electric Delivery Company	10/08 11/08	Oncor, TCC, TNC, ETT, LCRA TSC, Sharyland, STEC, TNMP	35665	Competitive Renewable Energy Zone	
CenterPoint Energy	6/10 10/10	CenterPoint Energy/Houston Electric	38339	Regulatory Policy, Risk, Consolidated Taxes	
Oncor Electric Delivery Company	1/11	Oncor Electric Delivery Company	38929	Regulatory Policy, Risk	
Cross Texas Transmission	8/12 11/12	Cross Texas Transmission	40604	Return on Equity	
Southwestern Public Service	11/12	Southwestern Public Service	40824	Return on Equity	
Lone Star Transmission	5/14	Lone Star Transmission	42469	Return on Equity, Debt, Cost of Capital	
CenterPoint Energy Houston Electric, LLC	6/15	CenterPoint Energy Houston Electric, LLC	44572	Distribution Cost Recovery Factor	
NextEra Energy, Inc.	10/16 2/17	Oncor Electric Delivery Company LLC, NextEra Energy	46238	Merger Application, Ring- fencing, Affiliate Interest, Code of Conduct	



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT	
CenterPoint Energy Houston Electric, LLC	4/19 6/19	CenterPoint Energy Houston Electric, LLC	49421	Incentive Compensation	
Sun Jupiter Holdings LLC and IIF US Holding 2 LP	11/19	Sun Jupiter Holdings LLC and IIF US Holding 2 LP Acquisition of El Paso Electric Company	49849	Public Interest Standard, Ring-fencing, Regulatory Commitments, Rate Credit and Economic Considerations, Ownership and Governance Post-closing, Tax Matters	
Texas-New Mexico Power Company and Avangrid, Inc. and NM Green Holdings, Inc.	3/21	Texas-New Mexico Power Company and Avangrid, Inc. and NM Green Holdings, Inc.	51547	Merger Approval Conditions	
Texas Railroad Co	mmissio	n	<u>+</u>	1	
Western Gas Interstate Company	1/85	Southern Union Gas Company	5238	Cost of Service	
Atmos Pipeline Texas	9/10 1/11	Atmos Pipeline Texas	GUD 10000	Ratemaking Policy, Risk	
Atmos Pipeline Texas	1/17 4/17	Atmos Pipeline Texas	GUD 10580	Ratemaking Policy, Return on Equity, Rate Design Policy	
Texas State Legislature					
CenterPoint Energy	4/13	Association of Electric Companies of Texas	SB 1364	Consolidated Tax Adjustment Clause Legislation	
Utah Public Service Commission					
AMAX Magnesium	1/88	Mountain Fuel Supply Company	86-057-07	Cost Allocation, Rate Design	
AMAX Magnesium	4/88	Utah P&L/Pacific P&L	87-035-27	Merger & Acquisition	
Utah Industrial Group	7/90 8/90	Mountain Fuel Supply	89-057-15	Gas Transportation Rates	



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT	
AMAX Magnesium	9/90	Utah Power & Light	89-035-06	Energy Balancing Account	
AMAX Magnesium	8/90	Utah Power & Light	90-035-06	Electric Service Priorities	
Questar Gas Company	12/07	Questar Gas Company	07-057-13	Benchmarking in Support of ROE	
Vermont Public Se	ervice Boa	ard			
Green Mountain Power	8/82	Green Mountain Power	4570	Rate Attrition	
Green Mountain Power	12/97	Green Mountain Power	5983	Cost of Service	
Green Mountain	7/98	Green Mountain	6107	Rate Development	
Power	9/00	Power			
Virginia Corporation Commission					
Virginia Electric	3/21	Virginia Electric and	PUR-2021-	Regulatory Policy	
and Power Company d/b/a	5/21	d/b/a Dominion	00058		
Dominion Energy Virginia		Energy Virginia			
Washington Utiliti	es and T	ransportation Commiss	ion	L	
Hydro One	9/18	Hydro One Limited	U-170970	Reasonableness and	
Limited and		and Avista		Sufficiency of the Governance, Bankruptcy and Financial	
Corporation		corporation		Ring-Fencing Stipulated	
				Settlement Commitments	
Wisconsin Public Service Commission					
WEC & WICOR	11/99	WEC	9401-YO-100 9402-YO-101	Approval to Acquire the Stock of WICOR	
Wisconsin Electric Power	1/07	Wisconsin Electric Power Co.	6630-EI-113	Sale of Nuclear Plant	
Company					
Wisconsin	10/09	Wisconsin Electric	6630-CE-302	CPCN Application for Wind	
Electric Power Company		Power Lo.		Project	



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Northern States Power Wisconsin	10/13	Xcel Energy (dba Northern States Power Wisconsin)	4220-UR-119	Fuel Cost Adjustments
Wisconsin Electric Power Company	11/13	Wisconsin Electric Power Co.	6630-FR-104	Fuel Cost Adjustment
Wisconsin Gas LLC	5/14	Wisconsin Gas LLC	6650-CG-233	Gas Line Expansion, Reasonableness
WE Energy	8/14 1/15	WE Energy/Integrys	9400-YO-100	Merger Approval
	3/15			
Wisconsin Public Service Corporation	1/19	Madison Gas and Electric Company and Wisconsin Public Service Corporation	5-BS-228	Evaluation of Models Used in Resource Investment Decisions



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT	
American Arbitrat	ion Asso	ciation	1	1	
Michael Polsky	3/91	M. Polsky vs. Indeck Energy	-	Corporate Valuation, Damages	
ProGas Limited	7/92	ProGas Limited v. Texas Eastern	-	Gas Contract Arbitration	
Attala Generating Company	12/03	Attala Generating Co v. Attala Energy Co.	16-Y-198- 00228-03	Power Project Valuation, Breach of Contract, Damages	
Nevada Power Company	4/08	Nevada Power v. Nevada Cogeneration Assoc. #2	-	Power Purchase Agreement	
Sensata Technologies, Inc./EMS Engineered Materials Solutions, LLC	1/11	Sensata Technologies, Inc./EMS Engineered Materials Solutions, LLC v. Pepco Energy Services	11-198-Y- 00848-10	Change in Usage Dispute, Damages	
Sandy Creek Energy Associates, L.P.	9/17	Sandy Creek Energy Associates, L.P. vs. Lower Colorado River Authority	01-16-0002- 6892	Power Purchase Agreement, Analysis of Damages	
Dynegy Midwest Generation, LLC	1/21 2/21	BNSF Railway Company and Norfolk Southern Railway Company v. Dynegy Midwest Generation, LLC	01-18-0001- 3283	Electric Generation Asset Management	
Canadian Arbitration Panel					
Hydro-Québec	4/15 5/16 7/16	Hydro-Fraser et al v. Hydro-Québec	-	Electric Price Arbitration	
Commonwealth of Massachusetts, Appellate Tax Board					
NStar Electric Company	8/14	NStar Electric Company	F316346 F319254	Valuation Methodology	



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT	
Western Massachusetts Electric Company	2/16	Western Massachusetts Electric Company v. Board of Assessors of The City of Springfield	315550 319349	Valuation Methodology	
Commonwealth of	Massach	usetts, Suffolk Superior	Court		
John Hancock	1/84	Trinity Church v. John Hancock	C.A. No. 4452	Damages Quantification	
Court of Common	Pleas of F	Philadelphia County, Civ	il Division		
Sunoco Marketing & Terminals L.P.	11/16	Sunoco Marketing & Terminals, L.P. v. South Jersey Resources Group	150302520	Damages Quantification	
State of Colorado I	District C	ourt, County of Garfield			
Questar Corporation, et al	11/00	Questar Corporation, et al.	00CV129-A	Partnership Fiduciary Duties	
State of Delaware,	Court of	Chancery, New Castle Co	ounty		
Wilmington Trust Company	11/05	Calpine Corporation vs. Bank of New York and Wilmington Trust Company	C.A. No. 1669-N	Bond Indenture Covenants	
Illinois Appellate Court, Fifth Division					
Norweb, PLC	8/02	Indeck No. America v. Norweb	97 CH 07291	Breach of Contract, Power Plant Valuation	
Independent Arbitration Panel					
Alberta Northeast Gas Limited	2/98	ProGas Ltd., Canadian Forest Oil Ltd., AEC Oil & Gas	-		
Ocean State Power	9/02	Ocean State Power vs. ProGas Ltd.	2001/2002 Arbitration	Gas Price Arbitration	
Ocean State Power	2/03	Ocean State Power vs. ProGas Ltd.	2002/2003 Arbitration	Gas Price Arbitration	



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT	
Ocean State Power	6/04	Ocean State Power vs. ProGas Ltd.	2003/2004 Arbitration	Gas Price Arbitration	
Shell Canada Limited	7/05	Shell Canada Limited and Nova Scotia Power Inc.	-	Gas Contract Price Arbitration	
International Cour	rt of Arbi	tration			
Wisconsin Gas Company, Inc.	2/97	Wisconsin Gas Co. vs. Pan-Alberta	9322/CK	Contract Arbitration	
Minnegasco, A Division of NorAm Energy Corp.	3/97	Minnegasco vs. Pan- Alberta	9357/CK	Contract Arbitration	
Utilicorp United Inc.	4/97	Utilicorp vs. Pan- Alberta	9373/CK	Contract Arbitration	
IES Utilities	97	IES vs. Pan-Alberta	9374/CK	Contract Arbitration	
Mitsubishi Heavy Industries, Ltd., and Mitsubishi Nuclear Energy Systems, Inc.	12/15 2/16	Southern California Edison Company, Edison Material Supply LLC, San Diego Gas & Electric Co., and the City of Riverside vs. Mitsubishi Heavy Industries, Ltd., and Mitsubishi Nuclear Energy Systems, Inc.	19784/AGF/RD	Damages Arising Under a Nuclear Power Equipment Contract	
International Chamber of Commerce					
Senvion GmbH	4/17	Senvion GmbH v. EDF Renewable Energy, Inc.	01-15-0005- 4590	Breach-Related Damages, Unfair Competition, Unjust Enrichment	
Senvion GmbH	9/17	Senvion GmbH v. EEN CA Lac Alfred Limited Partnership, et al.	21535	Breach-Related Damages	


SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Senvion GmbH	12/17	Senvion GmbH v. EEN CA Massif du Sud Limited Partnership, et al.	21536	Breach-Related Damages
EDF Inc.	3/21	Exelon Generating Company, LLC v. EDF Inc.	25479/MK	Valuation of Nuclear Power Plants
State of New Jerse	y, Mercei	County Superior Court	•	•
Transamerica	7/07	IMO Industries Inc. vs.	L-2140-03	Breach-Related Damages,
Corp., et al.	10/07	Transamerica Corp., et al.		Enterprise Value
State of New York,	Nassau (County Supreme Court	ł	L
Steel Los III, LP	6/08	Steel Los II, LP & Associated Brook, Corp v. Power Authority of State of NY	Index No. 5662/05	Property Seizure
State of South Card	olina, U.S	District Court for the D	istrict of South Car	olina
Toshiba Corporation	4/20	Lightsey v. Toshiba Corp.	Action No. 9:18- cv-190	Project Delays and Cost Overruns Analyses
Province of Albert	a, Court o	of Queen's Bench	•	•
Alberta Northeast Gas Limited	5/07	Cargill Gas Marketing Ltd. vs. Alberta Northeast Gas Limited	Action No. 0501- 03291	Gas Contracting Practices
Quebec Superior (Quebec Superior Court, District of Gaspé			
Senvion Canada and Senvion GmbH	2/19	Senvion Canada and Senvion GmbH v. Suspendem Rope Access	-	Breach-Related Damages, Reimbursement of Liquidated Damages, Reimbursement of Scheduled Maintenance Penalties



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
State of New Hamp	oshire, Bo	oard of Tax and Land Ap	peals	
Public Service Company of New Hampshire d/b/a Eversource Energy	11/18	Appeal of Public Service Company of New Hampshire d/b/a Eversource Energy	28873-14-15- 16-17PT	Valuation of Transmission and Distribution Assets
State of New Hamp	oshire, Ju	dicial Court-Rockinghar	n Superior Court	
Public Service Company of New Hampshire d/b/a Eversource Energy	10/18	Public Service Company of New Hampshire d/b/a Eversource Energy v. City of Portsmouth	218-2016-CV- 00899 218-2017-CV- 00917	Valuation of Transmission and Distribution Assets
State of New Hamp	oshire, Su	perior Court-Merrimac	k County	
Public Service Company of New Hampshire d/b/a Eversource Energy	3/18	Public Service Company of New Hampshire d/b/a Eversource Energy v. Town of Bow	217-2015-CV- 00469 217-2016-CV- 00474 217-2017-CV- 00422	Valuation of Transmission and Distribution Assets
State of Rhode Isla	nd, Prov	idence City Court	•	
Aquidneck Energy	5/87	Laroche vs. Newport	-	Least-Cost Planning
State of Texas, Hut	chinson	County Court		
Western Gas Interstate	5/85	State of Texas vs. Western Gas Interstate Co.	14,843	Cost of Service
State of Utah, Thir	State of Utah, Third District Court			
PacifiCorp & Holme, Roberts & Owen, LLP	1/07	USA Power & Spring Canyon Energy vs. PacifiCorp. et al.	Civil No. 050903412	Breach-Related Damages
U.S. Bankruptcy Co	ourt, Dist	rict of New Hampshire		
EUA Power Corporation	7/92	EUA Power Corporation	BK-91-10525- JEY	Pre-Petition Solvency



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
U.S. Bankruptcy Co	ourt, Dist	rict of New Jersey		I
Ponderosa Pine Energy Partners, Ltd.	7/05	Ponderosa Pine Energy Partners, Ltd.	05-21444	Forward Contract Bankruptcy Treatment
U.S. Bankruptcy Co	ourt, No.	District of New York	•	•
Cayuga Energy, NYSEG Solutions, The Energy Network	09/09	Cayuga Energy, NYSEG Solutions, The Energy Network	06-60073-6-sdg	Going Concern
U.S. Bankruptcy Co	ourt, So. I	District of New York		
Johns Manville	5/04	Enron Energy Mktg. v. Johns Manville; Enron No. America v. Johns Manville	01-16034 (AJG)	Breach of Contract, Damages
U.S. Bankruptcy Co	ourt, Nor	thern District of Texas	ł	I
Southern Maryland Electric Cooperative, Inc., and Potomac Electric Power Company	11/04	Mirant Corporation, et al. v. SMECO	03-4659; Adversary No. 04-4073	PPA Interpretation, Leasing
U.S. Bankruptcy Co	ourt, Sout	thern District of Texas	ł	ł
Ultra Petroleum Corp. et al	3/17	Ultra Petroleum Corp. et al	16-32202 (MI)	Valuation
U.S. Court of Feder	al Claims	5	•	•
Boston Edison Company	7/06 11/06	Boston Edison Company v. United States	99-447C 03-2626C	Spent Nuclear Fuel Breach, Damages
Consolidated Edison Company	7/07	Consolidated Edison Company	06-305T	Evaluation of Lease Purchase Option
Consolidated Edison Company	2/08 6/08	Consolidated Edison Company v. United States	04-0033C	Spent Nuclear Fuel Breach, Damages



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Vermont Yankee Nuclear Power Corporation	6/08	Vermont Yankee Nuclear Power Corporation v. United States	03-2663C	Spent Nuclear Fuel Breach, Damages
Virginia Electric and Power Company d/b/a Dominion Virginia Power	3/19	Virginia Electric and Power Company d/b/a Dominion Virginia Power v. United States	17-464C	Double Recovery, Cost Recovery of Infrastructure Improvements
U. S. District Court	, Boulder	County, Colorado		
KN Energy, Inc.	3/93	KN Energy vs. Colorado GasMark, Inc.	92 CV 1474	Gas Contract Interpretation
U. S. District Court	, Norther	n California	I	
Pacific Gas & Electric Co./PGT PG&E/PGT Pipeline Exp. Project	4/97	Norcen Energy Resources Limited	C94-0911 VRW	Fraud Claim
U. S. District Court	, District	of Connecticut		
Constellation Power Source, Inc.	12/04	Constellation Power Source, Inc. v. Select Energy, Inc.	Civil Action 304 CV 983 (RNC)	ISO Structure, Breach of Contract
U.S. District Court,	Norther	n District of Illinois, Eas	tern Division	
U.S. Securities and Exchange Commission	4/12	U.S. Securities and Exchange Commission v. Thomas Fisher, Kathleen Halloran, and George Behrens	07 C 4483	Prudence, PBR
U. S. District Court	, Massacl	nusetts	•	
Eastern Utilities Associates & Donald F. Pardus	3/94	NECO Enterprises Inc. vs. Eastern Utilities Associates	Civil Action No. 92-10355-RCL	Seabrook Power Sales



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
U. S. District Court	, Montan	a	<u>.</u>	
KN Energy, Inc.	9/92	KN Energy v. Freeport MacMoRan	CV 91-40-BLG- RWA	Gas Contract Settlement
U.S. District Court,	New Har	npshire		
Portland Natural Gas Transmission and Maritimes & Northeast Pipeline	9/03	Public Service Company of New Hampshire vs. PNGTS and M&NE Pipeline	С-02-105-В	Impairment of Electric Transmission Right-of-Way
U. S. District Court	, Souther	n District of New York		
Central Hudson Gas & Electric	11/99 8/00	Central Hudson v. Riverkeeper, Inc., Robert H. Boyle, John J. Cronin	Civil Action 99 Civ 2536 (BDP)	Electric Restructuring, Environmental Impacts
Consolidated Edison	3/02	Consolidated Edison v. Northeast Utilities	Case No. 01 Civ. 1893 (JGK) (HP)	Industry Standards for Due Diligence
Merrill Lynch & Company	1/05	Merrill Lynch v. Allegheny Energy, Inc.	Civil Action 02 CV 7689 (HB)	Due Diligence, Breach of Contract, Damages
U. S. District Court	, Eastern	District of Virginia		
Aquila, Inc.	1/05 2/05	VPEM v. Aquila, Inc.	Civil Action 304 CV 411	Breach of Contract, Damages
U. S. District Court, Western District of Virginia				
Washington Gas Light Company	8/15 9/15	Washington Gas Light Company v. Mountaineer Gas Company	Civil Action No. 5:14-cv-41	Nominations and Gas Balancing, Lost and Unaccounted for Gas, Damages



SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
U. S. District Court	, Portlan	d Maine		
ACEC Maine, Inc. et al.	10/91	CIT Financial vs. ACEC Maine	90-0304-B	Project Valuation
Combustion Engineering	1/92	Combustion Eng. vs. Miller Hydro	89-0168P	Output Modeling, Project Valuation
U.S. Securities and Exchange Commission				
Eastern Utilities Association	10/92	EUA Power Corporation	File No. 70-8034	Value of EUA Power
U.S. Tax Court in Il	U.S. Tax Court in Illinois			
Exelon Corporation	4/15 6/15	Exelon Corporation, as Successor by Merger to Unicom Corporation and Subsidiaries et al. v. Commission of Internal Revenue	29183-13 29184-13	Valuation of Analysis of Lease Terms and Quantify Plant Values
Council of the Dist	rict of Co	lumbia Committee on C	onsumer and Regu	latory Affairs
Potomac Electric Power Co.	7/99	Potomac Electric Power Co.	Bill 13-284	Utility Restructuring



Table of Contents

	FortisBC Energy Inc. (FEI or the Company)	Submission Date:
ты	Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
	Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 1

Page no. 2 Α. RENEWABLE GAS PROGRAM, GOVERNMENT POLICY, AND RENEWABLE 3 4 Β. C. 5 6 D. 7 RENEWABLE GAS BLEND FOR SALES CUSTOMERS124 E. 8 F. VOLUNTARY RENEWABLE GAS PROGRAM......146 9 G. ACCOUNTING TREATMENT, PROGRAM MECHANICS, RATE SETTING AND CUSTOMER BILL IMPACTS......179 10 11 Η. PROGRAM EXPENDITURES, IMPLEMENTATION, AND REPORTING......212 12 **RENEWABLE GAS PROGRAM, GOVERNMENT POLICY, AND RENEWABLE GAS** 13 Α. SUPPLY 14 1.0 **EVOLUTION OF CLIMATE CHANGE POLICY** 15 **Reference:** 16 Exhibit B-11, Section 3.4.1.1, p. 29 17 **CleanBC Roadmap Targets** 18 On page 29 of the Application, FEI states: 19 The 2018 CleanBC Plan enabled gas utilities to reduce emissions by increasing 20 the renewable content of their gas stream to 15 percent renewable content by 21 2030. Displacing 15 percent of the gas supply with Renewable Gas would increase 22 the annual supply of Renewable Gas in FEI's system to approximately 30 PJs. 23 The provincial government's approach with respect to the emissions of natural gas utilities was recently updated in the CleanBC Roadmap with the introduction of a 24 25 GHG emissions cap... 26 The cap, as laid out in the CleanBC Roadmap, is set at 6.11 Mt of CO2e per year 27 at 2030. This represents a 47 percent reduction in GHG emissions from 2007 28 levels, and will require utilities to increase Renewable Gas content, increase 29 investments in energy efficiency and employ other mechanisms to lower 30 emissions. FEI expects that Renewable Gas content exceeding 15 percent will be 31 required to meet this lower emission threshold by 2030. Details on the cap are



ты	FortisBC Energy Inc. (FEI or the Company) Revised Renewable Gas Program Application – Stage 2 (Application)	Submission Date: May 16, 2022
	Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 2

- under development; however, FEI sees the potential Renewable Gas supply
 requirements being between 45 and 65 PJs by 2030.
- 3
- 4 5

1.1 Please provide supporting assumptions and calculations used to arrive at the forecast Renewable Gas (RG) supply requirements of (i) 45PJ and (ii) 65PJ, under a 6.11 Mt of CO2e cap by 2030.

7 <u>Response:</u>

8 The referenced cap of 6.11 Mt of CO2e refers to the cap on GHG emissions required from all gas 9 utilities in British Columbia by 2030 in the CleanBC Roadmap, which FEI expects the provincial 10 government will implement as the Greenhouse Gas Reduction Standard (GHGRS). FEI is not 11 aware of the design details of the GHGRS, which is still under development. However, based on 12 the CleanBC Roadmap and FEI's discussions with the provincial government, FEI understands 13 that the cap would include emissions from residential and commercial buildings and industrial 14 sectors. While FEI cannot confirm if the cap includes T-Service or bypass customers, for the 15 information requests related to the cap, FEI has assumed that these loads are included within the 16 cap. The provincial government has stated that natural gas for vehicles will not be included in the

17 cap and that the GHG reductions achieved from these users will not count towards the cap.

To achieve the cap, a reduction from 2007 GHG emissions levels of 47 percent or approximately
5.5 Mt is required. FEI's portion of that reduction is approximately 5.3 Mt of CO2e per year. Pacific

20 Northern Gas is responsible for the remaining 0.2 Mt.

21 To determine the Renewable Gas supply required to reduce GHG emissions below the cap, FEI 22 conducted a preliminary analysis to identify the investments and activities needed to meet the 23 necessary emissions reductions and the potential rate impacts on British Columbians. The 24 analysis began by updating the modelling in Guidehouse's report titled Pathways for British 25 Columbia to Achieve its GHG Reduction Goals (Pathways Report).¹ This included increases to all 26 GHG mitigation strategies required to achieve the CleanBC Roadmap emissions cap, including 27 an update to the volume of Renewable Gas required, which is higher than that required to meet 28 the 2018 CleanBC Plan's 15 percent Renewable Gas target.

FEI first updated the GHG reduction potential of the key GHG mitigation strategies in the Pathways Report, other than volumes of Renewable Gas. These key GHG mitigation strategies are as follows:

32 33

34

• Energy efficiency in buildings: For residential and commercial energy efficiency, emission reduction potential was determined using the 2021 Conservation Potential Review (2021 CPR).² The 2021 CPR estimates the energy savings and subsequent GHG

¹ Guidehouse Inc., *Pathways for British Columbia to Achieve its GHG Reduction Goals*, August 2020: <u>https://www.cdn.fortisbc.com/libraries/docs/default-source/about-us-documents/guidehouse-report.pdf</u>.

² The 2021 CPR was conducted by the Posterity Group and is FEI's latest review of the energy efficiency opportunities available among FEI's residential, commercial, and industrial natural gas customers. Please see Appendix C-1 of FEI's 2022 Long Term Gas Resource Plan: <u>https://docs.bcuc.com/Documents/Proceedings/2022/DOC_66503_B-1-FEI-2022-LongTermGasResourcePlan.pdf</u>



- reduction potential of different levels of utility energy efficiency incentives and consumer participation. The high scenario assumes that 1.3 Mt of GHGs could be reduced by 2030.
- Energy efficiency and electrification in industry: Energy efficiency and electrification of industrial load was guided by modelling conducted by Guidehouse and informed by the 2015 CPR.³ This was assumed to generate 0.3 Mt of GHG reductions for energy efficiency and 0.3 Mt of GHG reductions for electrification.
- Carbon capture and sequestration (CCS): For CCS, Guidehouse estimated potential
 GHG reductions for end-use gas consumption such as in the cement sector. It was
 assumed that this could accomplish 0.6 Mt of GHG reductions.

Altogether, the GHG emissions reductions from the above-described GHG mitigation strategies
 amount to approximately 2.5 Mt. An additional 2.9 Mt of reductions is required to make up FEI's
 proportion of the cap to bring it to 5.4 Mt of reductions.

- 13 FEI then evaluated the supply of Renewable Gas required to make up the 2.9 Mt gap to meet the 14 GHG reduction cap. FEI used the results of the BC Renewable and Low-Carbon Gas Supply 15 Potential Study⁴ to validate the supply availability of Renewable Gas to 2030. This study was 16 commissioned by the Bioenergy Network (BCBN), the provincial government, and FortisBC, to 17 estimate the technical supply potential and production costs of renewable and low-carbon gases 18 in BC, Canada, and the United States. The study estimates that up to 50 PJ of renewable and 19 low-carbon gas is available in BC, over 80 PJ of RNG is available in Canada, and hundreds of PJ 20 are available for acquisition in the United States. Further, FEI assumed that the carbon intensity 21 of FEI's Renewable Gas supply portfolio as of 2021 would be approximately 10 kgCO2e per GJ 22 until 2030, resulting in a net GHG reduction of 50 kgCO2e per GJ (which assumes a lifecycle 23 carbon intensity of pipeline natural gas of approximately 60 kgCO2e per GJ).
- Based on these assumptions, approximately 59 PJ of Renewable Gas (50 kgCO2e/GJ X 59 PJ
 Renewable Gas = 2.950 Mt reduction) would be required to achieve the 2.9 Mt of reductions and,
 in combination with the other GHG reduction strategies, the GHG reduction cap.
- This 59 PJ estimate is subject to important assumptions on demand growth and other factors that will impact GHG emissions from FEI's customers. Based on high-level sensitivity analysis that looked at increasing or decreasing GHG emissions drivers such as economic and population growth, between 45 and 65 PJ of Renewable Gas could be needed by 2030. Please refer to the response to BCUC IR1 1.2 for a discussion of the factors that could change and impact the amount of Renewable Gas required by 2030.
- The various sources of GHG reductions to achieve FEI's share of the cap are shown in Figure 1below.

³ The 2015 CPR was a joint gas and electric conservation study which was conducted by Guidehouse.

⁴ Evint Consulting and Canadian Biomass Energy Research Ltd., *BC Renewable and Low-Carbon Gas Supply Potential Study*, January 28th, 2022:

https://www.cdn.fortisbc.com/libraries/docs/default-source/news-events/bc-renewable-and-low-carbon-gas-supplypotential-study-2022-03-11.pdf.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 4

1 Figure 1: GHG Reductions by Measure to Achieve the Emissions Cap of CleanBC Roadmap



2

At this time FEI is not aware of any further details with respect to how the provincial government intends to determine or enforce the emissions cap. Therefore, FEI will continue to engage with the provincial government as to how the emissions cap will be applied to gas utilities in British Columbia. However, it is clear that Renewable Gas will be a critical component to meet the CleanBC Roadmap's targeted reductions in emissions and, as such, increasing volumes of Renewable Gas are required.

- 9
- 10
- 11
- 121.2Please identify the main factors that may vary the forecast 2030 supply13requirements from 45PJ to 65PJ. Discuss the sensitivity for FEI's forecast to each14factor and the likely range of outcomes.
- 15

16 **Response:**

- 17 The main factors that may vary FEI's forecast 2030 Renewable Gas supply requirements to 18 achieve the GHG emissions cap in the CleanBC Roadmap (i.e., the GHGRS) are:
- Clarification of GHGRS: Clarification from the government as to which sectors will be included in the cap and what FEI's responsibilities will be regarding the sectors.
- **Quantity of Energy Delivered:** The growth or decline in the energy delivered to customers by 2030 is dependent on a number of variables, including: new customer connections, local government policy, the scope and adoption of energy efficiency initiatives and associated technological advances, utility rates, economic growth, industrial load growth, etc.



3

4

5

- **Carbon Intensity:** The lower the carbon intensity of the Renewable Gas secured by FEI, the lower volumes required to meet the target in the CleanBC Roadmap. Conversely, Renewable Gas with a higher carbon intensity will necessitate securing greater volumes. In addition, the lower the carbon intensity of conventional natural gas, the lower the volumes of Renewable Gas that will be required.
- Relative Cost: FEI will need to consider the relative cost per tonne to reduce GHG
 emissions as between the delivery of Renewable Gas and other actions, in order to
 manage rate impacts to its customers. For example, if the cost of Renewable Gas declines
 (e.g., through technological advancements or experience curves) relative to other actions,
 FEI would likely seek to secure proportionally higher volumes of Renewable Gas.
- **DSM**: If DSM activities enable the reduction of GHG emissions more cost-effectively, FEI could secure lower volumes of Renewable Gas. The extent to which the suite of DSM measures reduces emissions will generally impact the quantity of Renewable Gas required.
- Public Policy: Government policies that enable increased Renewable Gas supply while minimizing rate impacts could increase the volumes FEI acquires. For example, government funding for innovation, piloting and technology deployment could lead to greater volumes of Renewable Gas in FEI's supply portfolio. Conversely, funding for other technologies like carbon capture, utilization and storage (CCUS) could enable greater GHG reductions with a lower Renewable Gas supply requirement.
- Scale-Up: FEI is well-positioned to grow its supply portfolio based on its Renewable Gas growth in recent years; however, the utility will need to ensure the appropriate resources are in place, both internally and externally, to ramp up supply to the 65 PJ level. Some of this new supply will also come from BC projects, where development/permitting timelines need to be considered for supply facilities and any infrastructure upgrades.
- 26
- 27
- 21
- 28

32

- 291.3At FEI demand levels for 2021 and at the weighted average carbon intensity of30FEI's RG portfolio for 2021, please calculate what total volume of RG would be31required to displace fossil fuel natural gas to meet a 6.11Mt CO2e emissions cap.
- 33 Response:

As noted in the responses to BCUC IR1 1.1 and 1.2, there are many factors that will impact the amount of Renewable Gas required to meet the 2030 emission target for FEI. Changing system volumes and the carbon intensity of Renewable Gas will result in different outcomes than that presented in BCUC IR1 1.1.

FEI calculates that it would require 75 PJ of Renewable Gas to meet the emissions reductionsbased on the parameters in the question and the following assumptions:



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 6

- Throughput in 2021 = 235 PJ resulting in emissions of 11.5 Mt C02e
- Emissions Cap = 5.4 Mt (FEI portion)
- Renewable Gas Carbon Intensity 2021 (lifecycle emissions) = 0.022Mt CO2 per PJ
- Carbon Intensity of Conventional Natural Gas = 0.05 Mt CO2e per PJ
- 5 No DSM or fuel switching
 - All emission reductions are as a result of Renewable Gas
- 6 7



3

1 2.0 Reference: GROWTH IN RENEWABLE GAS SUPPLY

Exhibit B-11, Section 6.3.2.2, pp. 79-80

Long-Term Supply Forecast

4 On page 79 of the Application, FEI states:

5 FEI also relied on available research data to gauge the long-term RNG market 6 supply potential, including various studies that forecast the range of achievable 7 Canadian RNG supply potential. These studies show that there is approximately 8 61 to 82 PJs of supply potential per year by 2030.

- 9 2.1 Please confirm, or explain otherwise, that FEI anticipates its 2030 RG demand to 10 be roughly equal to 50-75% of all Canadian Renewable Natural Gas (RNG) supply 11 achievable by 2030.
- 12
- 13 Response:

Confirmed. However, this does not include other potential supply sources, such as hydrogen,
 syngas, RNG derived from alternate feedstocks such as woody biomass, RNG imported from the
 United States, and other low carbon fuels.

- 17 The BC Renewable and Low-Carbon Gas Supply Potential Study⁵ provides the following outlook:
- Canadian sourced supply of RNG derived from anaerobic digestion alone could account for 70 PJ by 2030.
- Renewable and low-carbon gases in BC could be as high as 444 PJ by 2050.
- 590 PJ of RNG from anaerobic digestion is available for import from the United States.
- Ultimately, when all sources of Renewable Gas are considered, FEI is confident that there is ample supply to meet the estimated demand by 2030 and also the long-term demand by 2050.

24 25		
26 27 28 29	2.1.1	Please discuss the implications this may have if hydrogen, lignin, and syngas supply fail to materialize in the quantities forecast in Figure 8-3.

⁵ Evint Consulting and Canadian Biomass Energy Research Ltd., *BC Renewable and Low-Carbon Gas Supply Potential Study*, January 28th, 2022: <u>https://www.cdn.fortisbc.com/libraries/docs/default-source/news-events/bc-renewable-and-low-carbon-gas-supply-potential-study-2022-03-11.pdf</u>.



1 Response:

2 If hydrogen, lignin, and syngas failed to materialize in the quantities forecast in Figure 8-3, FEI

3 expects that it would need to acquire more RNG supply. This additional RNG supply would likely

4 be acquired from Canadian sources and by importing RNG from the United States.

5 As discussed in the response to BCUC IR1 2.1, FEI expects there to be a significant potential 6 supply of RNG by 2030 and beyond, even using a conservative outlook. The BC Renewable and 7 Low-Carbon Gas Supply Potential Study⁶ includes a "Minimum Scenario" based on pessimistic 8 assumptions with respect to the availability and cost of supply by 2030 and 2050 in Canada. In 9 this scenario, 25 PJ of renewable and low-carbon gas supply is projected to be available by 2030 10 and over 100 PJ by 2050. This means that, even assuming a slower than expected development 11 timeline of new supply and higher costs, up to 25 PJ of RNG would be available in BC, with the 12 residual to be made up with RNG imports to comply with the goals of the CleanBC Roadmap. 13 The duration of FEI's existing RNG import contracts is a supply risk mitigation strategy whereby 14 off-take agreements secure project financing and allow FEI to lock-in RNG across North America

for long periods (i.e., generally for 20 years). FEI was the first to offer RNG to its customers and has just recently signed an RNG off-take agreement with Archaea Energy which is the largest RNG off-take agreement ever in North America. FEI continues to be an industry leader in RNG

- 18 project development and holds a first-mover advantage in that category, although this advantage
- 19 is expected to decrease over time.
- 20
- 21
- -
- 22 23
- 2.2 Please discuss whether FEI expects RNG demand in Canada to outpace RNG supply by 2030.
- 24 25

26 **Response:**

27 At this time, FEI does not expect demand for RNG in Canada to outpace supply by 2030. The 28 most recent supply study, as discussed in the response to BCUC IR1 2.1, demonstrates that there 29 is significant supply potential within BC. This also suggests that there are significant sources 30 available throughout Canada. FEI is also procuring and sourcing Renewable Gas from both within 31 Canada and the United States. Purchasing outside of Canada helps to diversify supply, ensure 32 that pricing is competitive, and ensures that there will be ample Renewable Gas for BC's needs. 33 FEI does not see the ability to source Renewable Gas from within North America as an issue, as 34 evidenced from FEI's more recent supply contracts. Towards the latter part of this decade, FEI 35 expects that it will bring on new forms of low carbon gas which will help further supply and mitigate 36 any potential for price escalation.

⁶ Evint Consulting and Canadian Biomass Energy Research Ltd., *BC Renewable and Low-Carbon Gas Supply Potential Study*, January 28th, 2022: <u>https://www.cdn.fortisbc.com/libraries/docs/default-source/news-events/bc-renewable-and-low-carbon-gas-supply-potential-study-2022-03-11.pdf</u>.



1 2			
3 4 5 6 7		2.2.1	Please discuss the risks of RNG supply constraints on FEI's RNG acquisition price and FEI's ability to meet its emission targets, should Canadian RNG demand outpace RNG supply.
8	Response:		
9	Please refer to	the resp	oonse to BCUC IR1 2.1.1.
10 11			
12 13	On paç	ge 80 of t	he Application, FEI states:
14 15 16 17 18		As discu forms of expected entering reflecting	Issed in Section 6.3.2 above, FEI has forecast an increase in alternative Renewable Gas (i.e., hydrogen, synthesis and lignin). These gases are d to be produced at an achievable scale of up to 400 PJs per year in BC, the supply mix beginning in 2024/2025 and increasing until 2032, g the province's abundant natural resources.
19 20 21 22	2.3	Please o scale" o producti	clarify what is meant by RG are expected to be produced at an "achievable f up to 400 PJs per year in BC. What year will the 400 PJs per year on materialize? Please provide supporting evidence.
23	Response:		
24 25 26 27	FEI's estimate <i>Renewable ar</i> including a "m carbon gas th	e of the a nd Low-C aximum at could	chievable scale of Renewable Gas is supported by the results of the <i>BC Carbon Gas Supply Potential Study</i> , ⁷ which analyzes various scenarios, scenario" that describes the upper bound volume of renewable and low- be produced in BC under a variety of assumptions. The study forecasts

- that a maximum scenario of up to 444 PJ of renewable and low-carbon gas could be produced
 with in-province resources, which would amount to approximately 200 percent of British
 Columbia's current downstream end-use natural gas consumption.
- 31 Based on the study, the estimated timeframes for production volumes are as follows:
- By 2030, between 25 (Minimum) and 50 (Maximum) PJ per year can be produced with in province resources. Of the Maximum, approximately 19 PJ per year could be produced
 from renewable feedstocks like municipal waste, forestry waste, and renewable electricity.

Evint Consulting and Canadian Biomass Energy Research Ltd., *BC Renewable and Low-Carbon Gas Supply Potential Study*, January 28th, 2022: <u>https://www.cdn.fortisbc.com/libraries/docs/default-source/news-events/bc-renewable-and-low-carbon-gas-supply-</u> <u>potential-study-2022-03-11.pdf</u>.



- By 2050, between 104 (Minimum) and 444 (Maximum) PJ per year of renewable and lowcarbon gas can be produced with in-province resources, i.e., between half and twice BC's current natural gas use. Between 42 and 195 PJ per year could be produced from renewable feedstocks, roughly a quarter of all of the natural gas currently retailed in BC.
- 5

3

4

- 6
- 7 8

9

10

2.4 Of the 400 PJ production forecast, please provide a breakdown for hydrogen, synthesis gas, and lignin.

11 Response:

- 12 The *BC Renewable and Low-Carbon Gas Supply Potential Study* provides an updated forecast 13 breakdown for the production of renewable and low-carbon fuels, including hydrogen, synthesis 14 gas, and lignin, compared to the references used to inform the Application. The 2050 annual 15 forecast production volumes for the three referenced fuels (excluding RNG) under the "maximum 16 scenario" are 434 PJ, as shown below:
- 17 Renewable (green) hydrogen: 39.9 PJ
- 18 Low-carbon (blue and turquoise) & waste hydrogen: 249.1 PJ
- 19 Syngas from wood-based pathways: 145 PJ
- Lignin: 0 PJ
- 21
- The lignin potential in the study is zero, not because it is technically unfeasible, but rather based
 on limiting factors determined by the authors, particularly that it has more valuable secondary
 uses with a market value of approximately \$35 per GJ.
- 25
- 262.5Please discuss what portion of FEI energy demand does it consider feasible to27replace with syngas and lignin by 2030.
- 2829 **Response:**
- FEI considers that syngas, without upgrading to hydrogen or RNG (biomethane), and lignin have
 the maximum potential to replace approximately 1.4 PJ of conventional natural gas annually by
 2030. Specifically:
- Lignin could technically replace approximately 2.2 PJ in limekilns and other plant operations at kraft pulp mills across BC. However, the *BC Renewable and Low-Carbon Gas Supply Potential Study* projects that by 2030, 0 PJ energy demand is replaced by lignin.
- 37



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 11

Syngas, without upgrading to hydrogen or RNG (biomethane), could replace approximately 1.4 PJ in limekilns and other plant operations at kraft pulp mills across BC.



3

4



1 3.0 Reference: GROWTH IN RENEWABLE GAS SUPPLY

Exhibit B-11, Section 6.4.3.1, p. 82; Section 8.6, Figure 8-3, p. 122

Hydrogen, Synthesis Gas, and Lignin Supply Forecast

On page 122 of the Application, FEI provides Figure 8-3 as shown below:

Figure 8-3: Forecast Volumes of Renewable Gas Supply, Customer Demand and Allocation to Sales Customers (PJ)



5

- 6 7
- 3.1 Please restate Figure 8-3 to show the breakdown of a forecast hydrogen, syngas, and lignin volumes.

8

9 Response:

10 FEI provides a restated Figure 8-3 below which breaks out hydrogen, syngas and lignin supply

11 volumes underlying the analysis in the Application. FEI notes that Renewable Gas supply is

12 evolving and that this supply forecast will change as new technology and projects develop. Please

13 refer to the responses to BCUC IR1 series 2 for a discussion of BC's renewable and low carbon

14 supply potential.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 13



- 2 3
- 4
- 5 6

8

9

3.2

Please discuss the end-use opportunities FEI has identified for syngas and lignin. Explain how the forecast demand from any opportunities identified compares to the total demand forecast provided.

10 **Response:**

11 FEI has identified significant potential for syngas and lignin to displace natural gas in industrial 12 end-use applications. In total, FEI estimates that syngas and lignin could replace over 8.2 PJ per 13 year of existing natural gas consumption in a range of industrial high temperature energy 14 applications.8

15 FEI expects to acquire syngas and lignin by displacement. For example, a syngas or lignin 16

production co-located beside an industrial gas customer capable of using syngas or lignin for its 17 energy needs would physically displace conventional gas and reduce associated GHG emissions.

BC Renewable and Low-Carbon Gas Supply Potential Study, Final Report, January 28, 2022. Online: https://www.cdn.fortisbc.com/libraries/docs/default-source/about-us-documents/renewable-gas-study-final-report-2022-01-28.pdf?sfvrsn=cb5ca1fd_0.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 14

1 Syngas End-Use Opportunities

Syngas produced from wood waste is a biofuel that can be used in a number of industrial
applications, including in the lime kilns of kraft pulp mills. Approximately 6 PJ per year of natural
gas are used in lime kilns in British Columbia which could be replaced by syngas.

5 Lignin End-Use Opportunities

6 Lignin produced is a by-product of the chemical pulping process and also a biofuel that, in its 7 unrefined form (black liquor), can be burned, partly as a fuel and partly to get rid of an unwanted 8 by-product, to recover entrained pulping chemicals. Instead of burning lignin as black liquor in 9 recovery boilers, it can also be extracted from black liquor and, in its refined form, can be used 10 as a fuel in a number of applications to replace natural gas use at kraft mills and in direct-fired 11 lumber drying kilns, veneer dryers or as a supplemental fuel in wood-burning processes of the 12 paper industry. Lignin can be further processed and sold to offsite markets as a high-grade solid 13 fuel or as a feedstock for further natural gas replacement. Lignin has the potential to displace up 14 to 2.2 PJ per year of natural gas across British Columbia.

- 15
- 16 17

22

23

29

- 183.3In the event that a 6.11Mt CO2e emissions cap was implemented by 2030, please19discuss whether FEI expects to be able to meet this with only RNG, hydrogen,20syngas, and lignin, at the same level of total energy demand used in the21Application.
 - 3.3.1 If yes, please provide an updated figure 8-3 showing the breakdown of RNG, hydrogen, syngas, and lignin volumes to 2030.
- 243.3.2If no, please discuss how much FEI expects to be able to increase RG25supply and discuss any other measures FEI would use to meet the266.11Mt CO2e emissions cap, assuming this cap is implemented. Please27include discussion of potential DSM measures and the purchase of28carbon offsets.

30 **Response:**

As discussed in the response to BCUC IR1 1.1, FEI conducted a preliminary analysis to understand the investments and activities needed to meet the emissions cap in the CleanBC Roadmap (i.e., a 47 percent reduction from 2007 levels). The analysis shows that a variety of GHG mitigation strategies are needed, including but not limited to, Renewable Gas. More robust analysis on compliance with the cap, including potential energy demand scenarios, renewable and low-carbon gas supply, and DSM potential, is included in FEI's 2022 Long Term Gas Resource Plan (LTGRP).

Please also refer to the response to BCUC IR1 1.2 for factors that may vary FEI's forecast 2030
 Renewable Gas supply requirements to achieve the GHG emissions cap set out in the CleanBC

40 Roadmap. In addition, please refer to the response to BCUC IR1 2.1 for discussion on achievable



TN	FortisBC Energy Inc. (FEI or the Company) Revised Renewable Gas Program Application – Stage 2 (Application)	Submission Date: May 16, 2022
	Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 15

potential Renewable Gas supply and BCUC IR1 2.4 for the breakdown of potential hydrogen,
 synthesis gas, and lignin volumes to 2030.

3 4			
5 6 7 8 9	3.4	Please o lignin ar fuels.	confirm, or explain otherwise, that FEI expects to be the supplier delivering ad syngas to FEI customers who elect to switch from natural gas to these
10	<u>Response:</u>		
11 12 13 14 15 16	Confirmed. A from a produce and reduce a this case, FE energy betwee facilitates the	as explaine cer when t associated I does not een produc use of lig	ed in the response to BCUC IR1 3.2, FEI can purchase syngas or lignin the syngas or lignin is used to physically displace conventional natural gas I GHG emissions (e.g., in an industrial gas customer plant operation). In expect to own the infrastructure, but will meter/measure and purchase the ction and end-use. By purchasing and measuring/metering the energy, FEI nin or syngas that otherwise would not occur.
17 18	Please also r were largely	note that th self-suffici	his type of customer would maintain a gas connection with FEI, even if they ent, for the purposes of reliability and balancing.
19 20			
21 22 23 24 25 26 27	3.5 Response:	Please existing have the transpor	discuss whether FEI expects to transport lignin and/or syngas using its pipeline systems, or whether FEI expects large industrial customers to e ability to produce their own lignin and/or syngas and using it without ting through FEI's system, or a combination of both.
28	FEI expects I	arge indus	strial customers to produce their own lignin and/or syngas without needing
29 30 31	to transport it	through F	El's system.
32 33 34 35 36 37		3.5.1	Please discuss whether there is any risk to FEI that customers who can utilize lignin or syngas to reduce their GHG emissions to do so off FEI's system such that FEI is not able to account for the corresponding emission reductions. Please quantify to the extent possible.
38	Response:		
39	If industrial o	ustomers	decided to use their syngas or lignin and not sell to FEI, the emission

40 reduction would still occur and, from a provincial inventory perspective, it would be the same



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 16

outcome. In this case, the industrial customers would likely retain access to the FEI system to
 ensure reliability or access to additional supply.

3 However, industrial customers are unlikely to take actions to utilize lignin and syngas without FEI 4 because the economic case for industrial gas customers to produce and utilize lignin or syngas 5 to reduce their GHG emissions is challenging. The cost to produce lignin and syngas is 6 significantly greater compared to the cost of conventional natural gas, including the carbon tax. 7 Therefore, the most economically viable option to utilize lignin and syngas to reduce GHG 8 emissions in BC is for industrial gas customers who can produce and utilize lignin and syngas to 9 sell the renewable energy, and associated environmental attributes, to entities that are 10 incentivized to buy it.

FEI expects that the maximum price per gigajoule for lignin and syngas allowed in the GGRR, and FEI's intent to procure lignin and syngas under long-term energy supply contracts up to the maximum price, will support the development of multiple lignin and syngas projects in BC to meet the forecast volumes.

- 15
- 16
- 17 18
- 3.6 Please discuss whether FEI expects lignin and syngas customers will be considered a part of FEI's RG customer classes and pay the same tariff rates.
- 19 20

21 **Response:**

22 FEI has not yet finalized the acquisition and accounting details for this offering. However, the 23 expected business model is for industries (e.g., pulp and paper and forestry) to produce lignin or 24 syngas as a by-product of their manufacturing process and for FEI to purchase the lignin and 25 syngas as a prescribed undertaking under the GGRR. FEI would take delivery of the lignin or 26 syngas by displacement of conventional natural gas. That is, the industry would continue to 27 purchase conventional natural gas from FEI, but the use of the conventional natural gas would be 28 displaced by the use of lignin or syngas for their industrial purposes. Therefore, the industrial 29 customer would be both a supplier of Renewable Gas and a customer of FEI that pays regular 30 tariff rates for service. Should the customer also want to reduce GHG emissions, and receive the 31 environmental benefit, credit, or carbon tax reduction, they would need to sign up for the 32 Renewable Gas Program and take service under Rate Schedule 11B.

- 33
- 34
- 35
- 363.7Please discuss whether FEI expects to incur capital costs related to installing new37pipelines or converting existing pipelines for lignin and/or syngas use, and whether38these will be borne by all FEI ratepayers or lignin/syngas customers only.
- 39



1 Response:

2 FEI does not expect to incur capital costs related to installing new pipelines or converting existing 3 pipelines for lignin and/or syngas use. Lignin and syngas will not be injected into FEI's distribution 4 system, and therefore, no upgrades to FEI's existing pipelines will be required. FEI expects the 5 cost of pipelines installed on a lignin/syngas supplier's property will be borne by that supplier with 6 the pipeline cost recovery occurring through the agreed upon Renewable Gas acquisition price, 7 subject to the GGRR maximum price per GJ. In the event that a pipeline is required to be 8 constructed between a supplier of lignin/syngas and a customer able to use the lignin/syngas 9 energy and FEI constructs that pipeline, the cost will be accounted for in the acquisition cost of 10 the lignin/syngas energy such that the total cost per GJ for the energy and pipeline does not 11 exceed the GGRR maximum at the time of contracting.

Please refer to the response to BCUC IR1 3.2 for further discussion on the physical flow of theserenewable energies.

- 14
- 15
- 16

173.8Please discuss whether the purchase and sale of lignin and/or syngas is expected18to result in a net cross-subsidization from other FEI ratepayers (i.e. will the19commodity rates charged for these fuels recover FEI's entire cost of supply?)

20

21 Response:

The purchase and sale of lignin and/or syngas from an acquisition and price standpoint will work in a similar fashion as the acquisition of Renewable Gas today. The volumes of lignin and syngas will make up a portion of FEI's Renewable Gas portfolio and will be sold to customers through one of FEI's approved programs. FEI has proposed to recover the costs associated with the Renewable Gas Program, including the sale of syngas and lignin, through the Renewable Gas Connections, Renewable Gas Blend, and Voluntary Renewable Gas services.

28

29 30

31 On Page 82 of the Application, FEI states:

- FEI is also in the process of testing how hydrogen interacts with pipeline materials, components and other equipment on its system, enabling hydrogen transport as a blend in the gas system, and the feasibility of hydrogen transport via repurposed high pressure transmission pipelines with a long-term goal of repurposing segments of existing natural gas networks for the delivery of 100 percent hydrogen gas.
- 38 3.9 Please discuss what blend of hydrogen FEI anticipates to deliver in its natural gas
 39 system to meet the 2030 supply mix forecast in Figure 8-3.



2 Response:

FEI anticipates that its existing natural gas network will deliver hydrogen blends of between 5 percent and 20 percent by volume to meet the 2030 supply mix forecast. In addition, FEI expects segments of the network may be repurposed for 100 percent hydrogen delivery to select industrial, commercial and residential customers where feasible.

- 7
- 8
- 9
- 103.10Please provide details of the studies to date by FEI on the feasibility of blending11hydrogen into its natural gas system.
- 12

13 Response:

14 FEI continues to advance a range of activities to study, test, and verify that hydrogen is safe to

15 use in the existing gas system and to identify any changes that may be required to ensure ongoing

16 safe operation of the gas system. The following provides background regarding blending

17 hydrogen in pipelines and describes FEI's key ongoing activities to investigate doing so.

18 University Research Studies

Since 2019, FEI has collaborated with the University of British Columbia research team to study hydrogen's compatibility with gas pipeline components and equipment, exploring the necessary tools, methods, technologies, and standards compliance pathways required to accommodate the transition to hydrogen-natural gas blends. This partnership will generate industry-relevant data, standard operating procedures, and safety and implementation solutions.

24 Joint Industry Study Projects

FEI is also engaged in the following collaborative international based joint industry initiatives,which are ongoing:

- HYREADY: This initiative bridges the gap between research and development projects and operations by delivering recommendations (in the form of guidelines) which describe the steps and aspects to be considered to prepare a specific existing natural gas network, including the end user facilities, for a certain percentage of hydrogen added to methane.
- In-Service Welding on Hydrogen-Methane Mixture Pipelines: This initiative is intended to determine if welding onto an in-service pipeline that contains a mixture of methane and hydrogen results in an increased risk of hydrogen cracking and, if so, to develop guidance pertaining to measures that can be taken to mitigate the increased risk. The final work scope will be developed with input from the participants.
- Composite Pipelines for Hydrogen: The objective of this initiative is to address the challenges and risks of using bonded and non-bonded thermoplastic composite pipes for



- hydrogen delivery and assess the cost-benefit, reliability and the state of regulatory
 framework within the supply chain of the hydrogen economy.
- Integrity Management of Hydrogen Pipelines: This initiative is developing guidelines on assessing defects in pipelines for transporting hydrogen blends. The guidelines will be based on compiling information from various ongoing industry efforts, as well as developing specific information on relevant materials under representative environmental and loading conditions. The guidelines will provide a framework to assess the feasibility of transporting hydrogen blends in existing pipelines along with providing a basis for construction of new pipelines for hydrogen service.
- Low Carbon Research Initiative (LCRI) with Gas Technical Research Initiative: This initiative aims to accelerate the deployment of low- and zero-carbon energy technologies required for deep decarbonization and specifically targets advances in the production, distribution, and application of low-carbon, alternative energy carriers such as hydrogen and the cross-cutting technologies that enable their integration at scale.⁹
- University College Irvine (Riverside): This initiative is assessing safety concerns associated with injecting hydrogen into the existing natural gas pipeline system at various percentages.

18 FEI Hydrogen Blending Technical Guidelines Studies

FEI has completed a technical review of available information regarding construction, operation, and integrity management of natural gas pipeline infrastructure that transports blends of natural gas and hydrogen mixtures, up to 100 percent hydrogen gas. The review captured and summarized recently published papers, recommendations, and requirements, and focused on pipeline system material selection, performance, and integrity management.

FEI then used this research to apply the general current state of admissible limits for hydrogen blending for its existing natural gas infrastructure and end use grid connected to customer applications. The resulting FEI Hydrogen Blending Technical Guidelines set out hydrogen blend concentrations across the gas system as infographics, summarizing available industry data.

28 FEI Asset Specific Hydrogen Blending Feasibility Study Assessments

FEI has conducted a high-level desktop review of specific pipeline assets to determine readiness to transport hydrogen blends. FEI will execute further detailed engineering assessments on each network asset prior to the introduction of hydrogen blended natural gas to ensure it is fit for purpose considering its materials, components, and operational characteristics.

33 FEI Overall Gas System Hydrogen Feasibility Study

FEI plans to collaborate with Pacific Northern Gas (PNG), Enbridge-Westcoast and the BC Oil and Gas Commission to execute an overarching BC Gas System Hydrogen Feasibility Study to investigate the extent to which hydrogen can be blended with methane to reduce the carbon

⁹ <u>https://www.gti.energy/hydrogen-technology-center/focus-areas/low-carbon-resources-initiative/.</u>



10

11

- intensity of delivered gas to all customers in BC. The Hydrogen Feasibility Study will include a
 suite of activities and deliverables that will identify the tolerance for hydrogen-blended natural gas
 within the existing gas system and mitigation strategies to achieve targeted blend levels.
- 5
 6
 7 3.10.1 Based on the studies completed to date, please discuss whether FEI has enough information to expect that it will be able to blend hydrogen into its natural gas system by 2024 for use by existing customers, without

significant upgrades.

12 **Response:**

FEI expects to have enough information based on existing industry literature, third party studies, ongoing research and development, internal technical guidance, and further planned hydrogen feasibility research, field-testing and pilot deployment to begin blending hydrogen into its existing gas system by 2024.

- 17
 18
 19
 20 3.11 Please provide an overview of the magnitude and likelihood of the top 5 highest
- 20 3.11 Please provide an overview of the magnitude and likelihood of the top 5 highest 21 risks to FEI in procuring and selling hydrogen in the quantities outlined in Figure 22 8-3, and identify any risk mitigation measures taken by FEI.
- 23
- 24 **Response:**

There are several key challenges to hydrogen market development that FEI has identified as barriers to adoption to achieve the volume of hydrogen forecast by 2032. A summary of the top 5 risks and mitigation measures is provided below. At this point, FEI has not quantitatively ranked the risks in terms of magnitude or likelihood.

29 Establishing public awareness and the safety case for hydrogen as a renewable fuel

The issue of safety and the perception of the risks associated with hydrogen, in particular, delivery by pipelines in the existing natural gas network or in dedicated infrastructure, especially in urban areas, and the use of hydrogen as a fuel in homes, businesses and industry, will challenge the adoption of hydrogen. There is a lack of awareness about the opportunities and safety around hydrogen within the general public, as well as within the natural gas industry and government. Increased awareness about hydrogen as a viable decarbonization pathway that is safe and provides economic benefits is critical to establishing a vibrant hydrogen sector.



- 1 To address this challenge, regulations, codes and standards that govern the safe distribution and
- 2 use of hydrogen across many sectors of the BC economy need to be developed and must keep
- 3 pace with evolving technology that covers hydrogen in all parts of the supply chain.

4 Regulation of hydrogen in the existing natural gas supply chain

5 Various published literature reviews and studies provide general guidance regarding allowable 6 hydrogen blend concentration in natural gas networks based on various assumptions. However, 7 each gas network operator is currently defining this on a case-by-case basis. The lack of a 8 standardized industry approach including codes, standards and regulations to define the 9 allowable hydrogen blend concentration is a barrier to promoting widespread hydrogen 10 deployment. If this barrier cannot be addressed in a meaningful way, hydrogen uptake will be 11 slow.

12 To overcome this barrier, provincial and federal governments and the natural gas industry will 13 need to develop a program of means and methods to adopt and over time increase green/low-14 carbon molecules in the natural gas grid. New codes, standards and practices and novel 15 approaches to operating equipment and systems not originally certified for hydrogen gas coupled 16 with strategic demonstration projects will be necessary to define the allowable hydrogen blend 17 concentration and other means to enable widespread hydrogen deployment. To support this 18 effort, it will also be necessary to execute hydrogen readiness technical feasibility assessments 19 and testing of the existing natural gas supply chain to determine a baseline hydrogen 20 compatibility.

21 Lack of industry expertise and subject matter experts

FEI will need to have staff and engage experts to assist with developing hydrogen projects including production, injection/blending, dedicated hydrogen distribution systems and end use applications. The availability of qualified and experienced talent in Canada to assist FEI and other natural gas infrastructure operators to introduce hydrogen into the natural gas supply chain is currently unknown and therefore could be a challenge to hydrogen development.

To address this challenge FEI will engage with university institutions and talent agencies to hire staff. FEI will engage with industry generally to develop industry working groups and advocacy that will align on addressing hydrogen technical challenges. FEI will also engage with peer gas distribution companies both within and outside of BC to share knowledge and progress research and development

31 and development.

32 How to stimulate and grow both demand and supply for hydrogen technologies

Most methods of hydrogen production are energy intensive. Producing hydrogen at a range of scales with little or no carbon emissions at acceptable cost will be a challenging economic barrier.

35 To achieve this, existing hydrogen production technologies need to be decarbonized, new low-

- 36 carbon hydrogen production technologies need to be innovated and commercialized, flexible
- 37 tariffs need to be developed to provide access to green power, and new distribution and end use
- 38 technologies need to be innovated and developed.



1 Federal and provincial government support will be required to progress research and 2 development, including supporting initial demonstration projects, technology innovation and

3 commercialization across the hydrogen supply chain.

4 Availability of hydrogen infrastructure and large-scale capital investments

5 Domestic supply of low-carbon hydrogen is limited in many parts of Canada today, and this is 6 preventing both pilot and commercial rollout. As domestic production and demand grow, there will 7 be a need for dedicated infrastructure such as hydrogen pipelines and liquefaction plants. 8 Ensuring that these crucial assets can be built in a coordinated and timely manner will be essential 9 to ensuring low cost, low-carbon hydrogen can be delivered to both domestic and international 10 markets. Existing hydrogen technologies will need to evolve to make hydrogen a sustainable fuel 11 for the long term, especially for hydrogen to emerge in larger scale utility applications to displace 12 traditional natural gas use. 13 Long-term planning will be required to understand how much hydrogen could be injected and 14 blended into the regional natural gas grid. Injecting renewable/low-carbon hydrogen to replace 15 natural gas and decarbonize the gaseous energy stream will compete for pipeline capacity with, 16 for example, increasing volumes of natural gas required for LNG production. The existing gas grid 17 will likely be unable to transport the volumes of natural gas and hydrogen required due to physical 18 and technical constraints. Therefore, a possible future scenario could require the construction of 19 a parallel hydrogen transmission network and the conversion of large segments of FEI's service 20 territories to hydrogen. This would require the construction of new incremental hydrogen 21 transportation and distribution infrastructure projects, end-use conversion to hydrogen and large-22 scale capital investment.



3



1 4.0 Reference: PROPOSED RENEWABLE GAS PROGRAM

Exhibit B-11, Section 7.4.2.1, Table A-1, p. 102; Appendix A, p. 3

Greenhouse Gas Intensity Emission Factors

On Page 102 of the Application, FEI states that "Renewable Gas has a substantially lower
greenhouse gas intensity than BC Hydro's electricity." On page 3 of Appendix A of the
Application, FEI provided Table A-1 entitled "Energy Source Emissions Factors" as shown
below:

Enormy		Emission Factor Values			
Source	Source of Values	kgCO₂₀/ GJ	kgCO₂₀/k Wh	tCO _{2e} /GWh	
Conventional Natural Gas	2020 BC Best Practices Methodology for Quantifying Greenhouse Gas Emissions ⁴ (Table 1, p. 12)	49.87	0.180	179.53	
Bioemethane (RNG)	2020 BC Best Practices Methodology for Quantifying Greenhouse Gas Emissions (Table 1, p. 12)	0.2932	0.001056	1.06	
Electricity	2020 GGIRCA website (Integrated grid for BC Hydro) 5	11.14	0.040	40.10	
Electricity	2020 GGIRCA website (Fort Nelson grid for BC Hydro)	147.22	0.530	530.00	

Table A-1: Energy Source Emission Factors

- 8
- 9 10

4.1 Please provide the weighted average carbon intensity for FEI's entire RG supply portfolio in its most recent completed gas year.

11

12 **Response:**

13 The carbon intensity of biomethane in the above table is for burner tip emissions. The weighted

average lifecycle carbon intensity (CI) of FEI's Renewable Gas supply procured in 2021 was less
 than zero at -22.4 kgCO₂e/GJ.

16 The calculation of the weighted average CI is based on the combined carbon intensities of all of

17 the individual projects that provided RNG to FEI over 2021, multiplying each CI with the

18 associated volume and dividing by the total volume.

19 The CI for each RNG supply project was calculated using the GHGenius model. This model uses

an ISO compliant lifecycle assessment (LCA) approach and is most commonly used to determine

21 CI for the Renewable and Low Carbon Fuel Requirements Regulation (RLCFRA). To provide a

better comparison to the home use market, FEI excluded emissions that are typically associated

23 with fuel delivery and dispensing in the RLCFRA.

24



3

4

5

6

4.2 Please explain, under the BC Energy Step Code, whether electricity and RG emissions are calculated using the BC Best Practices Methodology for Quantifying Greenhouse Gas Emissions or actual carbon intensity for a particular utility/service area (or otherwise).

7 <u>Response:</u>

8 Emissions factors are not listed in the BC Energy Step Code, or in the BC Building Code in which 9 it resides. At present, the BC Energy Step Code focuses on improving the energy efficiency of 10 buildings and equipment. FEI understands that the provincial government will provide a pathway 11 for local governments to use a GHGi metric for new buildings (the Step Code does not yet have 12 this provision). The provincial government has been in discussions with the Step Code council, FEI and others on the content of regulation, the specifics of the GHGi metric, and how local 13 14 governments will implement the GHGi metric. As noted in the Application, a number of 15 municipalities already have GHGi metrics and FEI expects the targets and mechanisms will be 16 similar at the provincial level.

- 17
- 18
- 19
- 19
- 20 21
- 4.2.1 If emissions factors used by the BC Energy Step Code differ from those provided in Table A-1, please provide an updated Table A-1 reflecting those factors used.
- 22 23
- 24 **Response:**

Please refer to the response to BCUC IR1 4.2, where FEI explains that the BC Energy Step Code
 does not include emissions factors. Table A-1 in the preamble provides the most up-to-date
 emissions factors published by the BC Climate Action Secretariat.

As explained in Section 7.2.2 of the Application, FEI understands that forthcoming amendments to the BC Building Code will incorporate a GHGi limit, as outlined in the CleanBC Roadmap. Currently, however, local governments have chosen to adopt their own GHGi targets, using various emissions factors they consider to be appropriate. For example, the excerpt below from the City of Vancouver's Modeling Guidelines shows emissions factors by fuel type. The City of Vancouver does not identify the reference source for the emissions factors nor does it include Renewable Gas.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 25

Table 1: Excerpt - City of Vancouver Energy Modeling Guidelines

Table 1.2 Emissions Factors by Fuel Type					
Fuel Type	Emissions Factor (kgCO _{2e} /kWh)				
Natural Gas	0.185				
Electricity 0.011					
District Energy System as provided by utility ^{1,2}					
¹ The emissions factor of a district energy system shall be as provided by the utility (and as agreed by the utility and the AHJ).					
² Where a district energy utility agrees to provide a development with energy at a carbon intensity that varies from that of the overall system, documentation of that agreement (or intent to enter an agreement), and any other measures or agreements required to secure the supply of low-carbon					

energy (such as those required by the CoV LCES Policy), shall be provided

to the authority having jurisdiction.



5.0 Reference: NEAR-TERM SUPPLY OUTLOOK SUPPORTS MEETING THE CLEANBC PLAN 3 Exhibit B-11, Section 6.2.2, Table 6-1, p. 74, pp. 73–75 4 Contracted RNG Supply Projects 5 On page 74 of the Application, Table 6-1 shows the contracted RNG supply projects up to December 2023:

	1	2	3	4	5	6	7	8	9
	Project	Туре	Provinc e/State	BCUC Approval Status	Start/Anticipate d Start Date (Month-Year)	Contract Max Annual Volume (TJ/Yr)	Proportion of Total Max Contract Volume (%)	Expected Annual Volume (TI/Yr)	Proportion of Total Expected Volume (%)
	Fraser Valley Biogass	Farm Digester	BC	Approved	Sep-10	91	0.7%	67	0.7%
	Columbia Shushwap Regional Dist.	Landfill	BC	Approved	Jan-13	40	0.3%	16	0.2%
	Kelowna Landfill	Landfill	8C	Approved	Jun-14	118	0.9%	62	0.6%
-	Seabreeze Farms	Farm Digester	8C	Approved	Feb-15	120	0.9%	90	0.9%
-	City of Surrey	Organics Processing	BC	Approved	Jul-18	160	1.2%	75	0.8%
Si	Tidal Stormfisher	Organics Processing	ON	Approved	Aug-20	237	1.7%	180	1.8%
-	Lulu Island Waste Water	Waste Water	BC	Approved	Jun-21	100	0.7%	40	0.4%
1.1	Lethbridge Biogas	Farm Digester	AB	Approved	Aug-21	475	3.5%	225	2.3%
	Shell Energy	Waste Water	IA.	Approved	Aug-21	692	5.1%	519	5.3%
	Faromor CNG	Farm Digester	ON	Approved	Oct-21	120	0.9%	60	0.6%
1.1	Total Existing (TJ/Yr)				1	2,153	15.9%	1,334	13.7%
	Assai Energy	Landfill	PA	Approved	Jan-22	1,600	11.8%	1,200	12.3%
	Dicklands Farm	Farm Digester	BC	Approved	Jul-22	160	1.2%	100	1.0%
	Walker 8NG	Farm Digester	ON	Approved	Jul-22	160	1.2%	120	1.2%
	Tidal Niagara	Landfill	ON	Approved	Aug-22	694	5.1%	675	6.9%
	Net Zero Waste	Organics Processing	BC	Approved	Oct-22	173	1.3%	130	1.3%
	GrowTEC	Farm Digester	AB	Approved	Oct-22	140	1.0%	80	0.8%
	Evergreen (Oshawa) Environmental	Organics Processing	ON	Approved	Oct-22	390	2.9%	300	3.1%
	City of Vancouver	Landfill	BC	Approved	Nov-23	298	2.256	250	2.6%
at e	Matter	Farm Digester	8C	Approved	Jul-23	100	0.7%	75	0.8%
cip	Tidal GSE	Hydrogen Reduction	ON	Approved	Sep-23	800	5.9%	600	6.1%
Int	Delta RNG	Landfill	BC	In Progress	Jan-23	1,200	8.8%	740	7.5%
-	EPCOR	Waste Water Treatment	AB	Approved	Mar-23	280	2.1%	210	2.1%
	RDFFG	Landfill	BC	In Progress	Mar-23	94	0.7%	80	0.8%
	Tidal Rockford	Landfill	耴	Approved	Jun-23	841	6.2%	486	5.0%
	Bradam Hamilton	Carbon Energy	ON	Approved	Jul-23	1,500	11.1%	1,125	11.5%
	Capital Regional District	Landfill	BC	Approved	Sep-23	280	2.1%	238	2.4%
	Bradam Napanee	Carbon Energy Recovery	ON	Approved	Oct-23	1,500	11.1%	1,125	11.5%
	REN Energy	Wood Biomass	BC	Approved	Dec-23	1,200	5.8%	900	9.2%
	Total Anticipated (TJ/Yr)					11,410	84.1%	8,434	86.3%
	Grand Total Volume (TJ/Yr)					13,563	109.0%	9,768	100.0%

Table 6-1: Contracted RNG Supply Projects

7

8

9

10

11

12

13

On page 74 of the Application, FEI states:

The expected annual volume [column 8 of Table 6-1] is the volume FEI presents in its volume forecasts and takes into account FEI's past experience with the initial output of new RNG supply projects. In particular, new supply projects have not historically operated at the full maximum value at first and may take time to ramp up their production to maximum volumes.

- 145.1Please discuss the time it takes for a typical project to ramp-up production to full15maximum value and how different types of projects may differ.
- 16



1 Response:

The ramp-up time to reach expected volumes of a given Renewable Gas supply project varies widely depending on the complexity of the system, the nature of the feedstock and the weather conditions. However, on average, FEI expects that most facilities will operate below expected volumes for the first year, with increased volumes in the second year of production, before reaching maximum expected volumes in the third year of operation.

For example, wastewater treatment plants and landfill projects usually take up to a year to develop operational familiarity with a biogas upgrader. These types of facilities are often oversized for the initial years of operation because biogas production can increase with population growth and changes to the facility, such as the expansion of landfill gas collection systems.

Anaerobic digesters, in comparison, are initially filled with water. It can take a few months of regular feedings of organic matter to reach the design capacity of the digester. Biological systems can have variable outputs and often require operational experience to determine the optimal operation. These systems are also subject to the availability of feedstock supply, which may change over the life of a project as a result of an increase in organics diversion.

- 16
 17
 18
 19 5.1.1 Please explain the methodology used by FEI to calculate the "Expected Annual Volume (TJ/Yr)" for each type of project.
- 21

22 Response:

23 Since 2010, FEI has developed a network of Renewable Gas suppliers which has enabled the

24 most significant and longest running Renewable Gas program in North America. FEI relies on,

and benefits from, its own experience in developing existing supply to determine expected annual
 volume projections.

27 For projects that are operating, FEI relies on historical production data to project future volume.

For example, one of FEI's current RNG suppliers, Fraser Valley Biogas, has been producing 80

TJ of RNG annually since 2014 and FEI thus projects these volumes to continue.

For projects that are not yet built or operational, FEI typically uses a projected volume that is 75 percent of the facility's maximum annual volume. FEI selected this percentage based on its experience with the 10 operating projects in its supply portfolio as of 2021.

In some cases, a projected volume that is 75 percent of the facility's maximum production volume is not appropriate. For example, the Columbia-Shuswap Regional District Landfill produces approximately 16 TJ per year (about 40 percent of max). In this case, the maximum annual volume allows for increased production as a result of population growth or improvements in landfill collection over the life of the contract. As such, FEI has chosen to use a more conservative approach for this project and uses the actual current RNG production, even though over the life of the project there may be future higher volumes.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 28

As FEI gains more experience and can draw on historical data from a greater number of projects,
 it expects to continue to improve its forecast accuracy.

3 4				
5 6 7 8 9	<u>Response:</u>		5.1.1.1	Please clarify if the expected annual volume is based on the yearly expected average over the contract length.
10 11 12 13 14 15 16	No, the experience of the expected an expected and operational is operation.	cted annu r, the exp number o annual vo nual volun ssues are	al volume bected an of factors lume for e ne. These resolved	e is not based on the yearly expected average over the contract nual volume is determined by FEI on a project-by-project basis, as described in the response to BCUC IR1 5.1.1. FEI establishes each project, and sums the output of each project to get the total e volumes are based on a steady state of operation (after early d), which is not typically seen until the second or third year of
17 18				
19 20 21	5.2	Please on negotiat	clarify wh	ether there are other projects that FEI is currently in commercial
22 23 24 25	Response:	5.2.1	lf yes, w anticipa	hat are their expected annual volumes and confirm whether the ted start dates are before December 2023.
26 27 28 29	On March 15 multiple proje is expected to to as much a	2022, the cts. At lea begin su is 2,000 ⁻	e BCUC a ast one of applying R TJ of add	accepted the Archaea BPA. This BPA consolidates supply from the projects included in the agreement is currently operating, and NG in the summer of 2022. The agreement will give FEI access litional RNG supply before the end of 2023 and is projected to

- 30 provide between 7,000 and 8,000 TJ of RNG by year 4 of the agreement (2026).
- In addition, FEI has filed the Linden BPA for acceptance which may be able to begin supplying
 RNG before the end of 2023. The Linden BPA will provide up to a maximum of 1,033 TJ per year,
 and the expected annual volumes are approximately 1,000 TJ.
- FEI is in the process of negotiating five purchase agreements for a total of approximately 5,000TJ of Renewable Gas supply.
- 36

38



IN	FortisBC Energy Inc. (FEI or the Company) Revised Renewable Gas Program Application – Stage 2 (Application)	Submission Date: May 16, 2022	
	Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 29	

- 1 5.2.2 2
 - Please expand Table 6-1 to show any additional projects with an anticipated start date of January 2024 and beyond.
- 3 4 Response:
- 5 All of the current contracted projects have a start date prior to January 2024. The updated Table
- 6 6-1 below includes additional projects that have been executed and filed with the BCUC since the
- Application was filed. 7



FortisBC Energy Inc. (FEI or the Company)	Submission Date:		
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022		
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 30		

Updated Table 6-1

	1	2	3	4	5	6	7	8	9
	Project	Туре	Province /State	BCUC Approval Status	Start/Anticipated Start Date (Month-Year)	Contract Max Annual Volume (TJ/Yr)	Proportion of Total Max Contract Volume (%)	Expected Annual Volume (TJ/Yr)	Proportion of Total Expected Volume (%)
	Fraser Valley Biogass	Farm Digester	BC	Approved	Sep-10	91	0.4%	67	0.4%
	Columbia Shushwap Regional Dist.	Landfill	BC	Approved	Jan-13	40	0.2%	16	0.1%
	Kelowna Landfill	Landfill	BC	Approved	Jun-14	118	0.5%	62	0.3%
	Seabreeze Farms	Farm Digester	BC	Approved	Feb-15	120	0.5%	90	0.5%
50	City of Surrey	Organics Processing	BC	Approved	Jul-18	160	0.7%	75	0.4%
ţi	Tidal Stormfisher	Organics Processing	ON	Approved	Aug-20	237	1.0%	180	1.0%
xis	Lulu Island Waste Water	Waste Water Treatment	BC	Approved	Jun-21	100	0.4%	40	0.2%
_	Lethbridge Biogas	Farm Digester	AB	Approved	Aug-21	475	2.1%	225	1.2%
	Shell Energy	Waste Water Treatment	IA	Approved	Aug-21	692	3.0%	519	2.8%
	Faromor CNG	Farm Digester	ON	Approved	Oct-21	120	0.5%	60	0.3%
	Assai Energy	Landfill	PA	Approved	Jan-22	1,600	7.0%	1,200	6.4%
	Total Existing (TJ/Yr)					3,753	16.4%	2,534	13.5%
Anticipated	Bradam Hamilton	Carbon Energy Recovery	ON	Approved	Jul-23	1,500	6.6%	1,125	6.0%
	Bradam Napanee	Carbon Energy Recovery	ON	Approved	Oct-23	1,500	6.6%	1,125	6.0%
	Capital Regional District	Landfill	BC	Approved	Sep-23	280	1.2%	238	1.3%
	City of Vancouver	Landfill	BC	Approved	Nov-23	298	1.3%	250	1.3%
	Delta RNG	Landfill	BC	Approved	Dec-22	1,200	5.2%	700	3.7%
	Dicklands Farm	Farm Digester	BC	Approved	Jul-22	160	0.7%	100	0.5%
	EPCOR	Waste Water Treatment	AB	Approved	Mar-23	280	1.2%	210	1.1%
	Evergreen (Oshawa) Environmental	Organics Processing	ON	Approved	Oct-22	390	1.7%	300	1.6%
	GrowTEC	Farm Digester	AB	Approved	Oct-22	140	0.6%	80	0.4%
	Matter	Farm Digester	BC	Approved	Jul-23	100	0.4%	75	0.4%
	Net Zero Waste	Organics Processing	BC	Approved	Oct-22	173	0.8%	130	0.7%
	RDFFG	Landfill	BC	Approved	Mar-23	115	0.5%	80	0.4%
	REN Energy	Wood Biomass	BC	Approved	Dec-23	1,200	5.2%	900	4.8%
	Tidal GSE	Hydrogen Reduction	ON	Approved	Sep-23	800	3.5%	600	3.2%
	Tidal Niagara	Landfill	ON	Approved	Aug-22	694	3.0%	675	3.6%
	Tidal Rockford	Landfill	IL	Approved	Jun-23	841	3.7%	486	2.6%
	Walker RNG	Farm Digester	ON	Approved	Jul-22	160	0.7%	120	0.6%
	Archaea	Landfill	USA	Approved	Jun-22	8,000	35.0%	8,000	42.7%
	Linden	Organics Processing	USA	In Progress	Dec-23	1,300	5.7%	1,000	5.3%
	Total Anticipated (TJ/Yr)					19,131	83.6%	16,194	86.5%
	Grand Total Volume (TJ/Yr)					22,884	100.0%	18,728	100.0%
FORTIS BC^{**}

7 8

9

10

11

12

13 14

15

16

17

18

FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 31

1 2	6.0	Reference:	FEI'S SHORT AND LONG-TERM SUPPLY FORECAST TO MEET THE CLEAN BC PLAN
3			Exhibit B-11, Section 6.3.2, Figure 6-3, p. 78, pp. 77–80
4			10-Year Renewable Gas Supply Forecast
5 6		On page 78 forecast from	of the Application, Figure 6-3 shows the 10-year renewable gas supply 2021 to 2032:



Figure 6-3: 10-Year Renewable Gas Supply Forecast

- On page 78 of the Application, FEI states:
 - The [10-year renewable gas supply] forecast can be divided into two time periods, as described below:
 - The forecast until 2026 is based primarily on existing and prospective supply agreements. During this period, FEI also expects to begin pilot and precommercial stage projects using alternate forms of Renewable Gas; however, these volumes are expected to be relatively low initially. Commencing in 2025, FEI expects to increase supply from alternate forms of Renewable Gas, such as hydrogen and synthesis gas.
 - From 2027 and onwards, the forecast incorporates FEI's expectation of further growth in the use of hydrogen, synthesis gas and lignin.
- 196.1Please provide an individual supply forecast and contracting plan for FEI to acquire20RNG, hydrogen, synthesis gas, and lignin to 2032.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 32

2 Response:

Please refer to the response to BCUC IR1 3.1 where FEI has provided a breakdown of estimated
volumes of RNG, hydrogen, synthesis gas and lignin. Please also refer to the response to BCUC
IR1 6.2 where FEI discusses the current and expected plans to contract for these alternate forms
of Renewable Gas.

- 7
- 8
- 9 10
- 6.2 Please outline FEI's current supply/commercial strategy for securing alternate forms of Renewable Gas such as hydrogen, synthesis gas, and lignin.
- 11 12

13 **Response:**

FEI's strategy to supply alternate forms of Renewable Gas will build upon FEI's established RNG (biomethane) acquisition business model. FEI intends to develop opportunities to build, own and operate renewable and low-carbon hydrogen production facilities and supporting infrastructure in BC, and purchase hydrogen, synthesis gas (syngas) and lignin from producers in BC under longterm supply contracts. FEI also expects to be able to import some alternative forms of Renewable Gas from outside BC. FEI's commercial strategy to acquire hydrogen, syngas and lignin to meet forecast supply includes the following strategic objectives:

- Engage with producers to procure hydrogen that is then blended in the gas system or is
 delivered by displacement when used to replace natural gas directly in industrial end-use
 applications.
- Seek opportunities to develop renewable and low-carbon hydrogen clusters within FEI gas service territories where hydrogen production is co-located with hydrogen demand nodes, including transport refueling, blending into the gas distribution system, and industrial customers that can use hydrogen directly to replace natural gas as a fuel or feedstock.
- 28 3. Engage with producers, or industrial host sites who can act as a producer, to procure
 29 syngas and lignin that is delivered by displacement when used to replace natural gas
 30 directly in industrial end-use applications.
- Advance FEI's business model and contracting plan, and supporting policy, legislative and
 regulatory framework for the acquisition of alternative forms of Renewable Gas in BC with
 the perspective that FEI will be able to import these forms of alternative Renewable Gas
 from outside BC in the future.
- Support low-carbon production technology development, infrastructure upgrades and
 multiple end-use cases to support market development and demand growth for alternative
 forms of Renewable Gas.



- FEI is in discussions with multiple parties related to potential hydrogen, syngas and lignin supply agreements for volumes of up to 5 PJ per year. FEI is also progressing early-stage project development feasibility for a large-scale hydrogen hub in FEI's Interior service area, and also in the Lower Mainland with a potential total hydrogen production of up to 10 PJ per year.
- 5
 6
 7
 8
 6.2.1 Please elaborate on potential sources of supply, volumes, and scale of projects relative to RNG.
 10

The *BC Renewable and Low-Carbon Gas Supply Potential Study*¹⁰ analyzes various scenarios, including a "maximum scenario" that describes the upper bound volume of renewable and lowcarbon gas for potential sources of supply and volumes including RNG to 2030 and 2050. The study's scenarios to 2030 are summarized as follows in terms of potential sources of supply and volumes.



Figure 1: BC 2030 Renewable and Low-Carbon Gas Supply Potentials by Scenario



¹⁰ Evint Consulting and Canadian Biomass Energy Research Ltd., *BC Renewable and Low-Carbon Gas Supply Potential Study*, January 28th, 2022, p. 66: <u>https://www.cdn.fortisbc.com/libraries/docs/default-source/news-events/bc-renewable-and-low-carbon-gas-supply-potential-study-2022-03-11.pdf</u>.



FortisBC Energy Inc. (FEI or the Company) Submission Date: Revised Renewable Gas Program Application – Stage 2 (Application) May 16, 2022 Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1 Page 34



Figure 2: BC 2050 Renewable and Low-Carbon Gas Supply Potentials by Scenario

2

In addition to the above, Canadian sourced supply of RNG derived from anaerobic digestion alone
could account for approximately 70 PJ by 2030. US import potential sourced supply of RNG from
all sources is estimated at 590 PJ per year by 2050. The potential for these resources from imports
outside BC is quantified as "very large" in the study.

In BC, the scale of RNG projects will vary from approximately 0.1 PJ per year for small scale
anaerobic digestion projects to greater than 1 PJ per year for wood to biomethane projects. The
scale of hydrogen, syngas and lignin projects relative to RNG is summarized as follows:

- Hydrogen: The largest potential source of Renewable Gas supply growth is expected from renewable and low-carbon hydrogen, which can be derived from a range of abundant resources. The scale of these projects is also expected to be large (up to 5 PJ per year) to sustain the relatively high capital cost. The abundant availability of methane may lead to the most cost-effective source of hydrogen (blue hydrogen). FEI is currently evaluating about 10 PJ per year of potential hydrogen supply.
- Syngas: Syngas can be derived from renewable resources such as wood-waste.
 Typically, these projects would need to be of a scale that is in the range of 0.5 to 1 PJ per
 year or greater production capacity to be economically viable. The biggest advantage of
 this type of supply is that it may result in a lower cost per GJ due to the fact that it does
 not require extra steps to create methane.
- Lignin: Lignin would need to be linked to existing pulp mills in BC. Similar to syngas projects, the scale of lignin projects are expected to be in the range of 0.5 to 1 PJ per year production capacity. FEI is currently negotiating a lignin supply opportunity with a supply volume of approximately 0.5 PJ per year.
- 25



7.0 **Reference: DIVERSITY OF SUPPLY MITIGATES RISK OF LOWER THAN** 1 2 **EXPECTED VOLUME**

3

4

5

Exhibit B-11, Section 6.4.1, pp. 80-82

Diversity of Supply Portfolio

On page 81 of the Application, FEI states:

6 The primary means of mitigating the risk of lower than expected production is to 7 diversify the supply portfolio. Today, FEI has a diverse mixture of supply projects 8 that use different feedstocks and technologies and are located in geographically 9 separate areas. This diversity helps to reduce supply volume risks to the portfolio 10 as all projects in the portfolio will not be subject to the same types of risks. As FEI 11 acquires Renewable Gas from new projects, this will diversify the portfolio further 12 and reduce risk. In addition, there are now suppliers that are themselves 13 aggregators of RNG supply, meaning they have a diverse supply of projects within 14 their own portfolio - thereby reducing supply risk. By contracting with these 15 aggregators, FEI may be able to secure a firmer supply, effectively transferring 16 supply risk to the supplier.

17 7.1 Please clarify whether current RNG supplies are contracted to specific projects 18 and how FEI mitigates supply risk within a project.

19 20 Response:

21 FEI's current RNG, biomethane and biogas purchase agreements are contracted to specific 22 projects except for the BPA with Archaea signed in January 2022. The Archaea agreement will 23 provide supply from a number of sites, which will provide FEI additional assurance of supply by 24 using a portfolio approach. With respect to the other projects, FEI mitigates the supply risk 25 associated with these projects through contractual assurances.

- 26
- 27

28 29

30

31

32

- 7.1.1 Given that most RNG delivery is notional, please discuss whether FEI has explored the ability to aggregate RNG supply within a given supplier and how this may impact supply risk.
- 33 **Response:**

34 Yes, FEI has explored the ability to aggregate RNG supply within a given supplier and has recently

35 received approval of an application that contracts to acquire supply from multiple projects - the

Archaea BPA. While FEI recognizes the benefit of aggregating supply to mitigate supply risk, 36

37 opportunities to aggregate supply are limited compared to individual project-based opportunities.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 36

- 1 2
- 3

On page 81 of the Application, FEI states:

5 A second supply risk is competition from other purchasers of Renewable Gas. FEI 6 has mitigated this risk to an extent by being a "first-mover" in the market and has 7 an established regulatory path with known guidelines for supply agreements, 8 particularly with respect to RNG. This established history in the Renewable Gas 9 market is attractive to suppliers who are interested in long-term offtake agreements 10 with a high degree of certainty of regulatory approval.

- Even so, an increasing number of entities in other jurisdictions, including Énergir in Quebec, are now seeking Renewable Gas supply. Further, the market for RNG is maturing and competition for supply is increasing. Over time, more and more market actors will develop the expertise and proven pathways to purchase RNG and other Renewable Gases. Therefore, to ensure FEI has access to supply at reasonable costs, FEI is working to secure biogas-derived Renewable Gas supply early in this decade rather than waiting for the market to mature further.
- 187.2Please provide FEI's pricing projections for RNG, hydrogen, synthesis gas, and19lignin to 2032. Please also identify the source of these assumptions.

20

21 Response:

Please refer to the table below for the average acquisition cost per GJ from 2021 to 2032 for each
 of RNG, hydrogen, synthesis gas and lignin used in the development of this Application.

For RNG, FEI used a weighted average price based on the following inputs: existing supply contracts, ongoing commercial negotiations, and market intelligence and anticipated future supply contracts. As the table below shows, FEI projects that the average portfolio price of RNG will increase to approximately \$28 per GJ by 2032.

For hydrogen, FEI assumed a price near the maximum GGRR price of \$31 per GJ until 2027. FEI then assumed that supply costs sourced from hydrogen would see an overall decrease due to the expected scale of these projects and potential amendments to the GGRR enabling FEI to acquire

31 hydrogen produced from a broader range of resources and production methodologies from both

in-BC and imported from off-system projects located outside of BC.

33 For syngas and lignin, FEI based its price forecasts on third party reports and suggested pricing

34 projections and early stage potential supplier commercial engagement for lignin and forecasts a

common price for both syngas and lignin of nearly \$24 per GJ by 2032.



			2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
	RNG	\$/GJ	22.13	22.60	23.07	23.55	24.05	24.55	25.07	25.60	26.13	26.68	27.24	27.82
	Hydrogen	\$/GJ	-	-	-	30.50	30.50	30.50	30.50	15.00	15.00	15.00	15.00	15.00
	Syngas	\$/GJ	-	-	-	-	22.00	22.25	22.50	22.75	23.00	23.25	23.50	23.75
2	Lignin	\$/GJ	-	-	-	-	22.00	22.25	22.50	22.75	23.00	23.25	23.50	23.75
3 4														
5														
6			7.2.	1 P	lease e	laborat	te on th	ne asso	ociated	pricing	risk w	ith ente	ering lo	ng-term
7				С	ontracts	s as a "	first-mo	ver" in	Renew	able G	ases.		-	-
8														

Table 1: Forecast Average Acquisition Cost for RNG, Hydrogen, Syngas and Lignin (\$/GJ)

9 Response:

Due to the fact that FEI has been able to secure a number of RNG agreements ahead of potential competitors (i.e., FEI is a first-mover amongst utilities), it has benefited from being able to negotiate lower acquisition pricing through long-term contracts and has developed a positive reputation among buyers. FEI is seen as a buyer with a known and transparent process for contracting for RNG and has demonstrated that the regulatory process is relatively quick and known. This is desirable for sellers who perceive any regulatory process as a hurdle and timeline risk.

17 While the price of RNG may decrease as technology develops, FEI believes that on balance its 18 customers will see more benefit from FEI being a first mover as the market continues to develop. 19 In the current context of a relatively small illiquid market (i.e., a market with relatively few 20 participants and low volume of activity), long-term contracts are a means of assuring price for the 21 long term. Based on the increased demand for Renewable Gas (in particular, RNG), FEI expects 22 prices to increase for the next few years. Through long-term contracts, FEI has been able to 23 secure pricing for RNG that more closely reflects the cost of production, rather than current volatile 24 market pricing. Having been active in the RNG market for many years and having seen multiple 25 projects, FEI has good insight into the differences in pricing between long-term and short-term 26 markets and is seeing that long-term agreements are typically priced well below short-term 27 pricing. By locking in pricing today, FEI has ensured predictable pricing and surety of supply for 28 the next 20 years or so.



4

5

6 7

8

1 B. CUSTOMER CONSULTATION

2 8.0 Reference: CUSTOMER NEEDS

Exhibit B-11, Section 5, p.54, Appendix B-1, p. 9

Voluntary Renewable Gas Offering

On page 54 of the Application, FEI describes five broad themes that emerged based on the knowledge and discussions with customers. The importance of affordability is mentioned in three of those five themes. The first of the five themes discussed by FEI is the following:

- 9 1. Customers Value Multiple Attributes of Gas Service: Customers want gas
- service to be affordable, reliable, provide comfort and convenience, and to be
 efficient and have low emissions. These attributes are present in all customer
 classes, with the weight of each attribute varying between the circumstances of
 each customer class.
- 14 Page 9 of appendix B-1 of the Application shows the following survey question result:



- 15
- 16

17

18

- 8.1 FEI has described the importance of energy affordability for customers and has provided evidence to demonstrate that audiences surveyed prefer gas homes over electric homes. Please provide further supporting evidence, through the Innovative Research Group survey or otherwise, which measures customers' preference of gas home over electric home <u>if the cost of energy was equal</u> under both options.
- 20 21



2 While FEI has findings from a number of customer research initiatives confirming a preference for 3 gas heated homes over electricity heated homes, none of these have examined customer 4 preferences if the cost of energy was equal under both options. FEI believes that respondents 5 tend to understand that gas is less costly on a per unit of energy basis, and that gas appliances 6 typically require greater capital investment. However, most customers do not understand energy 7 pricing in general. For a customer, an "equal" energy price is usually related to the price on their 8 bill as opposed to the unit price of energy. If a customer is paying a certain amount per month for 9 energy, then changes out their energy system to utilize a different form of energy and their overall 10 energy bills change, the customer notices. From this perspective, it is difficult to utilize surveys to 11 elicit a response from customers regarding the preference for a certain energy source if the "prices" of the energy were equal. 12



1	9.0	Refere	ence:	CONSULTATION AND ENGAGEMENT				
2				Exhibit B–11, Section 10, pp. 138-142				
3				Consultation and Engagement				
4		On pa	ge 142	of the Application, FEI states:				
5 6 7	FEI has received at total of 85 letters of support, including: 81 stakeholders industry, associations and ENGO, one from an industry partnership; one fror interested party; and two from local governments.							
8 9	On page 138 of the Application, FEI describes the stakeholders included in phase two the public consultation process as follows:							
10 11			During Renev	g this phase, FEI identified stakeholders with an interest in participating in the wable Gas Program, including:				
12 13			• -	Those that participated in, or expressed a desire to participate in, Renewable Gas Program;				
14			• -	Those interested in meeting provincial and municipal climate policy goals;				
15 16 17			• -	Those that expressed an interest in finding solutions to meet building-level emissions regulations such as: builders/developers, energy consultants, and manufacturers; and				
18 19			•	Interveners and interested parties registered in the Stage 1 review of the BERC Rate Assessment Report, which concluded in August 2021.				
20 21 22		9.1	Please FEI's	e describe if FEI received any letters of comment that were not in support of proposals. If so, please provide those letters.				
23	Respo	nse:						
24 25 26 27	At this t Letters procee broken	time, F oppos ding w down	EI has sing the ebsite. as follo	only received letters in support of FEI's proposals as part of the Application. Application have been provided directly to the BCUC and posted on the Overall, 112 letters of comment have been received by FEI or the BCUC, ws:				
28	•	Provid	led to F	EI:				
29		0	86 lett	ers of support (filed with the Application in Appendix F;				
30	Provided to BCUC:							
31		0	9 lette	ers of support;				
32 33		0	4 lette Applic	ers opposing only certain elements of the approvals sought by FEI in the ation; and				
34		0	13 lett	ers opposing the Application generally.				



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 41

 1

 2

 3

 4
 9.2

 9.2
 In Table 10-3 on page 142, FEI lists the 81 letters of support from industry, association, and Environmental non-governmental organizations (ENGO)

 6
 stakeholders. Please explain how many of these 81 letters pertain (collectively) to builder, developer, or construction organizations.

9 **Response:**

- In Table 10-3, of the 81 letters of support identified, 52 pertain to builder, developer or construction
 organizations.
- 12

8

- 13
- 14
- 9.3 Please provide any supporting evidence to demonstrate how the general end user
 population would respond to FEI's proposals in the Application regarding the cost
 recovery mechanism for RG Connections.

18 19 <u>Response:</u>

20 FEI does not have evidence that specifically speaks to how the general end user population would 21 respond to FEI's cost recovery mechanism for the Renewable Gas Connections service. Section 22 5.2.2 describes the results of several surveys FEI conducted to understand customer views and 23 attitudes regarding Renewable Gas. The survey results suggest that there is support for 24 consistent building emission regulations, support for RNG and RNG investment as part of the 25 GHG reduction solutions, and a desire for continued access to gas service. In addition, most 26 respondents indicated that they believe that climate change is occurring and that they are at least 27 somewhat concerned about it. At the same time, the respondents were price sensitive, indicating 28 a higher willingness to participate in the RNG Program at lower prices.

Based on these findings, FEI considers that the general end user population would respond favourably to the proposed cost of the Renewable Gas Connections service, which maintains equal access to the gas system for homeowners who are required by regulations to have homes that meet GHG intensity targets.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 42

1	C.	PROPOSED RENEWABLE GAS PROGRAM							
2	10.0	Reference:	PROPOSED RENEWABLE GAS PROGRAM						
3 4 5			Exhibit B-11, Section 3.4.1.1, p. 29, Section 7.2, p. 86, Section 7.3.4., Table 7-1, p. 95, Section 7.4, Figure 7-2, p. 97, Section 8.6, Figure 8-3, p. 122						
6		Objectives Revising the Renewable Gas Program							
7		On page 86 of the Application, FEI states:							
8 9 10		Therefore, to maintain the long-term viability of the natural gas distribution system and energy choice for British Columbians, FEI needs to revise the Renewable Gas Program to meet the following three objectives:							
11 12		1.	Meet provincial CleanBC targets for GHG emissions and balance Renewable Gas supply and demand;						
13 14		2.	Enable compliance with building regulations to maintain energy choice for New Residential construction; and						
15 16		3.	Meet customer requirements for Renewable Gas to maintain energy choice for existing customers.						
17 18		Further on pa Renewable G	ge 95 of the Application, Table 7-1 summarizes how the components of the as Program meets these objectives:						

Alternatives	Provincial Government Policy	Compliance with Building Regulation	Customer Needs for Renewable Gas
A: Voluntary Renewable Gas			✓
B: Renewable Gas Blend	✓		
C: Renewable Gas Connections (Option 1)		\checkmark	
D: Comprehensive Program	1	1	1

Table 7-1	All Three	Alternatives	Required	to Meet	Program Nee	eh
	All Hillee	Alternatives	Requireu	to meet	r rogram Need	43

10.1 Please discuss whether the achievement of the three objectives is complementary or conflicting with one another. For example, could the RG supplied for the RG Connections reduce the supply available for the Renewable Gas Blend and therefore, negatively impact FEI's ability to meet provincial CleanBC targets for GHG emissions?



2 The three objectives of the Renewable Gas Program are complementary and work together to be

3 responsive to the intersection of government policies, customer needs, and building regulations

4 that help facilitate the achievement of CleanBC targets for GHG emissions.

5 The first objective is to meet provincial CleanBC targets for GHG emissions and balance 6 Renewable Gas supply and demand. This objective is consistent with the CleanBC Roadmap's 7 gas system emissions cap related to heating homes and buildings and powering industries to a 8 level 47 percent lower than 2007 levels by 2030. The Renewable Gas Connections, Renewable 9 Gas Blend and Voluntary Renewable Gas services all contribute to the achievement of this 10 objective in a relatively short time period.

The second objective is to enable compliance with building regulations in a manner that maintains energy choice for customers building new residential homes. The Renewable Gas Connections service achieves this objective by assuring that FEI will procure amounts of Renewable Gas in its supply portfolio sufficient to meet the needs of new residential construction. This objective is fully consistent with the first objective to reduce emissions, and is unrelated to the third objective regarding customer needs because the Voluntary Renewable Gas service does not apply to new residential homes (as they will be served with 100 percent Renewable Gas).

The third objective relates to meeting the needs of customers desiring greater amounts of Renewable Gas than is offered in the Renewable Gas Blend service. By offering existing customers the ability to purchase higher volumes of Renewable Gas and have FEI maintain greater amounts of Renewable Gas as part of the overall supply portfolio, the Voluntary Renewable Gas service not only addresses a customer need, but also helps achieve the first objective. Finally, this third objective is unrelated to the second objective because it is not available to residential customers building new homes.

Finally, even if Renewable Gas supplied for the Renewable Gas Connections service reduced the supply available for the Renewable Gas Blend service, this would not negatively impact FEI's ability to meet provincial CleanBC targets for GHG emissions because supply to both the Renewable Gas Connections and Renewable Gas Blend will contribute to achieving the emissions cap in the CleanBC Roadmap. In other words, the allocation of Renewable Gas between the Renewable Gas Connections and Renewable Gas Blend services does not impact the total amount of Renewable Gas supply counting towards achieving the emissions cap.¹¹

Please refer to the response to BCUC IR1 10.2 for more detail related to how FEI's Renewable
Gas supply will be prioritized to meet the various components of the proposed Renewable Gas
Program.

35

¹¹ With the exception of the Renewable Gas provided to NGV customers, as transportation is not included in objective one.



- 1 2 10.1.1 Please elaborate on the priority of FEI's objectives for the RG program. 3
- 4
- 5

If there are competing objectives, please explain how FEI reconciles them to formulate the current proposal.

6 **Response:**

- 7 Please refer to the response to BCUC IR1 10.1 where FEI provides a discussion of how FEI has
- 8 designed the Renewable Gas Program to enable the objectives to be complementary rather than 9 competing.
- Please also refer to the response to BCUC IR1 10.2 for a description of how FEI will manage the 10
- 11 supply and demand for Renewable Gas amongst the various components of the proposed
- 12 Renewable Gas Program.
- 13
- 14
- 15

On page 97 of the Application, Figure 7-2 outlines the structure of FEI's proposed 16 17 Renewable Gas Program:



Figure 7-2: Revised Renewable Gas Program

- Note * Does not include NGV customers
- 18 19

- 10.2 Please explain how FEI's RG supply will be prioritized to meet the demand from the various components of FEI's proposed RG Program. Explain why the components of the RG Program are prioritized as such.
- 21 22



2 FEI will take an active role in managing the supply and demand of Renewable Gas in order to 3 ensure it meets the demand from the various components of the proposed Renewable Gas 4 Program. FEI will forecast the supply and demand for Renewable Gas prior to each calendar year. 5 FEI will report to the BCUC on the anticipated supply and demand for Renewable Gas in the 6 annual filing to set the S&T LC rider, as described in Section 9.5 of the Application. This demand 7 and supply forecasting exercise will allow FEI to allocate supply to meet the anticipated demand 8 and take active steps to manage demand in order to mitigate the risk of a supply versus demand 9 imbalance.

FEI will first prioritize supply for the Renewable Gas Connections service, including both existing and new additions in the year, to ensure compliance with GHG intensity limitations set by local governments. FEI will then prioritize to meet the existing demand from Voluntary Renewable Gas customers, and the demand resulting from the proportion of Renewable Gas included in the Renewable Gas Blend service.

- After the forecast demand from these program components has been satisfied by the available supply, FEI can consider using any remaining supply to increase the volume of Renewable Gas made available to new or existing participants in the Voluntary Renewable Gas offerings, to increase the proportion of Renewable Gas included under the Renewable Gas Blend service, or both. FEI also intends to maintain a buffer supply of Renewable Gas at the outset of each year to
- 20 accommodate potential supply fluctuations, or greater than anticipated demand in any of the
- 21 program components.

Despite the anticipated and significant increase in Renewable Gas supply described in Section 6.3.2 of the Application, demand could in theory exceed the available supply. While FEI considers this to be an unlikely scenario, it has considered several options to manage through such a situation in the event it materializes, including:

- Using its supply buffer to accommodate some excess demand in any given year;
- Using the Renewable Gas Blend service to manage any increases in demand, as the volume of Renewable Gas delivered through that service will only be increased at the outset of each year at FEI's discretion. If FEI observes that the demand for Renewable Gas for the forecast year may exceed the supply, any planned increase for the following year to the Renewable Gas Blend service percentage would likely be deferred to a later year when FEI is confident that sufficient supply is available; and
- Purchasing offsets for use in the Voluntary Renewable Gas service.

Service curtailment is an option that FEI may use, at its discretion, in cases where demand for Renewable Gas exceeds the available supply. Service curtailment would normally only be employed where other options to balance demand and supply have been attempted and have proven to be insufficient. In the event of Renewable Gas service curtailment, FEI would implement service curtailment as it deems will best maintain service integrity to the fullest extent possible.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 46

1 For instance, service curtailment would apply first to customers enrolled under an interruptible

2 rate schedule (RS 11LC or 7LC). In all cases, Renewable Gas for the Renewable Gas

3 Connections service would be maintained.

4 With respect to the Voluntary Renewable Gas offerings, customers must enroll for Voluntary Renewable Gas service under FEI's rate schedules, giving FEI control over the volume of 5 6 Renewable Gas provided under this service and the ability to forecast volumes for the coming 7 year. In particular, currently, under the terms of service for RS 5B, 7B, 11B and 46, customer 8 enrollment commences on the date they enroll and follows the gas year (from November 1 to 9 October 31) thereafter and automatically renews from year-to-year unless terminated. Enrollment 10 occurs when the customer provides their executed General Firm Service Agreement (GFSA) 11 under the applicable rate schedule which identifies their estimated maximum volumes of 12 Renewable Gas in gigajoules per day. FEI can also limit the growth in demand to match the 13 available supply for voluntary customers by working with program participants who request large 14 volumes of Renewable Gas to scale up their volumes of Renewable Gas as the increasing supply 15 of Renewable Gas allows and by temporarily pausing new voluntary enrolments until supply has sufficiently caught up with demand. 16



6

11.0 Reference: PROPOSED RENEWABLE GAS PROGRAM

Exhibit B-11, Section 7.4.3, p. 102, Section 7.4.3.3, p. 105; FEI
Application for Approval of Biomethane Recovery Charge (BERC)
Rate Methodology, Exhibit B-1, Section 7.2.2, Table 7-1, p. 47, Order
G-133-16, p. 3

Modifications to the Voluntary Renewable Gas Offering

7 On page 102 of the Application, FEI states:

8 FEI's proposed Voluntary Renewable Gas offering will be structured substantially 9 same as the current Renewable Gas Program as described in section 2 of the 10 Application. Subject to availability of supply, customers can opt in and select the 11 percentage of Renewable Gas they desire. For example, customers under Rate 12 Schedules 1, 2, or 3 can chose percentages of 5, 10, 25, 50 or 100 percent, while 13 Rate Schedule 5 customers can chose a percentage between 5 percent and 100 14 percent in 5 percent increments.

- 15 11.1 Please explain why a blend based opt-in service is still an appropriate program
 16 design considering the changes in circumstances such as the recent changes in
 17 Government policies and the availability of supply related to the RG Program.
- 18

19 Response:

A blend based voluntary opt-in service remains an appropriate and desirable offering. It provides a Renewable Gas option and energy choice to gas customers seeking to reduce their GHG emissions. It also helps maintain the long-term viability of the gas system by both maintaining load on the system and concentrating the cost of RNG on customers who seek and value a higher percentage of RNG for their load.

25 Many larger volume gas consumers are seeking ways of reducing their GHG emissions. As 26 discussed in the Application, some large commercial customers have government-mandated 27 GHG emission targets. The Greenhouse Gas Pollution Pricing Act and the Climate Change 28 Accountability Act establish specific emission reduction targets. These customers must incur 29 costs to comply with those government-mandated targets. Other customers not subject to 30 government mandates are still increasingly adopting corporate ESG climate change targets. 31 Further, the CleanBC Roadmap may place an indirect obligation on all customers to reduce 32 emissions. All of these customers often have a range of options available to reduce their 33 emissions, and unlike residential new construction customers in certain municipalities, can still 34 obtain a connection to the gas system. A blend based opt-in service provides a gas-based solution 35 for those who want or need to purchase Renewable Gas in excess of what may be delivered 36 through the Renewable Gas Blend service, allowing these customers to achieve their GHG 37 emission reduction targets.

In addition to supporting climate change policies and objectives, having a Renewable Gas option
 for larger volume customers also helps to counter upward pressure on rates in two ways:



- It promotes keeping larger volume gas customers, and their load, on the gas system.
 These customers have multiple options to reduce their GHG emissions, including energy efficiency, electrification, other forms of bioenergy and purchased carbon offsets. Some solutions, such as electrification, could see these customers shift their load off the gas system (either in whole or in part). Providing a gas-based option allows these loads to remain on the gas system, which in turn helps spread the cost of the gas system over a greater volume of GJ, reducing the per GJ cost to all ratepayers.
- 8 2. It may concentrate more of FEI's Renewable Gas acquisition costs on a more limited 9 number of customers who are willing to pay for the added value of Renewable Gas and 10 the associated environmental attributes. Voluntary Renewable Gas participants will pay 11 for a substantial portion of the cost of Renewable Gas procurement on any volumes they 12 consume and will reduce the S&T LC rider. Therefore, any portion of the cost of 13 Renewable Gas paid for by Voluntary Renewable Gas participants will not need to be 14 captured in the S&T LC rider and will not be recovered from other ratepayers. This will 15 reduce the cost burden on all other customers, many of whom are not, as of yet, directly 16 required (through government regulation) to reduce their GHG emissions.
- 17 The voluntary, opt-in service is part of the package of Renewable Gas services which balances 18 various regulatory and ratemaking objectives, including supporting public policy to the benefit of 19 all customers, providing energy solutions/options, supporting the economically efficient use of 20 FEI's infrastructure and provision of natural gas services.
- As the Renewable Gas Blend for all sales customers increases to levels of five percent and above, then the lower level opt-in percentages of five and ten percent will become redundant, and FEI will phase those opt-in blends out over time.
- 24 25 26 27 11.2 Please provide the pros and cons for alternative opt-in formats, such as fixed dollar 28 premium per month (e.g., extra \$30 per month for Renewable Gas). Please include 29 considerations for factors such as, but not limited to: 30 a. Customer bill stability 31 b. Demand for the Voluntary Renewable Gas offering 32 c. Balancing supply and demand 33 d. Impact on LCG Account 34 35 Response:
- While there are a number of possible opt-in formats, many may not ultimately be feasible. In developing the Application, FEI considered the appropriateness of changing the opt-in voluntary program. However, as feedback from customers was positive, there was interest in the program,



- 1 customers understood the offering, and there was little negative response from customers, FEI
- 2 did not believe that changes to the opt-in program would be beneficial or would create a "better"
- 3 program than the current program. As such, it chose to keep the program as is. Below FEI
- 4 discusses the alternative opt-in formats it believes to be the most plausible.

5 **Option 1: A fixed monthly dollar premium**

6 This option can be further subdivided into two different approaches, each discussed below.

7 a) <u>The delivered Renewable Gas volume would correspond to the \$ premium</u>

- 8 Under this option, participants would pay a fixed monthly charge for additional Renewable 9 Gas volumes. The volume of Renewable Gas delivered to the customer would be a function 10 of the premium divided by the LCG Charge, and thus will remain constant from month-to-11 month, despite changes in total gas consumption from one month to the next.
- 12 This approach has some desirable features from a customer perspective, including knowing 13 in advance exactly how much extra cost will be paid for Renewable Gas in each month or 14 each calendar year. This may also be of benefit for customer tracking and reporting of GHG 15 emission reductions.
- 16 One drawback of this approach is that higher percentages of Renewable Gas could not be achieved by many customers due to the dominance of space heating on their gas 17 18 consumption profile. For example, a customer whose base level of consumption during the 19 summer months is 30 percent of their peak level of consumption in the winter months could 20 not select a monthly premium that would put their monthly volume of Renewable Gas 21 delivered beyond their total monthly gas consumption in the summer months. In practice, this 22 would considerably limit the amount of Renewable Gas that many customers could purchase. 23 For many large commercial customers, this is not likely to be a satisfactory outcome and would 24 serve to reduce interest in Voluntary Renewable Gas.
- In terms of balancing supply and demand, FEI believes this option would have little impact,either positive or negative.
- Since any volumes sold under this option would be at the applicable LCG Charge, the effect on the LCG Account would generally be similar to the proposal in the Application. However, FEI believes that this option would likely result in a reduction of the Renewable Gas sold through the Voluntary Renewable Gas service. This in turn would mean that greater recovery would come from the S&T LC rider, putting upward pressure on this component of all sales customer rates.
- b) <u>The delivered Renewable Gas volume would correspond to a fixed proportion of the</u> <u>customer's total monthly gas consumption</u>
- Similar to a) above, under this option participants would pay a fixed monthly charge for additional Renewable Gas volumes. However, unlike a), the Renewable Gas delivered to the



customer would be based on a fixed percentage of their total gas consumption. The
 percentage would remain constant from month-to-month. For example, an RS 1 customer
 could opt-in by paying an additional \$15/month to be provided with 25 percent Renewable
 Gas.

Similar to option a), this option would allow customers to know in advance how much extra
they will be spending on Renewable Gas. It would also allow customers to achieve up to 100
percent Renewable Gas – thereby eliminating all GHG emissions associated with gas
combustion if they so choose.

9 One drawback of this approach is that cost recovery would be decoupled from actual demand. 10 FEI would need to estimate how much Renewable Gas would be used by voluntary customers 11 in a year, and set the fixed charge as best as possible to recover the desired amount of cost 12 from voluntary customers. An event such as an extended period of cold weather could 13 produce a sizeable increase in demand, and thereby a shortfall in the costs recovered versus 14 the volumes actually delivered to customers. Another significant drawback is that while rate 15 setting for this type of approach may work across a large number of broadly homogenous 16 customers, such as single-family homes, it would become unworkable as the size and 17 diversity of customers increase. FEI would not likely be able to determine a monthly fixed rate 18 or rates that would be broadly applicable to customers as diverse as general stores and 19 hospitals. Given this impracticality, FEI believes an attempt to implement this approach would 20 have a detrimental impact to demand under the Voluntary Renewable Gas service.

In terms of balancing supply and demand, this option seems likely to add more complexity.
However, given the options that FEI would have available to manage supply and demand
under the revised program, FEI believes supply and demand balancing would still be feasible.
Please refer to the response to BCUC IR1 10.2 in this regard.

25 Under or over recoveries of cost under this option could have a significant effect on the LCG 26 Account. Any such under or over recoveries in any given year would likely need to be captured 27 in a deferral account and either: (1) recovered from or credited back to voluntary customers 28 in the subsequent year: or (2) recovered from or credited to the S&T LC rider in the subsequent 29 year. The first approach could lead to large swings in the fixed monthly charge from year to 30 year. The second approach would mean that costs had been under recovered from Voluntary 31 Renewable Gas participants (if an under recovery were to be transferred to the S&T LC rider) 32 or over recovered from voluntary participants (if an over recovery were to be transferred to 33 the S&T LC rider).

Given the Renewable Gas is a variable cost that varies with the volumes of gas, FEI recommends
 a pricing mechanism that is variable in nature and hence is tied to volumes consumed, as is the
 existing and proposed voluntary service.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 51

1 **Option 2: A combination of fixed and variable monthly premiums**

Under this approach, Voluntary Renewable Gas participants would pay both a fixed monthly charge and a per GJ LCG charge, in addition to the S&T LC rider. This option would reduce the potential volatility of the outcomes associated with the drawbacks of the options above; however, it would introduce more volatility into the outcomes of the desirable features as well. This option may also introduce additional complexity into customer billing, thereby adversely affecting customer understanding and acceptance of the voluntary program.

- 8
- 9
- 10 11 On page 105 of the Application, FEI states:
- FEI is proposing to continue offering long-term contracts for customers who meet the long-term contract eligibility requirements of a commitment to purchase no less than 60 thousand GJs in aggregate over a term of no less than five years and no more than ten years. FEI currently has long-term contracts with UBC, Translink and the CoV.
- 17 Long-term contracts still provide benefits to both customers and FEI. For eligible 18 customers, the benefit is in the form of supply security for periods of five to 10 19 years. For FEI, the benefit is in the ability to foresee with confidence a sizeable 20 portion of demand, and to administer the available Renewable Gas supply 21 accordingly.
- However, FEI is proposing to remove the \$1/GJ discount for any future long-term contracts. The conditions that made the \$1/GJ discount a reasonable approach in 2015 are no longer applicable. With the proposed Renewable Gas Blend, FEI does not run the risk of having unsold volumes of Renewable Gas. Given that the revised Renewable Gas Program will provide mechanisms for all Renewable Gas to be sold, FEI does not consider that a discount is necessary or required to encourage long-term contracts.
- On page 47 of FEI's Application for Approval of Biomethane Recovery Charge (BERC)
 Rate Methodology, Table 7-1 provided a summary of the long-term contract terms and
 conditions:



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 52

Table 7-1:	Summary of	Long Term Contrac	t Terms and Conditions
------------	------------	-------------------	------------------------

	Topic	Notes
9	Contract Length	 10 year term as standard, with evergreen option (yearly roll over) available at the end of the term subject to conveyel of both partice.
		 Five year term possible if volume meets or exceeds ten years multiplied by
		Contract term cannot exceed existing FEI supply contracts
1	Early Termination	Early termination possible subject to agreement by both parties. ⁴²
	Provision	Standard FEI curtailment guidelines set out in Rate11B.
		 Customer must 'take or pay' to receive lower rate (may be used to prevent any stranded asset cost)
	Quantity	 Individual contract quantities will be negotiated based on customer requirements and FEI available supply
	Quantity Exceeded or Not Met	 Volumes not met by FEI would be subject to existing R11B curtailment rules; replacement with credits or a penalty as defined by the contract
	Rate Escalation	 Rate to increase at 50% of the Canadian General CPI effective January 1 each year.
	contrac aggreg than fiv b. Long to	ct must be for a commitment to purchase no less than 60,000 G gate over the term of the contract and must be for a term of no leve years and no more than ten years; erm contracts shall be subject to a Minimum Contract Strike Price
	φi0 pe	
	c. Long t results of a co	in the price of Renewable Natural Gas in any period beyond year to ntract that is not less than the prevailing Conventional Gas Cost;
1.3	Please confi contracted, c in place until renewal term terms or on t	rm whether the terms (e.g., price of Renewable Gas, quan ontract duration) of existing approved long-term contracts will rem the expiry date as stipulated in the contract, and explain whether s in the existing long-term contracts will be based on grandfathe he new terms after the expiry date.
	11.3.1 Plea exp	ase explain whether FEI anticipates any renewals after the initive initiation in the three existing long-term contracts.
<u>se:</u>	exp	

FEI confirms that the terms of the three existing approved long-term contracts will remain in place until the expiry date as stipulated in the contract, and that the renewal terms in the existing longterm contracts will be grandfathered. These contracts were entered into in good faith by both parties and did not contain the wording regarding a potential change to the BERC rate or



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR)	No. 1 Page 53

mechanism for calculating the long-term contract rate that FEI was directed to include in all 1 2 subsequent long-term contracts, pursuant to Order G-242-21.

3 Note that the first long-term contract, Tariff Supplement No. K-1, came into effect in 2017 and has a 10-year contract term, without a renewal option. FEI anticipates that this contract will be carried 4 5 through to its expiry. FEI currently anticipates that the remaining two long-term contracts, Tariff 6 Supplement Nos. K-2 and K-3, will each be renewed for a second 5-year term before they expire. 7 8

- 9
- 10
- 11 12
- 11.3.2 Please estimate the impact on the Sales & Transport Low Carbon (S&T LC) rider if demand from long-term contracts reduce by 50% five years from now.

11.3.3 Conversely, please estimate the impact on the S&T LC rider if demand

from long-term contracts increase by 50% five years from now.

- 13
- 14 15
- 16 **Response:**

17 FEI provides the table below setting out the S&T LC rider, as filed, and also if: (1) the Long Term

18 Contract Volume is reduced by 50 percent five years from now; and (2) the Long Term Contract

19 Volume is increased by 50 percent five years from now.

20 As can be seen, with the reduction in long-term contract demand, more renewable costs flow 21 through the S&T LC rider causing a small increase in the charge until 2029. The converse is true 22 with an increase in long-term contract demand.

23

Table 1: S&T LC Rider

	S&T LC Rider		2024	2025	2026	2027	2028	2029	2030	2031	2032
	As Filed		1.43	1.78	2.02	2.42	2.44	2.72	3.02	3.71	4.40
	Long Tern Cont	tracts 50% Reduction	1.53	1.83	2.09	2.48	2.45	2.72	3.02	3.71	4.40
24	Long Term Cor	tracts 50% Increase	1.33	1.72	1.96	2.35	2.43	2.72	3.02	3.71	4.40
25 26											
27 28 29 30 31 32 33	11.4	Please discuss whether from entering into long RG that may be lost of forecast for each year eliminated.	er the r g-term o due to t r to 203	emoval contrac he elim 32, unc	of the ts with ination ler the	\$1 disc FEI. Ha of the conditi	count w as FEI \$1 disc on that	ill disco estima count? the \$'	ourage ted the Please I disco	custom volume provid unt will	ers e of le a be



2 FEI has not estimated the volume of Renewable Gas demand that may be lost due to the 3 elimination of the \$1 discount.

When the \$1 discount was proposed in the 2015 BERC Rate Application¹² the program was 4 5 entirely voluntary in nature, meaning that Renewable Gas volumes could only be sold to 6 customers who had opted into the program. If FEI was not able to sell all the volumes it acquired, 7 the cost of unsold Renewable Gas would be transferred to all FEI customers, not just those 8 enrolled in the program (subject to BCUC review and approval). The \$1 discount was intended to 9 help reduce the risk of unsold volumes by encouraging eligible large volume customers to enter 10 into long-term contracts. These contracts created long-term revenue certainty, provided a more predictable load throughout the year, and reduced marketing efforts directed at the eligible 11 12 customer group. The most important of these considerations at the time was the assurance of 13 revenue from a voluntary customer.

14 The revised Renewable Gas Program incorporates mechanisms to ensure that all Renewable 15 Gas will ultimately be sold to customers through the Renewable Gas Blend service. As such, a 16 \$1 discount is no longer required, and FEI does not believe the elimination of the \$1 discount will 17 have a material impact on the overall demand for Renewable Gas, or its ability to sell the 18 Renewable Gas it acquires.

- 19
- 20

28

- 21
- 22 11.5 Please explain why a long-term contract price equivalent to the short-term Low 23 Carbon Gas (LCG) Charge is appropriate, including a pros and cons analysis for 24 alternative pricing schemes. This may include, but not limited to:
- 25 a. A discounted price from the short-term rate (e.g. \$1 discount)
- 26 b. A marked up price from the short-term rate (e.g. \$1 markup)
- 27 c. Weighted average cost of RG supply

29 **Response:**

30 For clarity, the purpose of the \$1 discount is not applicable to the revised Renewable Gas Program 31 and would offer minimal benefits to FEI and its customers. One potential benefit of the \$1 discount is that it could encourage certain larger volume customers to use the gas system to achieve their 32 33 GHG emission reduction targets, which would retain their load on the gas system and help reduce 34 upward rate pressure. However, FEI considers that the current \$7 premium is an appropriate price 35 and will continue to attract large volume customers. Ultimately, under the revised Renewable Gas Program, a \$1 discount would unnecessarily reduce the recovery of Renewable Gas supply costs 36 37 from Voluntary Renewable Gas participants.

¹² Application for Approval of Biomethane Energy Recovery Charge (BERC) Rate Methodology dated August 28, 2015.



A marked-up price above the short-term rate (e.g., \$1 markup) has limited potential to increase 1 2 the recovery of Renewable Gas supply costs and could reduce cost recovery. With the marked-3 up rate, Voluntary Renewable Gas customers who perceive value in a long-term contract as a 4 means to provide a measure of forward-looking Renewable Gas supply security would contribute 5 more toward the recovery of Renewable Gas supply costs by paying the marked-up price to 6 access a long-term contract. However, many customers may simply opt for the short-term rate. 7 When setting the S&T LC rider each year, FEI will consider the demand of all currently enrolled 8 customers before allocating supply volumes to new sources of demand, for example, by 9 increasing the amount of Renewable Gas in the Renewable Gas Blend offering. FEI expects 10 customers will come to understand that, once enrolled in the program, the supply is sufficiently 11 stable to meet their needs even without a long-term contract. The preference for the short-term 12 rate would be amplified by greater spreads between the short-term and marked-up long-term rate, 13 likely limiting how much incremental revenue could be achieved. On the other hand, a potential 14 negative consequence of a marked-up rate is that certain large-volume customers will not be 15 satisfied with the cost of Renewable Gas under the long-term rate, or the perception of supply 16 uncertainty associated with a short-term rate. These customers may therefore seek solutions to 17 their GHG emission reduction needs elsewhere, thus shifting load away from the gas system and 18 reducing recovery of Renewable Gas Program costs.

19 Setting the long-term contract price to equal the average cost of Renewable Gas supply comes 20 with the certain downside risk that few, if any, customers would see the value in the offering, 21 unless or until the penalties for emitting GHGs, or the rewards for reducing GHG emissions, are 22 sufficient to make such a price worth their while. For example, NGV customers who can participate 23 in the BC-LCFS credit market may be able to justify paying the average cost of Renewable Gas 24 supply, while building sector customers likely could not. In the meantime, most large-volume 25 voluntary participants would either opt for the short-term rate, or seek to reduce their GHG 26 emissions by adopting a non-gas-based alternative, especially if they perceive supply uncertainty 27 associated with a short-term rate. As a result, setting the long-term contract price to equal the 28 average cost of Renewable Gas supply is likely to decrease the recovery of Renewable Gas 29 supply costs.

- 30
- 31
- ·
- 32 33

34

35

- 11.6 Given the change in circumstances from 2015, please explain whether the other long-term contract terms and conditions, as outlined in Table 7-1 of FEI's Application for Approval of Biomethane Recovery Charge (BERC) Rate Methodology and Directive 2 of Order G-133-16, are still appropriate.
- 36 37

38 **Response:**

39 If approved, FEI's proposal to set the long-term contract rate equal to the short-term rate would

40 render two of the long-term contract provisions described in Table 7-1 redundant. These are

41 described below:



- 1. The rate escalation provision would no longer apply. Under FEI's proposal, the rate charged to customers under the long-term contract would match the short-term rate and consequently would be updated annually, in January of each year.
- The take or pay provision would no longer be required, both because the discounted rate
 would no longer be available, and because under the revised program FEI has other
 means of selling Renewable Gas to customers and recovering all Renewable Gas supply
 costs.
- 8

3

- 9
- 10
- 1111.7Please elaborate on how FEI still benefits from entering into long-term contracts12given that the revised Renewable Gas Program will provide mechanisms for all13Renewable Gas to be sold with specific reference to the three objectives of the14program.
- 15

16 **Response:**

17 FEI would continue to benefit from the use of long-term contracts in the following two ways:

18 1. Long-term contracts provide a solution that some large volume customers seek, thereby 19 offering these customers a gas-based approach to reducing their GHG emissions. These 20 customers would like to enter into long-term Renewable Gas purchase agreements in 21 order to demonstrate a long-term commitment to reducing GHG emissions, either for their 22 own internal ESG objectives, or to demonstrate long-term compliance with local or 23 provincial regulations. Long-term contracts also ensure that these customers' requested 24 volumes are well understood and accounted for by FEI in advance. This helps provide 25 supply certainty for these customers. With a gas-based solution, these customers have 26 the option to keep their load on the gas system, either in whole or in part, helping to spread 27 the cost of the gas system over a greater overall volume of throughput.

- 28 2. FEI is provided with 5 to 10 years of insight into the Renewable Gas demand from customers who enter into long-term contracts. This insight will help FEI forecast the demand for Renewable Gas for rate setting purposes, as well as to ensure that enough supply has been contracted to provide for customer demand.
- 32



6

1 D. RENEWABLE GAS CONNECTIONS

2 12.0 Reference: RENEWABLE GAS CONNECTIONS

 3
 Exhibit B-11, Section 3.5.2, pp. 35-36; Section 7.4.2.1, p. 101 and

 4
 Section 8.6, Figures 8-3 to 8-6, p. 122- 125

FEI's Load Forecast and Customer Rates Without the New RG Connections Offering

- 7 On pages 35-36 of the Application, FEI states:
- 8 Ultimately, <u>narrowing the available low-carbon energy solutions to electricity alone</u> 9 impedes the ability of customers to choose gas as their preferred energy source 10 and prohibits FEI from connecting new customers in this sector. [Emphasis added]
- 11 On p. 101 of the Application, FEI states:
- From the utility and customer perspective, maintaining access to the gas system for New Residential Connections is central to the long-term viability of the utility, while also utilizing the assets of the utility more efficiently and <u>keeping rates</u> <u>affordable for all customers</u>. Adding customers helps to better utilize existing utility assets while bringing on additional revenue through the new residential construction market. [Emphasis added]
- 18 On p. 122 of the Application, FEI states that:
- 19In order to calculate the bill impact, FEI also estimated a ten year Renewable Gas20demand forecast from Renewable Gas Connections for residential dwellings,21Voluntary Renewable Gas for sales and T-Service customers and the Renewable22Gas Blend for sales customers. FEI made the following assumptions to arrive at23the demand forecast shown in Figure 8-3:
- Renewable Gas Connections are in the range of 14 thousand to 16
 thousand per year and the composition is similar to the recent past
 (approximately 98 percent [Rate Schedule (RS)] 1, and the remainder RS 2
 and RS 3);



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 58





1 2

- 12.1 Please clarify what FEI means by "keeping rates affordable for all customers". How would FEI measure "affordable rates" (whether in absolute value or relative to some other measure?)? What criteria would FEI use to determine a rate is affordable?
- 5 6

7 Response:

Affordability is relative and is defined differently by different customer segments, and even by
 customers within each segment. In recognition of this, FEI views affordability and affordable rates

10 through the lens of FEI's ability to transition to providing low carbon fuels at the lowest reasonable

11 cost.

12 To achieve this, FEI strives to undertake a portfolio of activities to comply with legislative 13 requirements in the most cost-effective way, including by using its existing delivery infrastructure 14 to bring a drop-in¹³ fuel to customers. FEI is also focusing on keeping demand on its system and 15 expanding in areas like LNG where FEI has existing infrastructure that can be utilized to generate 16 additional revenues to help mitigate rate pressures. FEI is also helping to advance the adoption 17 of new clean technologies that improve efficiency and potentially lower costs to help customers 18 save money. 19 What is clear is that affordable rates will need to incorporate the cost of providing energy sources

19 What is clear is that affordable rates will need to incorporate the cost of providing energy sources

that meet both customer and government policy thresholds to be considered a "low carbon fuel".

- In alignment with provincially mandated climate targets, FEI will also need to help lower the emissions of its customers. This will require investment in new measures and infrastructure to
- 22 emissions of its customers. This will require investment in new me23 reduce emissions that will increase costs for customers.

¹³ Drop-in fuel means that a customer will not have to change their appliances to use the fuel.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 59

- 1 As a result, measuring affordability against historical rates can no longer be the paradigm for
- 2 British Columbians. A decarbonized future means energy will be a greater share of a customer's
- 3 income. The measure of affordability should therefore be against the cost to produce and
- 4 distribute other renewable energy sources.

5 Please also refer to the response to BCOAPO IR1 8.2 for a discussion of FEI's initiatives to 6 support low-income customers.

7 8 9 10 12.2 If FEI is not approved for a 100% RG Connections offering going forward tailored 11 to the new residential construction sector, would FEI expect its load forecast to 12 decrease by 4.9 PJ in 2023 and by 18 PJ by 2032 (as shown in Figure 8-3), with 98 percent of the reduction affecting the residential class (RS 1) and the remaining 13 14 2 percent affecting the commercial classes (RS 2 and RS 3)? 15 If not, please explain why not and provide FEI's 10-year load forecast for 12.2.1 16 residential and commercial customers in the absence of an RG 17 Connections offering, all else being equal. 18

19 Response:

The assumption that FEI used for the load estimates included in the preamble was that these new customer connections would take 100 percent Renewable Gas.

If the Renewable Gas Connections service is not approved and tailored to the new residential construction sector as proposed, FEI expects that some of this load would be served by conventional natural gas for the municipalities that do not adopt GHGi metrics. However, there would be a loss of customer attachments and associated potential load without a Renewable Gas Connections program that would increase out to 2030. Those not served by gas would likely be served by electricity; however, such an expectation is dependent on the provincial and municipal regulations in place within each community at the time.

- In a scenario which assumes that provincial building stock turnover is approximately 2 percent per year and none of those new buildings connect to the gas system, resulting in FEI losing 2 percent of its residential and commercial customers per year, FEI could expect the total volume of gas sold to residential and commercial customers to be 20 PJ¹⁴ or 18 percent lower than it would be if the Renewable Gas Connections service was approved.
- With respect to Renewable Gas load only, FEI does not expect the total volume of Renewable
 Gas sold to customers would diminish if there were not a Renewable Gas Connections service.
 Currently, FEI is enabled through the GGRR to acquire approximately 30 PJ of Renewable Gas,
 with additional volumes required to meet the CleanBC Roadmap (see the response to BCUC IR1

¹⁴ Assuming average UPC for each customer lost from building stock turnover.



1.1). If Renewable Gas supply did not flow to the Renewable Gas Connections customers, it
 would flow instead to Renewable Gas Blend customers. There may also be additional opportunity
 to sell Renewable Gas to voluntary customers.

4
5
6
7
12.2.2 Please also provide FEI's 10-year load forecast for residential and commercial customers assuming the RG Connections offering is approved as proposed.

11 Response:

10

FEI has used the information from its Long Term Gas Resource Plan (LTGRP) to assist in responding to this IR. FEI used the Diversified Energy Future (Planning) scenario from the LTGRP, which includes forward looking demand reflective of the Renewable Gas supply embedded in the Application. Under this scenario, customer growth continues to occur and the existing gas infrastructure is used to deliver low carbon energy solutions to customers. FEI has omitted RS 23, which serves large commercial Transport service customers, from the table below, because these customers are much less affected by the proposals in the Application.

19 Table 1: 10-Year Load Forecast based on Diversified Energy Future (Planning) Scenario

	Rate												
	Schedule	Category	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
	RS 1	Residential	ΤJ	69,752	68,319	67,077	65,896	64,762	63 <i>,</i> 675	62,673	61,746	60,769	59,831
	RS 2	Small Commercial	TJ	30,163	30,112	30,034	29,968	29,853	29,708	29,626	29,615	29,430	29,269
	RS 3	Large Commercial	TJ	27,314	27,267	27,197	27,138	27,033	26,902	26,828	26,818	26,650	26,504
20		Total	ΤJ	127,229	125,698	124,308	123,003	121,649	120,285	119,128	118,179	116,848	115,604
~ .													
21													
22													
23													
24		12 :	23	Please	e estima	ate the a	annual I	bill in 20)30 of a	reside	ntial cus	stomer ((RS 1)
25		12.		and a			ouctom	or (DQ)	2 and			to tod	
20				anu a						K33) I			ay, 11
26				percer	ntage ar	nd abso	lute valu	ue, resu	liting on	ly from t	the loss	of throu	ighput
27				due to	losing	the new	w const	ruction	sector,	all else	being e	equal. F	Please
28				provid	e the	calculat	ions us	sing rea	al 2022	2 dollar	s and	state a	all the
29				assum	ptions	used, i	ncluding	those	to estir	nate th	e impad	ct on de	elivery
30				rates	and on	storage	e and tr	ansport	t rates	of a rec	duction	in throu	ughput
31				(e.g., ı	relative	share o	of fixed v	/ersus v	variable	costs).			
32										,			



FEI provides the following table which estimates the annual bill in 2030 (and 2050) relative to
today for a residential (RS 1) and commercial (RS 2 and RS 3) customer, in percentage and
absolute terms. In providing this analysis, FEI used the following assumptions:

- FEI's current Renewable Gas Program is in place, therefore FEI has used the Voluntary Renewable Gas demand in this Application multiplied by the BERC, which equals Cost of Gas/GJ + Carbon Tax/GJ + \$7 as recoveries into the BVA and all costs not recovered through Voluntary Renewable Gas sales are recovered from all non-bypass customers through the BVA Rate rider;¹⁵
- As discussed in the response to BCUC IR1 12.2, FEI assumed that provincial building stock turnover is approximately 2 percent per year, resulting in FEI losing 2 percent of its residential and commercial customers per year, with the starting year equal to FEI's 2021 approved demand by rate schedule;
- FEI has used the current UPC for its residential and commercial rate schedules, multiplied
 by the declining customers to determine the demand;
- The delivery margin required from all customers in a rate schedule is held constant and is
 spread over less customers and less volume, resulting in delivery rate increases;
- FEI's supply of Renewable Gas will continue to grow to 30 PJ by 2030 and remain at that
 level to 2050;
- Carbon tax increases to \$170 per tonne by 2030 (\$8.40 per GJ) and remains at that level to 2050;
- Any costs left in the BVA are recovered from all customers through a delivery rate rider each year; and
- For simplicity, since Renewable Gas supply is greater than Renewable Gas demand, FEI assumes that Sales Service customers receive a carbon tax credit on their bills for a portion of their gas received as renewable.

27 Regarding real dollars, please note that in the Application the Basic, Delivery, Storage & Transport 28 and Cost of Gas charges did not include inflation so were already in real dollars. The forecast of 29 Renewable Gas supply costs is without consideration for inflation so was also in real dollars. The 30 only charge embedded in the figures within the Application that is nominal is carbon tax.

31 Therefore, FEI has discounted carbon tax by 2 percent per year to calculate real 2022 dollars.

Please note that FEI is unable to determine the impact on Storage & Transport charges and hastherefore not included changes to these charges in its analysis.

¹⁵ The BVA rate rider is embedded on the bill as a delivery rate rider and associated with total bill throughput.



- 1
- 2

Table 1: Annual Bill in 2030 and 2050 Relative to 2022

		2022\$	2022\$	\$ Change from 2022	% Change from 2022	2022\$ 2050	\$ Change from 2022	% Change from 2022
RS 1				510111 2022	J10111 2022		J10111 2022	J10111 2022
Total Demand	ΤJ	77,700	66,104	(11,596)	-15%	44,132	(33,568)	-43%
Delivery Rate (including BVA Delivery Rate Rider)	%	5.21	9.79	4.58	88%	15.13	9.93	191%
Annual Bill	\$	1,226	1,876	649	53%	2,126	900	73%
RS 2								
Total Demand	ΤJ	28,363	24,130	(4,233)	-15%	16,109	(12 <i>,</i> 253)	-43%
Delivery Rate (including BVA Delivery Rate Rider)	%	4.02	8.27	4.25	106%	12.50	8.48	211%
Annual Bill	\$	4,151	6,562	2,412	58%	7,174	3,024	73%
RS 3								
Total Demand	ΤJ	25,680	21,848	(3,832)	-15%	14,586	(11,094)	-43%
Delivery Rate (including BVA Delivery Rate Rider)	%	3.51	7.56	4.05	116%	11.15	7.64	218%
Annual Bill	\$	41,069	66,980	25,911	63%	71,444	30,375	74%

3 4

5 FEI notes that, under the current Renewable Gas Program, all non-bypass customers (both Sales 6 Service and T-Service) bear some of the costs of the program through the BVA Rate rider. 7 Assuming the proposals in this Application are not approved and FEI loses the new construction sector, there will be fewer Renewable Gas costs recovered from that (primarily Sales Service) 8 9 sector, leaving more Renewable Gas costs be recovered from all other (primarily T-Service) customers. FEI estimates that by 2030 all Sales Service customers will be paying an average of 10 \$510¹⁶ per year toward recovery of Renewable Gas, and T-Service (primarily Industrial) 11 customers will be paying an average of \$130 thousand¹⁷ per year toward recovery of Renewable 12 Gas. This will increase to \$740¹⁸ per year per Sales Service customer and \$220 thousand¹⁹ per 13 14 T-Service customer by 2050.

FEI would expect that this outcome would compel Industrial customers to find alternative energy
solutions, exacerbating the recovery of FEI's system costs, or move their operations to other less
costly jurisdictions.

- 18
- 19
- 20 21

- 12.3 Please confirm, or otherwise explain, that in the absence of the RG Connections offering and the demand associated with it, FEI would increase the percentage of RG blend for its RG Blend offering to offload its supply of RG.
- 23 24

- ¹⁷ Ibid.
- ¹⁸ Ibid.
- ¹⁹ Ibid.

¹⁶ In real 2022 dollars.



	FortisBC Energy Inc. (FEI or the Company)	Submission Date:
тм	Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
	Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 63

2 Confirmed.

-	eenneu		
3 4			
5 6 7 8 9 10	<u>Response:</u>	12.3.1	If so, please estimate the resulting percentage of RG blend in FEI's system and the resulting S&T LC rider in <u>2030</u> , relative to the 2030 levels of both blend and S&T LC rider if the Application were to be approved as proposed (in real 2022 dollars).
12 13 14	In the absence Gas blend for a S&T LC rider w	e of the l all sales vould inc	Renewable Gas Connections service, FEI estimates that the Renewable customers would increase to 20 percent (from 8 percent) in 2030 and the crease from an estimated \$2.58 ²⁰ to 4.10 ²¹ per GJ.
15 16			
17 18 19 20 21 22 23 24 25 26 27	Decembra	12.3.2	Please revise Figures 8-4 to 8-6 to reflect an RG Program with only the RG Blend and Voluntary RG offerings, adding the years 2022 and 2030 to these graphs. In estimating these annual bills, please consider the increase in delivery rates and storage and transport rates resulting from a loss of throughput due to losing the new construction sector. Please provide the calculations using real 2022 dollars, state all assumptions used, and provide a fully functioning Excel spreadsheet supporting the calculations.
27	<u>Response:</u>		
28 29	In preparing t Renewable Ga	this resp as that a	conse, FEI noted that it inadvertently over-calculated the volume of voluntary customer would receive and pay for on their bills and, as also

noted in response to BCSEA IR1 11.1, FEI inadvertently overstated the forecast demand for the
 Renewable Gas Connections offering. Both of these omissions resulted in Figures 8-4, 8-5 and

32 8-6 showing incorrect bill impacts and Renewable Gas blend percentages. FEI has made

33 corrections and included Corrected Figures 8-4, 8-5 and 8-6 below.

²⁰ 2022 real dollars assuming inflation equals 2 percent per year.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 64

Corrected Figure 8-4: Annual Bill for Rate Schedule 1





FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 65

Renewable Gas Voluntary

Renewable Gas

Conv COG + Carbon Tax

Blend

648

2,998

1,417

2,006

2032

Voluntary Renewable Gas

Renewable Gas

Blend

Renewable Gas COG

8,000 14% Renewable Gas in S&T LC rider 6% Renewable Gas in 7,000 S&T LC rider 4% Renewable Gas in 6,000 1,020 S&T LC rider Annual Bill incl. Carbon Tax 3,410 5,000 975 3,259 2,640 4,000 2,441 1,925 3,000 1,417 787 787 461 461 2,000 1,000 2,006 2,006 2,006 2,006 2,006 2024 2024 2028 2028 2032

S&T LC Rider

Corrected Figure 8-5: Annual Bill for Rate Schedule 2



Renewable Gas

Blend

Voluntary

Renewable Gas

■ Basic, Delivery, S&T



FortisBC Energy Inc. (FEI or the Company) Revised Renewable Gas Program Application – Stage 2 (Application)	Submission Date: May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 66



Corrected Figure 8-6: Annual Bill for Rate Schedule 3

2

FEI used the same assumptions as in BCUC IR1 12.2.3 except that in this scenario FEI has assumed that the Voluntary Renewable Gas and the Renewable Gas Blend services are

5 approved instead of the current program being in place.

As requested, FEI has provided revised Figures 8-4 through 8-6 adding the years 2022 and 2030
below. The boxed percentages across the tops of the graphs are the percent Renewable Gas
blend embedded in the S&T LC rider. As discussed in Section 9 of the Application, due to the
timing of the expected BCUC decision regarding the Application, FEI will not implement the S&T
LC rider in 2022 (nor in 2023); however, FEI has modeled the bill impacts for 2022 as if the
proposals (except that for the Renewable Gas Connections service as requested in this IR) are
in place in 2022.






4 The Corrected Figure 8-4 above includes Carbon Tax in nominal dollars. After converting Carbon 5 Tax into real 2022 dollars, the Corrected Figure 8-4 and the Requested Figure 8-4 can be 6 compared. This comparison results in the following conclusion: if the proposals in the Application 7 are approved, in 2030, when accounting for Carbon Tax in real 2022 dollars the Annual Bill for an 8 RS 1 customer would equal \$1,760 or a 43 percent increase from 2022 bills. With the loss of the 9 new construction sector without the Renewable Gas Connections service, the annual bill for an 10 RS 1 customer in 2030 will equal \$1,920 in real 2022 dollars or a 56 percent increase from 2022 11 bills.







4 The Corrected Figure 8-5 above includes Carbon Tax in nominal dollars. After converting Carbon 5 Tax into real 2022 dollars, the Corrected Figure 8-5 and the Requested Figure 8-5 can be compared. The comparison results in the following conclusion: if the proposals in the Application 6 7 are approved, in 2030, when accounting for Carbon Tax in real 2022 dollars the Annual Bill for an 8 RS 2 customer would equal \$6,250 or a 51 percent increase from 2022 bills. With the loss of the 9 new construction sector without the Renewable Gas Connections service, the annual bill for an 10 RS 2 customer in 2030 will equal \$6,733 in real 2022 dollars or a 61 percent increase from 2022 11 bills.







4 The Corrected Figure 8-6 above includes Carbon Tax in nominal dollars. After converting Carbon 5 Tax into real 2022 dollars, the Corrected Figure 8-6 and the Requested Figure 8-6 can be 6 compared. The comparison results in the following conclusion. If the proposals in the Application 7 are approved, in 2030, when accounting for Carbon Tax in real 2022 dollars the Annual Bill for an 8 RS 3 customer would equal \$64,300 or a 57 percent increase from 2022 bills. With the loss of the 9 new construction sector without the Renewable Gas Connections service, the annual bill for an 10 RS 3 customer in 2030 will equal \$68,900 in real 2022 dollars or a 66 percent increase from 2022 11 bills.

There are longer term and permanent implications to closing FEI out of the new construction sector, which will result in greater customer bill impacts into the future as more building stock turns over. FEI estimates that by 2050, in 2022 dollars, RS 1, 2, and 3 annual bills would approximately double because of the impacts on throughput of FEI's inability to add new



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 70

- 1 residential customers alone, and not accounting for other compounding and expected effects,
- 2 such as existing customers leaving the system due to the resulting higher rates.

4 Please refer to Attachment 12.3.2 for the fully functioning Excel spreadsheet.



1	13.0	Refere	ence:	RENEWABLE GAS CONNECTIONS
2 3				Exhibit B-11, Section 2.2.3, p. 22, Section 3.4, p. 30 and Section 7.4.2, p. 100
4				Alternative rate-setting mechanisms
5		On pa	ge 22 o	f the Application, FEI states:
6 7 8			Custor emissi energy	mers who own and/or operate buildings, and who have firm and committed ons reduction targets, have found the price of RNG is competitive with other v solutions to achieve these targets.
9 10		On pa states	ge 30 of :	the Application, FEI provides an extract from the CleanBC Roadmap which
11 12 13 14 15			Zero-c based like re our pro regula	arbon new construction by 2030: The standard will be performance, allowing for a variety of options including electrification, low carbon fuels newable natural gas, and low carbon district energy. In 2023, we'll review ogress and, based on what we've learned, we'll start phasing in provincial tions over time (2024, 2027, 2030).
16		On pa	ge 100	of the Application, FEI states:
17 18 19 20			In orde reduce Gas C existin	er to provide for equity between residential dwellings who are mandated to e emissions and those who are not, customers served under the Renewable connections tariff will pay the same effective rate for their gas service as g customers in similar rate schedules.
21 22 23 24 25 26 27		13.1	Withou carbor equiva constr regula new co	at FEI's proposed RG Connections offering, please describe all other low- n energy options, along with their rates in \$/GJ and \$/MWh (and in the lent \$/GJ for electric solutions to the extent possible), available to new auction who are either mandated to reduce emissions under municipal tion or would eventually be under a new BC Building Code with zero-carbon construction standard.
28	Respo	onse:		
29	Histor	ically, th	here hav	ve been two main sources of energy to heat buildings in British Columbia:

- natural gas and electricity. While there are homes that are heated with wood, propane and oil,
 these are fewer in number and are generally located in areas that might not have historically had
 access to the natural gas or electricity delivery systems.
- The two primary options for customers wanting a low-carbon energy solution are gas (in the form of Renewable Gas) and electricity (generated from "clean" sources). RNG provides the energy for furnaces/boilers on a large and small scale, while electricity powers heat pumps (geo and air
- 36 source), fuel cells or baseboards, on a large and small scale.



	FortisBC Energy Inc. (FEI or the Company)	Submission Date:
w	Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
	Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 72

1 There is limited opportunity for other low-carbon energy sources that provide the primary energy 2 from which heat is created for a building. In some jurisdictions, there are direct sources of low

from which heat is created for a building. In some jurisdictions, there are direct sources of low
 carbon fuel that can be used to create heat such as biomass (wood). However, this depends upon

4 regulatory permissibility. In select locations, it may be possible to capture waste heat directly from

5 an industrial process (e.g., the Burnaby Incinerator); however, these options are extremely limited.

Please refer to the responses to BCUC IR1 13.7, 13.8 and 13.9 for the "equivalent \$/GJ for electric
solutions".

- 8
- 9
- 10

1113.2Considering that FEI customers who have firm emissions reduction targets have12found the RNG price to be competitive with other low-carbon solutions, please13explain why FEI is not proposing to set the rate for the RG Connections at the14competitive RNG pricing rather than at the effective rate of conventional natural15gas.

16

17 <u>Response:</u>

To clarify, the referenced text on page 22 of the Application refers to large volume natural gas customers and not to customers who are eligible for the Renewable Gas Connections service. Large volume customers have the option to enroll in the Voluntary Renewable Gas service, which is priced on a stand-alone cost basis using \$7/GJ as a proxy for the Renewable Gas cost differential over the cost of conventional natural gas plus carbon tax. Large volume customers, who have firm emissions reduction targets, have found the RNG price to be competitive with other low-carbon solutions.

25 The following response is provided by Concentric Energy Advisors, Inc. (Concentric)

FEI has proposed to set the rate for customers under both the new Renewable Gas Blend service and the Renewable Gas Connections service to reflect the rolled-in or average cost of providing those services. Rolled-in or average cost ratemaking for these services: (1) is cost-based and consistent with longstanding ratemaking principles and regulatory, including BCUC, practices; (2) will not result in unjust discrimination and is distinguishable from the just discrimination created by the Voluntary Renewable Gas service as discussed further below; and (3) supports economic efficiency including the efficient use of existing infrastructure to the benefit of all customers.

33 Rolled-In Cost Ratemaking

Bonbright defines the fair apportionment of costs as simply fairness in the way costs are apportioned to customers which then "invokes the principle that the burden of meeting total revenue requirements must be distributed fairly among the beneficiaries of the service."²²

²² James C Bonbright, "Criteria of a Sound Rate Structure," in Principles of Public Utility Rates, 1st ed. (New York, NY: Columbia University Press, 1961), p. 292.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 73

Regulators, including the BCUC and other Canadian regulators, have applied this principle in a 1 2 manner that seeks to have cost responsibility follow cost causation. This leads to the critical 3 question as to whether new customers on a system are responsible for new costs, or whether it 4 is the aggregate level of service that causes the aggregate level of costs. In addressing this 5 question, regulators across North America make much greater use of rolled-in or average costs than stand-alone or incremental costs in utility service ratemaking where the "new" and "old" 6 7 customers are being provided with a service that is the same or nearly the same.²³ In fact, as noted earlier, average cost has been the dominant form of pricing in North America, even when 8 9 "new" costs have significantly exceeded "old" costs, as is the case with the cost difference 10 between RNG and conventional natural gas.

11 The suggestion that Renewable Gas Connection customers should pay stand-alone or 12 incremental costs for gas supply essentially ignores the joint effect of applying Bonbright's fair 13 apportionment principle and industry practice with regard to what constitutes unjust discrimination. 14 Under the incremental cost theory, a customer who built a house and initiated service last year 15 would pay much less for gas supply than a customer who built a house next year even where the 16 two customers had identical usage characteristics. This, despite the fact that both houses are 17 served by the same gas system, use the same amount of gas, and physically receive the same 18 blend of natural gas containing Renewable Gas. In this situation the "newer" customer did nothing 19 to impose a different level of costs on the system. Thus, it makes no sense to establish different rates for that customer; rather, that customer's cost of gas should be averaged with existing 20 21 customers, just as would be true for new and existing transmission and distribution costs of 22 serving the two customers. In an evaluation of cost causation and cost responsibility, it is 23 important to recognize that every customer was a new customer when they joined the system, 24 and they were not charged the "new" costs for the energy commodity, delivery or administrative 25 functions they were "causing" when initiating service. Taken to its natural extension, if this logic 26 were sound, FEI's residential delivery rates would need to be adjusted to remove the Service Line 27 Cost Allowance for new residential services, and New Residential Connections would be made 28 to pay the full incremental cost of their delivery service. The same approach could be applied to 29 main expansions and extensions. Such a change would be highly inconsistent with regulatory 30 practice and policy. Industry practice and FEI's existing tariffs support average cost pricing for both commodity and delivery service. 31

32 The National Energy Board (NEB) explicitly recognized the benefits of average cost pricing:

33 In considering cost causation as an approach to making tolls just and reasonable,

- 34 the Board notes that in an integrated system as complex as TransCanada's, it is
- 35 not always practical to determine the precise costs caused by the provision of a
- 36 specific service. Accordingly, modifications to a strict cost-causation approach to
- tollmaking are necessary. One such example is the use of toll zones to deal with
- 38 a multitude of delivery points within a geographical region. If tolled on a strict cost-

²³ "Embedded cost of service studies may be the most common form of utility cost allocation study, often termed "fully allocated cost of service studies." Most state regulators require them, and nearly all self-regulated utilities rely on embedded cost of service studies." Lazar, J., Chernick, P., Marcus, W., and LeBel, M. (Ed.). (2020, January). Electric cost allocation for a new era: A manual. Montpelier, VT: Regulatory Assistance Project, p. 69.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1 Page 74

causation basis, for example point-to-point, a multiplicity of price differences within each region would result.²⁴

A BCUC decision which supports average cost pricing is the BCUC Decision and Order G-245-20 approving FEI's proposal to amalgamate its natural gas and Revelstoke propane supply portfolios where the BCUC found that the public interest was better served from a policy perspective by the equalization of rates despite some interveners arguing that FEI's proposal violated Bonbright's cost causation principles. The BCUC summarized the BC Sustainable Energy Association's (BCSEA) arguments as follows:

- 9 BCSEA considers a number of Bonbright's principles of public utility rates and 10 argues that "Bonbright Principle 2: fair apportionment of costs among customers" 11 supports the status quo, since Revelstoke customers cause propane commodity 12 costs and natural gas customers cause natural gas costs. BCSEA argues to 13 achieve fairness in cost allocation, it is an established principle that those "causing 14 costs" should bear the responsibility for paying said costs.²⁵
- 15 Nevertheless, the BCUC rejected this argument and stated that it "judges this effect by its degree:"
- 16 The Panel has given full consideration to the Application and the relevance of 17 Bonbright's principles regarding public utility rates. In the Panel's view, the 18 arguments presented do not suggest that FEI's proposal would be inconsistent 19 with those principles. FEI's proposal is considered in keeping with these principles 20 by equalizing rates fairly across its service territory. FEI's proposal brings about a 21 balanced allocation of costs, improves price stability and reduces the burden on 22 Revelstoke customers by means of a proposal which minimizes negative effects 23 and allows for alternatives in the future.
- The Panel accepts that FEI's proposal may suggest discrimination, given the effect on natural gas users' costs. However, the Panel judges this effect by its degree and how overall fairness in the apportionment of costs fits within the public interest framework. In consequence, the Panel does not find that FEI's proposal is unduly discriminatory or that the principles or price signals are critically compromised.²⁶
- The BCUC's decision that made FEI's Biomethane Program permanent also supports average cost pricing and is an example of the socialization of costs which benefit all customers. Under that existing program, FEI procures RNG based on its forecasted need and, to the extent there is excess inventory, the costs associated are treated in two ways. The portion of the costs equal to the prevailing Biomethane Energy Recovery Charge (BERC) is transferred to the Midstream Cost Reconciliation. Account (MCRA) and recovered from EEI's cales customers. The remainder
- 34 Reconciliation Account (MCRA) and recovered from FEI's sales customers. The remainder,

²⁴ NEB Reasons for Decision GH-2-87, at 71.

²⁵ BCUC Decision and Order G-245-20, Appendix A, at 9.

²⁶ BCUC Decision and Order G-245-20, Appendix A, at 11.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 75

- 1 namely, the difference between the total RNG cost and the BERC, is deferred and recovered from
- 2 all non-bypass FEI customers through a rate rider.²⁷

3 The use of rolled-in or average cost pricing for the proposed Renewable Gas Program is further 4 supported by a recognition of the fact that new customers, who will be served under the 5 Renewable Gas Connections service, did not "cause" the need for utilization of higher-cost 6 Renewable Gas supplies. This need was caused by governmental policy which seeks to limit the 7 use of conventional gas supplies in order to achieve lower carbon emissions. The benefit of lower 8 carbon emissions is not limited to "new" customers, or even to FEI's customers. This benefit is 9 understood to be for all residents of BC, and in fact for the entirety of the global ecosphere. To 10 assign these costs to only new FEI customers would be a gross mismatch between cost causation 11 and cost responsibility. The costs to utilities of achieving compliance with governmental objectives 12 are best socialized across the entire set of utility customers, rather than burdening a small subset 13 of customers with the costs of providing a benefit to all.

14 Just v. Unjust Discrimination

15 Charging a different, higher rate for Renewable Gas Connections service than for other sales 16 customer simply because of when the customer joined FEI's system would be inconsistent with 17 long-standing regulatory policy and would result in unjust discrimination with regard to new 18 residential customers. Voluntary Renewable Gas service customers, however, may be 19 reasonably charged the higher, stand-alone cost of Renewable Gas because, unlike Renewable 20 Gas Connections customers, they have made a choice to pay more for Renewable Gas even 21 though the rolled-in average cost services were made available to them.²⁸

22 Establishing separate rates for customers based on the date service was initiated represents a 23 vintaging approach that other regulators have explicitly rejected. Such an approach is illogical 24 because it charges similarly situated customers different rates on the basis of when they joined 25 the system. Utilities often apply the same rate to new and existing customers, even though it 26 typically costs different amounts to serve new vs. existing customers due to factors such as 27 inflation, technological change, location, usage characteristics, etc. In spite of these cost 28 differences, regulators adhere to the principle of no unjust discrimination, and it has been 29 determined that discriminating based on vintage of service initiation is unjust.

- For example, the NEB held that existing customer have "no acquired rights" to the lower,embedded cost of the existing system.
- Some parties argued that those who had paid for the existing facilities, in the sense of having been a customer in the past, should be entitled to continue using them without being affected by the addition of new facilities to serve new customers. Because new facilities tend to be more costly than older plant, this entitlement would in reality provide existing shippers with an acquired right to enjoy the use of older facilities at their lower embedded cost. Otherwise, they claim they would be

²⁷ BCUC Decision and Order G-133-16, p. 44.

²⁸ These customers will have the RG premium fixed at \$7/GJ, with costs above that level socialized to all customers.



3

4

5

required to cross-subsidize new customers. This theme underpinned a good deal of the arguments presented to the Board in these proceedings. Thus, various approaches were proposed to protect the existing shippers, including the separation of different rate bases for different vintages of shippers based on nothing more than seniority.

6 While the Board could well understand the motives of some existing shippers in 7 protecting their own interests, acceptance by the Board of the notion of acquired 8 rights would inevitably mean that past tolls were not just and reasonable in the 9 sense of payment for services rendered. Such a notion would require that past tolls 10 somehow also included payment for an option for the future use of the pipeline on 11 preferential terms. Clearly this is not the case. In the Board's view, the payment of 12 tolls in the past conferred no benefit on tollpayers beyond the provision of services 13 at that time. The Board does not equate those who paid for a service with those 14 who paid for the facilities. Accordingly, the Board rejects the notion that shippers 15 who have used the pipeline in the past are somehow entitled to continue using the existing facilities without being affected by new circumstances.²⁹ 16

17 Similarly, in GH-5-89, the NEB held:

18 The Board considers that the effect of alternatives to the current toll design 19 methodology which were presented by intervenors is to shield existing shippers 20 from some or all of the additional costs associated with the new facilities.

21 In this regard, the Board agrees with those who submitted that the payment of tolls 22 confers no future benefit on tollpayers beyond the provision of service. In other 23 words, previous tollpayers have no acquired rights. Therefore, they cannot expect 24 to be exempted from a toll increase simply, because they have paid tolls in the 25 past. In this proceeding parties have not laid claim to any acquired rights, per se. 26 Rather, the proponents of alternative toll methodologies have asserted that the 27 sheer size and cost of the proposed facilities together with the impact on tolls and 28 the nature of the market to be served, are unique circumstances which justify some 29 level of toll protection for the existing shippers. While factors such as the size, cost 30 or impact on tolls of the proposed facilities may be relevant to the Board's decision on whether to authorize the construction of facilities, they do not in this case justify 31 32 discriminating among shippers on the basis of when they commenced, or will 33 commence, paying tolls and receiving service.

Both the CPA proposal for a capital contribution and the Consumers' proposal for a demand surcharge make a distinction based on vintages of shippers. This implies the existence of certain rights for existing shippers which, in the Board's view, they do not have. In addition, the requirement of a capital contribution or a demand surcharge would serve as a barrier to entry for new participants in the

²⁹ GH-2-87, Reasons for Decision, at 70.



- marketplace, would limit competition and would give existing shippers an undue
 competitive advantage.³⁰
- 3 More recently, the NEB affirmed this policy in RH-1-2007:

4 In the GH-2-87 and GH-5-89 Decisions, the Board expressed the view that the 5 payment of tolls in the past conferred no benefit on tollpayers beyond the provision 6 of services at that time. In other words, previous tollpayers have no acquired rights. 7 The Board stated that it does not equate those who paid for a service with those 8 who paid for the facilities. Accordingly, the Board rejected the notion that shippers 9 who have used the pipeline in the past are somehow entitled to continue using the 10 existing facilities without being affected by new circumstances. They cannot be exempted from a toll increase simply because they paid tolls in the past.³¹ 11

Underlying the NEB's approved policy as described above is the tacit recognition that a vintage
 toll-based approach would effectively result in a transfer of wealth between existing and new
 customers. This argument was put forth in GH-5-89 by Alberta/Northeast Gas Export Project:

15 The vintaging of tolls is tantamount to creating wealth, in the form of economically f_{2}

16 favored tolls, and distributing that wealth to existing shippers.³²

17 Vintage pricing, as opposed to rolled-in pricing, for gas supply service between existing customers 18 and new residential customers would promote a policy that would result in a similar pattern of 19 creating wealth entitlements. For instance, a newly built residential dwelling that initiated service 20 prior to the proposed start date of this program would be charged for its gas supply based on the 21 average cost of gas supplies utilized for the Renewable Gas Blend service. An identical newly 22 built residential dwelling that initiated service after the proposed start date of this service would, 23 however, pay a much higher gas supply cost for the sole reason that a new connection must, as 24 a matter of policy, be accommodated through 100 percent Renewable Gas supply. In this 25 instance, there are no delivery-related cost of service differences between the two customers, nor are there any functional service differences with respect to the supply of natural gas.³³ Instead, 26 27 the difference between the two otherwise identical customers is a function solely of how they are 28 treated for purposes of FEI's supply mix, itself a function of provincial and municipal policy. 29 Requiring the newer customer to bear the cost of this policy through the use of vintage pricing 30 would effectively result in a transfer of wealth to the older customer. At a minimum, the customer 31 who initiated service prior to the proposed start date of this program would pay a lower gas supply 32 cost on a going forward basis for no other reason except that they initiated their service before 33 the start date of the proposed program. All else equal, a prospective buyer of the two identical 34 homes would value the former more highly if only because their ongoing gas utility bills in that

³⁰ GH-5-89, Reasons for Decision, at 31.

³¹ RH-1-2007, Reasons for Decision, at 22.

³² GH-5-89, Additional Written Evidence of Alberta/Northeast Gas Export Project, at 7.

³³ Under FEI's proposal, a newly connected customer will not functionally receive 100% Renewable Gas at their service point. Instead, FEI will alter its supply mix to account for the fact that its obligation to this new customer must be accounted for with 100% Renewable Gas, whereas its obligation for existing customers must be accounted for with a blended supply that is composed primarily of natural gas and a much lower proportion of Renewable Gas.



home would be substantially lower. This differential in the value of the two homes would represent the creation of wealth for the owners of homes entitled to Renewable Gas Blend service, due solely to the adoption of differentiated vintaged pricing for the Renewable Gas Blend service and for the Renewable Gas Connections service. Creating such wealth entitlements through ratemaking, when the incremental cost of serving a "new" customer is the product of public policy, not the product of differences in the costs imposed by a "new" customer as compared to an "existing" customer, does not comport with the establishment of just and reasonable rates.

8 The Voluntary Renewable Gas service, however, is appropriately priced differently than standard 9 Renewable Gas Blend or Connections service. Customers who voluntarily choose to purchase 10 up to 100 percent Renewable Gas are charged the stand-alone cost of Renewable Gas (priced 11 at a \$7/GJ differential) for that premium service. This distinction is well-supported in ratemaking 12 principles. Charging a different price for a different service is just discrimination where that service 13 is distinguishable from the default service, and where the value of that service to the customer is 14 materially different. In FEI's proposal, new customers joining the natural gas system are not 15 provided a distinguishable service as compared to the service provided to existing customers. By 16 contrast, dedicated Voluntary Renewable Gas service customers voluntarily pay FEI to acquire 17 fully-decarbonized supply, which is distinguishable both as a matter of cost causation and value. 18 Therefore, charging the directly assigned stand alone cost to those customers is "just 19 discrimination".

20 Furthermore, customers who choose to participate in the Voluntary Renewable Gas service have 21 recourse to their otherwise applicable gas supply service provided through FEI's Renewable Gas 22 Blend service. The ability of Voluntary Renewable Gas participants to switch back to this 23 traditional cost-based rate that is just, reasonable, and non-discriminatory renders the different 24 pricing of the Voluntary Renewable Gas program itself just, reasonable, and non-discriminatory. 25 This is consistent with FERC's ratemaking treatment of voluntary agreements for gas capacity 26 services in the United States. FERC has a well-established Negotiated Rate Policy that governs 27 the prices charged to interstate shippers by gas pipelines for pipeline capacity and other services. 28 Under this policy, a rate voluntarily agreed to between a gas pipeline and a shipper can deviate 29 from traditional cost of service as long as the shipper has recourse to a rate based on the 30 traditional cost of service:

31 The Commission believes that negotiated/recourse service programs could be a 32 viable way of achieving flexible, efficient pricing when market-based rates are not 33 appropriate. Negotiating different rates and service terms for individual shippers could result in wide flexibility in service offerings including individually tailored 34 35 seasonal service and rates, short-term services, or special rates for more flexible 36 terms and conditions. Greater rate flexibility has previously been tied to a showing 37 that a pipeline lacks market power. Under this method, however, the availability of 38 a recourse service would prevent pipelines from exercising market power by 39 assuring that the customer can fall back to cost-based, traditional service if the



pipeline unilaterally demands excessive prices or withholds service. Thus, the
 recourse rate mitigates market power.³⁴

FERC's ratemaking policy behind allowing price discrimination for alternate, negotiated service arrangements is directly analogous to the circumstances accompanying a customer's choice of taking FEI's Voluntary Renewable Gas service. These customers have recourse to other services priced on a traditional non-discriminatory basis but prefer the alternate service and its differentiated service terms. Offering such an alternate service on differentiated pricing terms does not constitute unjust discrimination.

9 Economic Efficiency

10 As stated by Bonbright and many other ratemaking authorities, just and reasonable rates should 11 send the proper price signals so that consumers can respond and make the most efficient use of 12 the utility system and the resources provided by that utility. This includes making efficient use of 13 existing infrastructure and other resources and avoiding wasteful or inappropriate use of the 14 utility's product. However, as noted by Dr. Alfred Kahn, economically efficient price signals must 15 be provided to all customers in order for the allocation of resources to be optimized. For example, 16 it is not appropriate to attempt to send a marginal cost price signal to one set of "new" customers 17 when others see their services being priced on embedded or average cost rates. Such an attempt 18 to "optimize piecemeal" will not prove to be efficient, since existing customers are not being 19 provided with the appropriate price signal to relinquish service that may be of relatively lower 20 value, while new customers are required to cover the full incremental cost. Vintaged pricing, with 21 new customers being priced at the stand-alone cost of new service and older customers being 22 priced at embedded, average cost is a clear example of an inefficient set of price signals being 23 sent.

The Canadian Energy Regulator (CER) has previously recognized the importance of maximizing
 the utilization of existing infrastructure, even when it may be necessary to depart from strictly cost based tolls:

The Board is of the view that, while the Dawn LTFP toll represents a departure from the cost-based/user-pay principle, economic efficiency will be promoted by Dawn LTFP service through increased system utilization and the net lowering of existing Mainline tolls.³⁵

- 31
- 32
- 13.3 Please confirm, or explain otherwise, that FEI has not completed price elasticity
 studies on RNG demand for new RG connections.
- 35

13.3.1 If confirmed, please explain why not.

³⁴ See 74 F.E.R.C. 61,076, at 53.

³⁵ RH-003-2017, Letter Decision, at 27.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 80

13.3.2 If not confirmed, please provide results from the most recent study.

3 Response:

4 Confirmed. FEI has not completed price elasticity studies on Renewable Gas demand for the 5 proposed Renewable Gas Connections service. As discussed in Section 5.8 of the Application, 6 performing a price elasticity study requires demand and price data that reflect consumer choices 7 when exposed by market forces such as variable price points for Renewable Gas, and the 8 availability and pricing of competitive options, among other variables. This data is not available 9 and FEI is unable to obtain the required market data. The existing RNG Program does not provide 10 this data because the BERC rate holds the price of RNG fixed relative to conventional gas. 11 Therefore, different price points for RNG, and the associated consumer response, have not been 12 freely tested. If available, price and customer demand data from other jurisdictions could be used 13 as a proxy in place of data specific to British Columbia. As noted in the Application, however, 14 comparable offerings from which FEI could obtain relevant data are not available elsewhere.

Please also refer to the response to RCIA 21.3 and 21.7 regarding the price elasticity of naturalgas.

17 The following response is provided by Concentric.

18 This question suggests that pricing higher than the proposed rolled-in rate for gas supply might 19 be considered for the Renewable Gas Connections service. As discussed in the response to 20 BCUC IR1 13.2, the proposed rolled-in rate is consistent with long-standing ratemaking principles 21 including recovering the revenue requirement, the fair apportionment of costs, sending efficient 22 price signals, and avoiding undue discrimination, among others. There are no delivery-related 23 cost of service differences between the new residential customers eligible for the Renewable Gas 24 Connections service versus existing customers, nor are there any functional service differences with respect to the supply of natural gas.³⁶ Instead, the difference between the two otherwise 25 26 identical customers is a function solely of how they are treated for purposes of FEI's supply mix, 27 itself a function of policy. Requiring the newer customer to bear the cost of this policy through the 28 use of vintage pricing would effectively result in a transfer of wealth to the older customer, in conflict with established regulatory policy. It is not necessary to perform price elasticity analysis 29 30 in order to establish an equitable rate.

- 31
- 32
- 33
- 34 35
- 13.4 Please discuss other ways that FEI can remain competitive with the other lowcarbon energy solutions and continue to attract customers in the new construction

³⁶ Under FEI's proposal, a newly connected customer will not functionally receive 100% Renewable Gas at their service point. Instead, FEI will alter its supply mix to account for the fact that its obligation to this new customer must be accounted for with 100% Renewable Gas, whereas its obligation for existing customers must be accounted for with a blended supply that is composed primarily of natural gas and a much lower proportion of Renewable Gas.



sector, aside from pricing the RG Connections offering as low as conventional natural gas.

3

4 <u>Response:</u>

5 FEI's proposed Renewable Gas Connections service, whereby existing and new residential 6 customers would pay the same rolled-in or average cost of natural gas, inclusive of Renewable 7 Gas, is intended to maintain a competitive energy solution in response to local government 8 emission intensity requirements and provide the benefits of Renewable Gas to all customers. FEI 9 is unaware of any viable alternatives to its Renewable Gas Connections service which will achieve 10 these objectives as well as the approach that is proposed and that will be competitive with 11 electricity.

12 The following response is provided by Concentric.

If FEI were to price the Renewable Gas Connections service at a higher price than proposed in the Application, the offering would: (1) not offer customers a viable alternative to electric heat; (2) be in conflict with long-standing ratemaking principles; (3) be discriminatory towards new residential customers; and (4) ultimately be harmful to all customers by not using existing infrastructure in an economically efficient manner. Please refer to the responses to BCUC IR1 13.2 and 1 16.2.

- 19
- 20
- 21
- 13.5 Please confirm, or otherwise explain, that the decision to choose electric or natural
 gas service at the time of building construction can be dependent on both capital
 costs and operating costs over a certain timeframe.
- 25

26 **Response:**

Confirmed. Capital costs and operating costs are two factors considered at the time of building
design and construction that can influence the decision to choose electric or gas service.
Operating costs are particularly important because of the effect on the marketability of a home.
Specifically, when the builder sells the home, future and potential homeowners consider the cost
of operating the home, including its energy costs.

There are additional factors that can also influence this decision, including: the space requirements of gas versus electric equipment, venting requirements, and customer preferences such as a desire for instantaneous hot water or a preference for a gas fireplace.

35

36



2

3

4

FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 82

13.6 Please compare the capital costs between installing electric equipment (electric heat pumps) and gas equipment (natural gas furnace) in a new house, a new midrise building, and a new high-rise building.

5 **Response:**

6 There are differences between the residential building types identified above that will affect the 7 capital costs of installing heating equipment and, therefore, prevent a "like-for-like" comparison. 8 For example, a greater range of heating systems are available for larger buildings in order to meet 9 a variety of architectural and mechanical configurations. FEI is unable to provide the requested 9 capital costs comparison given this variability.

- 10 capital costs comparison given this variability.
- 11 However, in order to be responsive, FEI provides a comparison of capital costs including ductwork
- 12 where applicable for new single family residential buildings (i.e., detached single family homes,
- 13 duplexes, and townhouses).
- 14

 Table 1: Residential Space and Water Heating Capital Cost Comparison

	Spa	ice Heating Opt	ions	Water Heating Options			
Equipment	C F	Electric	Electric Heat	Gas Water Heater	Electric Water	Electric	
	Gas Furnace	Baseboard	Pump	Tank	Heater Tank	Heat Pump	
Capital Cost	\$18,000	\$9,200	\$21,000	\$2,800	\$1,550	\$4,200	
Efficiency Rate	96%	100%	200%	67%	100%	230%	
Clean BC Rebate	\$0	\$0	\$3,000	\$0	\$ 0	\$1,000	
FortisBC Rebate *	\$0	\$0	\$0	\$500	\$ 0	\$0	
Provincial Sales Tax (PST) %	12%	7%	0%	12%	7%	0%	
Provincial Sales Tax (PST) \$	\$ 2,160.0	\$ 644.0	\$-	\$ 336.0	\$ 108.5	\$-	
Goods And services Tax (GST) %	5%	5%	5%	5%	5%	5%	
Goods And services Tax (GST) \$	\$ 900.0	\$ 460.0	\$ 1,050.0	\$ 140.0	\$ 77.5	\$ 210.0	
Gross Capital Cost	\$ 21.060.00	\$ 10.304.00	\$ 19.050.00	\$ 2.776.00	\$ 1.736.00	\$ 3.410.00	

- 15
- 16
- 17
- 18
- 1913.7For a new residential dwelling with a use per customer (UPC) of 83.1 GJs per year20based on the 2021 approved forecast as indicated on p. 123 of the Application,21please compare the net present value (NPV) of heating costs over a ten-year22timeframe (in real 2022 dollars) between (i) 100% RG priced at the level of23conventional gas and at the weighted average RG supply cost and (ii) electricity24using electric heat pumps, both in BC Hydro and Fortis BC Inc. (FBC) service25areas. Please provide all assumptions used in the calculation.
- 2613.7.1Based on the above calculations, please calculate the premium in \$/GJ27that FEI could charge the RG Connections customers in RS 1PLC, plus28the CCRC and the carbon tax so that their rate is equal to the alternative



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 83

low-carbon solution (i.e., electricity) and customers become indifferent to
 the energy solutions based on costs.

4 Response:

- 5 Please refer to the tables provided below. Table 1 provides the comparison of the NPV of heating
- 6 costs over 10 years. Table 2 provides the \$/GJ premium determination. The tables do not consider
- 7 capital costs that were provided in the response to BCUC IR1 13.6.

8 For each analysis, FEI has provided two scenarios labeled "Low Bookend" and "High Bookend".

9 For the electric scenarios, the Low Bookend scenario is based on a home using a standard 10 efficiency electric heat pump for space heating, and an electric resistance water heater. This 11 represents a common configuration of electric heating appliances. The High Bookend scenario is 12 based on a home using a high efficiency electric heat pump for space heating and uses another 13 heat pump for water heating. The technology for the higher efficiency configuration is available 14 on the market, although the installation for this configuration is currently less common than the 15 Low Bookend scenario. Both scenarios assume that the electric heat pumps can provide all the 16 heat. This assumption may not be reasonable for all areas served by FEI.

- For the gas scenarios, the gas heated home in the analysis is based on a 96 percent efficient gas furnace for space heating, and a 67 percent efficient gas water heater for water heating. The
- 19 space heating end use accounts for 63 percent of the gas energy consumed, water heating for
- 20 30 percent, and 7 percent is used by auxiliary appliances such as gas ranges or fireplaces.³⁷
- 21

Table 1: Comparison of 10 Year NPV of Heating Costs

Α	В	С	D	Е	F	G	н	I	J
						10 Yea	r NPV		
				RG Burne Comp	r Tip Rate arison	BC Hydro T1:T2		FortisBC T1:T2	
Scenarios	Description	Heat Pump Efficiency	Water Heater Efficiency	Priced @ equivalent of NG	Priced @ weighted average cost of RG Supply	50:50	25:75	50:50	25:75
1	Low Bookend	200%	100%	\$14,274	\$25,627	\$13,670	\$15,036	\$15,189	\$15,581
2	High Bookend	272%	230%	\$14,274	\$25,627	\$8,381	\$9,219	\$9,313	\$9,553

22

Columns E and F in Table 1 provide the NPV of heating costs using Renewable Gas priced equivalent to conventional gas (Column E) and priced equivalent to the weighted average cost of Renewable Gas supply (Column F). Columns G, H, I and J provide the NPV of heating costs for the same home, using electricity. The NPV of electricity costs are further analysed by providing costs depending on what proportion of the energy consumption occurs in either the Tier 1 (T1) or Tier 2 (T2) electric rates. The analysis has been completed for the home consuming 50 percent

³⁷ Based on FEI REUS (2017) gas consumption in a newer home.



TN	FortisBC Energy Inc. (FEI or the Company) Revised Renewable Gas Program Application – Stage 2 (Application)	Submission Date: May 16, 2022	
	Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 84	

1 of the energy in each Tier, as well as if 25 percent of the energy was consumed at Tier 1, and 75

2 percent at Tier 2.

3 Under the Low Bookend scenario, the NPV of the heating costs for the home with Renewable 4 Gas priced equivalent to conventional natural gas is broadly similar to the heating costs using 5 electricity, with a slight cost advantage to an electrically heated home in BC Hydro territory, 6 remaining within Tier 1 for 50 percent of its consumption, and a small cost advantage to a gas 7 heated home in the remaining cases. However, when the price of Renewable Gas is set to match 8 the weighted average cost of Renewable Gas supply, the NPV of the heating costs for the gas 9 heated home (Column F) significantly exceed those of the electrically heated equivalents.

10 Under the High Bookend Scenario the NPV of the heating costs for the gas heated home exceed

11 those of a similar electrically heated home, whether the price of Renewable Gas is set equivalent

12 to conventional gas or equivalent to the weighted average cost of Renewable Gas supply.

13

Table 2: Renewable Gas Premium (Discount) to Electricity (\$/GJ)

Α	В	С	D	E	F	G	н	I	J	К	L
							\$/	'GJ			
					BC H	lydro			Fort	is BC	
	Host Rump Water 50:50		25:75 50		50):50		25:75			
Scenarios	Description	Ffficiency	Heater	RG at							
		,	Efficiency	\$18.45/GJ	\$33.13/GJ	\$18.45/GJ	\$33.13/GJ	\$18.45/GJ	\$33.13/GJ	\$18.45/GJ	\$33.13/GJ
1	Low Bookend	200%	100%	\$ (0.78)	\$ (15.46)	\$ 0.98	\$ (13.69)	\$ 1.18	\$ (13.49)	\$ 1.69	\$ (12.99)
2	High Bookend	272%	230%	\$ (7.62)	\$ (22.29)	\$ (6.54)	\$ (21.21)	\$ (6.41)	\$ (21.09)	\$ (6.10)	\$ (20.78)

14

15 Table 2 provides much the same insight as Table 1. While Renewable Gas priced equivalently to 16 conventional natural gas provides an energy cost similar to that of the Low Bookend electrically

17 heated home, it does not do so under the remaining conditions.

18 The premium that would need to be added to either of the Renewable Gas price options in order 19 to achieve energy cost parity with electricity is provided in columns E through L. Most of the 20 premiums are negative, while those that are positive are only moderately so. This analysis 21 suggests that a discount, as opposed to a premium, would need to be applied to the price of gas 22 under the Renewable Gas Connections service in order to achieve approximate cost parity 23 between gas and electricity. It is apparent from this analysis that pricing the Renewable Gas 24 Connections service at the same rolled-in cost of gas, inclusive of Renewable Gas from the 25 Renewable Gas Blend service, results in costs higher than an electric heated alternative on an 26 NPV basis in nearly all cases. A Renewable Gas price higher than that proposed in the Application 27 would make gas-based home heating more expensive than that of homes heated with electric 28 heat pumps.

Ultimately, it is arguably impossible to achieve true cost parity between electricity and gas such that customers become indifferent to their energy solution based on costs. The analysis provided above demonstrates that even when considering only a few variables, there is no one size fits all solution for all customers. Instead, in practice, a whole host of different variables can influence a home's energy consumption further compounding the difficulty of achieving cost parity, even across a wide range of customers with broadly similar characteristics. The geographic location,



- home orientation, home elevation, wall to window ratios, cold weather performance of the heat pumps, and occupant behavior are examples of some of the additional factors that drive the energy consumption of the home, with the demands placed on the heating systems tipping the
- 4 balance from one option to another. Moreover, it is not reasonable to believe that other factors
- 5 such as the capital cost of gas versus electric heating equipment, marketability, instant heating
- 6 ability, etc. do not also influence the market's thinking when considering energy options. Lastly,
- 7 short-term incentives can drive behaviour inconsistent with traditional market-based decisions.

8 Given all of the variables and uncertainty, the best and only fair option is to set the price of gas

9 service under the Renewable Gas Connections service on an equivalent basis, equal to the rolled-

10 in cost of gas inclusive of Renewable Gas.

11 The following response is provided by Concentric.

12 In addition, as discussed in the response to BCUC IR1 13.2, pricing the Renewable Gas 13 Connections service higher than that proposed in the Application would violate long-standing 14 ratemaking principles and result in unjust discrimination against Renewable Gas Connections 15 customers. New customers, who will be served under the Renewable Gas Connections service, 16 did not "cause" the need for utilization of higher-cost Renewable Gas supplies. This need was 17 caused by governmental policy which seeks to limit the use of conventional gas supplies in order 18 to achieve lower carbon emissions. The benefit of lower carbon emissions is not limited to "new" 19 customers, or even to FEI's customers. This benefit is understood to be for all residents of BC, 20 and in fact for the entirety of the global ecosphere. To assign these costs to only new FEI 21 customers would be a gross mismatch between cost causation and cost responsibility.

- 22
- 23
- 24 25 For a new construction with a UPC of 322.4 GJs per year based on the 2021 13.8 approved forecast as indicated on p. 124 of the Application, please compare the 26 27 NPV of heating costs over a ten-year timeframe (in real 2022 dollars) between (i) 28 100% RG priced at the level of conventional natural gas and at the weighted 29 average RG supply cost, (ii) electricity using electric heat pumps, both in BC Hydro 30 and FBC service areas, (iii) low-carbon district energy, and (iv) low-carbon Stream 31 A thermal energy systems. Please provide all assumptions used in the calculation. 32 For (iii) and (iv), please consider only those systems that would be able to meet 33 the municipal or provincial GHGi targets.
- 3413.8.1Based on the above calculations, please calculate the premium in \$/GJ35that FEI could charge the RG Connections customers in RS 2PLC, plus36the CCRC and the carbon tax so that their rate is equal to the lowest cost37alternative low-carbon solution and customers become indifferent to the38energy solutions based on costs.39



1 Response:

FEI is unable to respond to this request with a reasonable degree of confidence. FEI expects any results would be similar to that described in the response to BCUC IR1 13.7 where a discount would be required to set rates equal to the lowest cost alternative low carbon solution, but results could vary considerably from one building archetype to the next, and therefore, cannot be relied on to draw material conclusions.

FEI would serve residential customers in small multi-family buildings under RS 2PLC, which have
a range of available appliance options to serve their heating needs, making a representative
building archetype difficult to specify and analyze. Further, FEI does not have sufficient
information on the relative energy use of space versus water heating in newer multi-family
buildings.

- 12
- 13
- 14
- 15 For a new construction with a UPC of 3,555.5 GJs per year based on the 2021 13.9 16 approved forecast as indicated on p. 125 of the Application, please compare the 17 NPV of heating costs over a ten-vear timeframe (in real 2022 dollars) between (i) 18 100% RG priced at the level of conventional natural gas and at the weighted 19 average RG supply cost, (ii) electricity using electric heat pumps, both in BC Hydro 20 and FortisBC service areas, (iii) low-carbon district energy, and (iv) low-carbon 21 Stream A thermal energy systems. Please provide all assumptions used in the 22 calculation. For (iii) and (iv), please consider only those systems that would be able 23 meet the municipal or provincial GHGi targets.
- 2413.9.1Based on the above calculations, please calculate the premium in \$/GJ25that FEI could charge the RG Connections customers in RS 3PLC, on26top of the CCRC and the carbon tax so that their rate is equal to the27lowest cost alternative low-carbon solution and customers become28indifferent to the energy solutions based on costs.

2930 **Response:**

FEI is unable to provide a meaningful response to this question. Large residential buildings have access to a broader array of heating systems than single-family dwellings and small apartment buildings and, as such, there is a greater degree of variability in system design in larger buildings than is typically seen in smaller residential buildings. A representative building archetype is therefore difficult to specify and analyze as required to be responsive. Further, the assumptions and system design features included could have a material impact on the outcome, and could vary considerably from one model to the next.



3

4

5

14.0 **Reference:** FORECAST DEMAND FROM RG CONNECTIONS CUSTOMERS 1

Exhibit B-11, Section 8.6, pp. 121-122

Demand forecast from the RG Connection customers if rate is higher than proposed

On pages 121-122 of the Application, FEI states:

6 In order to calculate the bill impact, FEI also estimated a ten year Renewable Gas 7 demand forecast from Renewable Gas Connections for residential dwellings, 8 Voluntary Renewable Gas for sales and T-Service customers and the Renewable 9 Gas Blend for sales customers. FEI made the following assumptions to arrive at the demand forecast shown in Figure 8-3: 10

11 Renewable Gas Connections are in the range of 14 thousand to 16 thousand per year and 12 the composition is similar to the recent past (approximately 98 percent RS 1, and the 13 remainder RS 2 and RS 3);

Figure 8-3: Forecast Volumes of Renewable Gas Supply, Customer Demand and Allocation to Sales Customers (PJ)



14

- Please revise FEI's forecast of RG Connections per year (from the 14,000 to 15 14.1 16,000 figure cited in the preamble) if the LCG Charge were set equal to the RG 16 17 weighted average cost of supply per GJ. Please revise Figure 8-3 accordingly.
- 18
- 19

Please explain how this revised demand may affect the utility's long-term 14.1.1 viability and its ability to keep rates affordable for all ratepayers.

20

21 **Response:**

22 If the rate for the Renewable Gas Connections service equaled the weighted average cost of 23 Renewable Gas supply, FEI's forecast demand would not materialize because new residential 24 builders would be unwilling to connect their homes to the gas system. Please see the response 25 to BCUC IR1 13.4 for further discussion. Therefore, FEI considers the Renewable Gas



TM	FortisBC Energy Inc. (FEI or the Company) Revised Renewable Gas Program Application – Stage 2 (Application)	Submission Date: May 16, 2022
	Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 88

- 1 Connections service at the weighted average cost of supply to not be feasible and that it would
- 2 be preferable to have no Renewable Gas Connections service as then FEI would still be able to
- 3 attach some customers in municipalities that did not adopt GHGi metrics.
- In the revised Figure 8-3 below, FEI provides an updated forecast of Renewable Gas Connections
 customers if the LCG Charge were set equal to the Renewable Gas weighted average cost of
- 6 supply per GJ.
- 7 8

Revised Figure 8-3: Forecast Volumes of Renewable Gas Supply, Customer Demand and Allocation to Sales Customers (PJ)



9

10 The inability to add new residential customers to the gas system would be detrimental to the 11 utility's long-term viability and, ultimately, the affordability of rates for all customers. British 12 Columbia's climate goals are among the most aggressive in North America. Mandates in the 13 CleanBC Plan and CleanBC Roadmap for overall GHG reductions from the gas supply, 14 regulations and policies that restrict gas service in the new residential construction sector, and 15 GHG reduction mandates or goals will impact new customers' energy choices and may cause 16 current customers to leave the system if there is not a viable Renewable Gas solution to meet 17 their needs. Without the ability to connect new customers and with existing customers exiting the 18 system, throughput will dwindle, leaving a shrinking customer base to absorb a growing amount 19 of costs. Rate increases would largely be caused by the turnover of residential building stock, 20 causing a progressive erosion of FEI's customer base. The teardown rate in BC is estimated to



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 89

- 1 be approximately 2 percent in FEI's 2021 Conservation Potential Review,³⁸ meaning substantially
- 2 all of British Columbia's building stock will be replaced within 50 years. Absent any new customers
- 3 connecting to the gas system, FEI's residential customer base, and the load they put on the gas
- 4 system, would largely disappear over this period.

5 It is critical to maintain throughput on FEI's system via the enablement of new connections facilitated by the availability of a Renewable Gas solution to avoid a rate spiral that would be 6 7 detrimental to existing customers. If approved by the BCUC, FEI's Renewable Gas Program will 8 enable FEI to offer a non-discriminatory, cost-based service that complies with increasingly 9 stringent new construction mandates for existing and new customers. FEI's proposal 10 simultaneously embraces decarbonization, satisfies long-standing ratemaking principles, and 11 encourages the efficient use of its natural gas distribution system in which it has invested billions of dollars on behalf of its customers. FEI's Renewable Gas Program is in the public interest 12 13 because it continues the utilization of existing infrastructure, while also furthering British 14 Columbia's decarbonization efforts.

15 Finally, as discussed in the response to BCUC IR1 13.1, historically, there have been two main 16 sources of energy to heat buildings in British Columbia, namely natural gas and electricity. Absent 17 a viable Renewable Gas option for new residential connections, these customers will be left with 18 no meaningful alternative to electricity. Moreover, FEI expects that the above-noted loss of new 19 residential load would further accelerate as existing customers begin to abandon the gas system 20 in favour of other energy options, most likely electricity, provided sufficient electric capacity could 21 be found. This would compound the increase in gas rates, as even more load leaves the gas 22 system. As discussed in the response to BCUC IR1 23.3, this will also create significant resource 23 and cost pressure on electric utilities to build, operate, and maintain the generation, transmission 24 and distribution capacity required to serve this new load in a relatively short period. The increased 25 capital investments required to ensure the viability of the electric system will ultimately be borne 26 by all electric customers.

- 27
- 28
- 29
- 3014.2Please revise FEI's forecast of RG Connections per year (from the 14,000 to3116,000 figure cited in the preamble) if the LCG Charge were set equal to electricity32rates (BC Hydro and FBC rates in their own respective service areas). Please33revise Figure 8-3 accordingly.
- 34
- 35 **Response:**

The residential BC Hydro variable electricity rate is currently \$0.095/KwH (or \$26.39/GJ) for Step and \$0.1408/KwH (or \$39.11/GJ) for Step 2. Both of these rates are higher than the average

³⁸ See Appendix C-1 of FEI's 2022 LTGRP: <u>https://docs.bcuc.com/Documents/Proceedings/2022/DOC_66503_B-1-FEI-2022-LongTermGasResourcePlan.pdf</u>



BC™	FortisBC Energy Inc. (FEI or the Company) Revised Renewable Gas Program Application – Stage 2 (Application)	Submission Date: May 16, 2022
	Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 90

Renewable Gas acquisition cost, and substantially higher than the rate proposed by FEI for the 1 2 Renewable Gas Connections service. Additionally, gas heating appliances lag electric heat 3 pumps in terms of their heating efficiency, as shown in the response to BCUC IR1 13.7. 4 Therefore, higher energy costs cannot yet be mitigated with gas appliances as they are with 5 electric heat pumps. The conclusion is that setting the Renewable Gas Connections service rate 6 at the residential BC Hydro rate would result in no new residential connections. Please refer to 7 the response to BCUC IR1 14.1 for further information. Please also refer to the response to BCUC 8 IR1 13.7 for a discussion of the negative rate premium required to make the Renewable Gas 9 Connections service similar in cost to an electrically heated home when considering the relative 10 efficiencies of gas furnaces and electric heat pumps.

- 11
- 12
- . _
- 13
- 14 15

16

- 14.2.1 Please explain how this revised demand may affect the utility's long-term viability and its ability to keep rates affordable for all ratepayers.
- 17 <u>Response:</u>

18 Please refer to the responses to BCUC IR1 14.1 and 14.2 for a discussion on the impact to the

19 long-term viability of the utility.



3

IN	FortisBC Energy Inc. (FEI or the Company) Revised Renewable Gas Program Application – Stage 2 (Application)	Submission Date: May 16, 2022
	Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 91

1 15.0 Reference: COST RECOVERIES THROUGH THE LCG CHARGE

Exhibit B-11, Section 8.4, Table 8-1, p. 114

Recovery of RG Program costs from RG Connections customers

4 On page 114 of the Application, Table 8-1, shows that:

Table 8-1: LCG Charge and S&T LC Rider Summary

		Sales Custom	ers		T-Service
	Baseline F	Renewable Gas	Volur	Gas	
	Renewable Gas Blend (for Sales Customers)	Renewable Gas Connections (residential dwellings)	Non-NGV Sales	NGV Sales	T-Service
Renewable Gas Service	No Renewable Gas Sign up Required	Default 100% Renewable Gas	Elect 10% Renewable Gas	Elect 10% Renewable Gas	Elect 10% Renewable Gas
		1	1	1	
LCG Charge (Section 8.4.1)	Not Applicable	Equivalent to CCRC + carbon tax	CCRC + carbon tax +\$7	Renewable Gas weighted average supply cost per GJ less S&T LC rider	Renewable Gas weighted average supply cost per GJ

6

5

 7
 15.1 By setting the LCG Charge for RG Connections customers at the equivalent of 8
 9
 0
 CCRC plus carbon tax, what proportion of the full cost of the RG Connections 9
 0
 2023 and 2030 (using real 2022 dollars) and state all assumptions used.

11

12 Response:

As discussed in the response to BCUC IR1 12.2.3, all charges and costs with the exception of carbon tax embedded in the analysis are in real dollars. For this response, FEI has discounted carbon tax in the same way as in the response to BCUC IR1 12.2.3. Line 14 from the table below

16 sets out the percent recovery for the Renewable Gas Connections service. Line 16 includes the

17 calculation as requested in BCUC IR1 15.2, also in real dollars.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 92

Table 1: Percent Recovery from Renewable Gas Connections Customers

Line		<u>Unit</u>	<u>2023</u>	<u>2030</u>	<u>Reference</u>
1	<u>Real \$</u>				
2	RG Connections Volume	TJ	1,567	11,785	
3	RG Weighted Average Supply Co	\$/GJ	23.52	24.31	
4	CCRA	\$/GJ	3.844	3.844	
5	Carbon Tax	\$/GJ	3.224	7.169	
6	S&T LC Rider	\$/GJ	0.265	3.023	
7					
8	RG Connections Supply Cost	\$000	36,851	286,497	Line 2 x Line 3
9					
10	Recoveries through LCG Charge	\$000	11,074	129,791	Line 2 x (Line 4 + Line 5)
11	Recoveries through S&T LC Rider	\$000	416	35,627	Line 2 x Line 6
12	RG Connections Recoveries	\$000	11,490	165,418	Line 10 + Line 11
13					
14	Percent Recovery	%	31%	58%	Line 12 / Line 8
15					
16	CCRA + Carbon Tax / Supply Cost	%	30%	45%	(Line 4 + Line 5) / Line 3
1	5.2 Please provide the result weighted average supply of	of the cost pe	e division "C0 er GJ" for the	CRC + ca years 202	arbon tax per GJ" by "RG 23 and 2030.
Respon	<u>se:</u>				
Please r	efer to the response to BCUC IR	1 15.1.			



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 93

1	16.0	Reference	e: RENEWABLE GAS CONNECTIONS
2			Exhibit B-11, Section 2, p.3
3 4			Evaluation of Alternative Rate-Setting Mechanisms for RG Connections Customers
5		On page	3 of the Application, FEI states:
6 7		ln gı	the Decision, the BCUC Panel identified three overarching objectives which uided its decision approving the BERC rate methodology, as follows:
8			1. Maximize the recovery of program costs from RNG customers. This
9			objective was laid out in the previous Commission decision. In order to
10			maximize the recovery of program costs, it may not be sufficient to maximize
11			the number of RNG customers, reduce the number of net RNG customer drops
12			or to maximize the volume of RNG sold. The revenue received from
13			biomethane customers must be maximized. This is an important distinction, as
14			there has been discussion in this proceeding of all of these metrics. When
15			considering an appropriate BERC price setting mechanism, the Panel will
16			consider whether the proposed pricing mechanism is expected to maximize
17			revenues. If it isn't possible to make a determination about maximizing
18			revenues, the Panel will then consider whether the proposed pricing
19			mechanism is expected to at least increase revenues relative to what revenues
20			are expected to be in the absence of a change in the BERC pricing
21			methodology. [Bold in the original, emphasis added]
22		16.1 PI	ease discuss whether the objective of maximizing the recovery of program costs
23		fro	om RG customers or maximizing the revenue received from RG customers is still

- 24
- 25

26 **Response:**

applicable now.

The objective of maximizing the recovery of program costs was established as one of the measures of success of the current BERC rate methodology, which was itself established to suit a voluntary (opt-in) Renewable Gas program. Given that FEI could not seek to recover the full cost of the Renewable Gas without driving down voluntary participation in the program, the objective of revenue maximization was intended to shield ratepayers, to the extent possible, from the costs of supply acquisition for an optional program. FEI considers that this objective is still applicable to the Voluntary Renewable Gas service.

A key rationale for maintaining the Voluntary Renewable Gas service is that those customers that have a need for a volume of Renewable Gas greater than the Renewable Gas Blend will have an option to purchase up to 100 percent Renewable Gas and that this will help offset the costs of Renewable Gas for Sales customers generally. In this context, the objective of maximizing revenue is still applicable and FEI's proposed pricing for the Voluntary Renewable Gas service is consistent with this objective.



- However, FEI does not consider that maximizing revenue is an overarching principle that applies 1 2 to the whole Renewable Gas Program. As described in Section 2 of the Application, the existing 3 voluntary program was designed within a policy and regulations context that did not impose or 4 seek to impose significant GHG emission reductions for both the gas system and residential new 5 construction. As described in Section 3 of the Application, the policy environment has changed 6 considerably in recent years. Gas distribution utilities in BC are now being asked to reduce their 7 GHG emissions by 47 percent below 2007 levels, using a variety of means, most notably by using 8 Renewable Gas. In response to these changes, FEI developed new objectives for the program, 9 which are described in the Application as follows:³⁹
- Meet provincial CleanBC targets for GHG emissions and balance Renewable Gas supply and demand;
- Enable compliance with building regulations to maintain energy choice for New Residential
 construction; and
- Meet customer requirements for Renewable Gas to maintain energy choice for existing customers.
- FEI developed the proposed revisions to the Renewable Gas Program to best achieve these objectives. Under FEI's proposals all ratepayers will, upon implementation of the Renewable Gas Blend offering, become Renewable Gas customers and all will contribute toward the cost of Penewable Gas supply
- 19 Renewable Gas supply.
- 20
- 21
- 22 23

25

26

27

28

16.2 For the RG Connection offering, please evaluate the alternative rate-setting mechanisms against the Bonbright rate design criteria, as well as by assessing the impact of each against the following metrics: maximizing revenues from the RG Program, minimizing cross-subsidization from FEI's sales customers, ability to attract new residential customers, keeping rates affordable for all ratepayers and meeting Government policy. To do so, please complete the following table:

	FEI's proposed LCG Charge: CCRC + carbon tax (\$/GJ)	Cost-based rate- setting mechanism: weighted average RG supply cost	Market-based rate setting mechanism: equal to the lowest- cost alternative
	Bonbrigh	nt Criteria	
1. Recovery of the			
revenue requirement			
2. Fair apportionment			
of costs			
3. Efficient price			
signals			

³⁹ Exhibit B-11, Application, Section 7.2, p. 86.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
sponse to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 95

4. Customer			
understanding and			
acceptance			
5. Practical and cost-			
effective			
6. Rate stability			
7. Revenue stability			
8. Avoid undue			
discrimination			
	Additiona	al Criteria	
9. Maximizing			
revenues from the RG			
Program			
10. Minimizing cross-			
subsidization from FEI			
sales customers			
11. Ability to attract			
new residential			
customers			
12. Keeping rates			
affordable for all			
ratepayers			
13. Meeting			
Government policy			

2 Response:

3 The following response is provided by Concentric.

4 As discussed in the response to BCUC IR1 13.2, FEI's proposed new Renewable Gas 5 Connections service balances and satisfies Bonbright's criteria. It is important to recognize that FEI's proposed new Renewable Gas Connections service is cost based. FEI is simply asking the 6 7 BCUC to authorize rates that reflect the rolled-in or average cost of providing two services (i.e., 8 Renewable Gas Blend and Renewable Gas Connections) that are functionally the same and for 9 which differentiated pricing based on the vintage of service initiation would amount to unjust price discrimination. As discussed in the response to BCUC IR1 13.2, regulators, including the BCUC 10 11 and other Canadian regulators, have applied Bonbright's principles in a manner that makes much greater use of rolled-in or average costs than vintaged or incremental costs in utility service 12 ratemaking.⁴⁰ In fact, ratemaking based on the rolled-in cost by customer class has been the 13 dominant form of pricing in North America, even when incremental costs significantly exceeded 14 15 average costs. This is precisely the situation today with the cost difference between Renewable

16 Gas and conventional natural gas.⁴¹

⁴⁰ "Embedded cost of service studies may be the most common form of utility cost allocation study, often termed "fully allocated cost of service studies." Most state regulators require them, and nearly all self-regulated utilities rely on embedded cost of service studies." Lazar, J., Chernick, P., Marcus, W., and LeBel, M. (Ed.). (2020, January). Electric cost allocation for a new era: A manual. Montpelier, VT: Regulatory Assistance Project, p. 69.

⁴¹ As discussed in the introduction, FEI is also proposing that customers who voluntarily sign up to receive additional amounts of RNG pay the marginal cost of service. As explained later, the use of marginal cost pricing for this



- In addition to reflecting a fair apportionment of costs, FEI's proposed Renewable Gas Program 1 2 satisfies other objectives including establishing efficient price signals to new and existing 3 customers, supporting economic efficiency with continued use of FEI's transmission and 4 distribution infrastructure, and, importantly, supporting societal energy policy objectives.
- 5 FEI's revised Renewable Gas Program will maintain throughput on its system while simultaneously satisfying British Columbia's decarbonization requirements. This approach is 6 7 efficient and sound from a policy perspective because it mitigates stranded cost risks due to the 8 fact that billions of dollars of gas infrastructure investment are at risk if FEI enters a rate spiral
- 9 (i.e., attempting to recover prudent investment costs from a shrinking customer/sales base).
- 10 Finally, FEI's revised Renewable Gas Program is consistent with the fact that recent history offers
- 11 dozens of examples of utility regulators relying on rolled-in pricing for existing and environmentally
- 12 compliant energy services, although the two energy forms may have very different costs.

13 With regard to the requested comparison table, Concentric assumes that column 3 "Cost-based 14 rate-setting mechanism: weighted average RG supply cost" means that Renewable Gas 15 Connections service would be charged at a rate equal to the marginal cost of Renewable Gas 16 and that existing customers would have vintaged pricing. Concentric assumes that column 4 17 "Market-based rate setting mechanism: equal to the lowest-cost alternative" means that 18 Renewable Gas Connections service would be priced at the cost of electricity. Please refer to the 19 response to BCUC IR1 13.7, which shows that Renewable Gas should likely be priced at a 20 discount to be roughly equal to the cost of electricity considering the relative efficiencies of the 21 equipment in market today. In addition, the "market-based rate setting mechanism" poses 22 numerous practical challenges including establishing the electric cost benchmark and updating

23 that benchmark.

	FEI's proposed LCG Charge: CCRC + carbon tax (\$/GJ)	Cost-based rate- setting mechanism: weighted average RG supply cost	Market-based rate setting mechanism: equal to the lowest- cost alternative
		Bonbright Criteria	
1. Recovery of the revenue requirement	\checkmark	\checkmark	Possibly
2. Fair apportionment of costs	\checkmark	N	N
3. Efficient price signals	\checkmark	N	N
4. Customer understanding and acceptance	\checkmark	N	Possibly
5. Practical and cost-effective	\checkmark	\checkmark	N

24 The requested comparison of these hypothetical alternatives to FEI's proposal is provided below.

distinguishable service does not constitute unjust discrimination.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 97

	FEI's proposed LCG Charge: CCRC + carbon tax (\$/GJ)	Cost-based rate- setting mechanism: weighted average RG supply cost	Market-based rate setting mechanism: equal to the lowest- cost alternative
6. Rate stability	\checkmark	\checkmark	\checkmark
7. Revenue stability	\checkmark	Ν	Ν
8. Avoid undue discrimination	\checkmark	N	Ν
		Additional Criteria	
9. Maximizing revenues from the RG Program		Ν	Ν
10. Minimizing cross- subsidization from FEI sales customers	\checkmark	Ν	Ν
11. Ability to attract new residential customers		Ν	Possibly
12. Keeping rates affordable for all ratepayers		Ν	Possibly
13. Meeting Government policy	\checkmark	\checkmark	\checkmark



1	17.0	Refere	ence:	RENEWABLE GAS CONNECTIONS
2 3 4				Exhibit B-11, Section 7.4.2, p. 100, BC Hydro Public EV Fast Charging Service Rates Application, Decision to Order G-18-22, Executive Summary, pp. i-ii
5				Level Playing Field
6		On pa	ige 100	of the Application, FEI states:
7 8 9 10			In orde reduce Gas C existin	er to provide for equity between residential dwellings who are mandated to emissions and those who are not, customers served under the Renewable connections tariff will pay the same effective rate for their gas service as g customers in similar rate schedules.
11 12		In its d made	decision the follo	on BC Hydro Public EV Fast Charging Service Rates Application, the BCUC owing findings, at pages i-ii:
13 14 15 16			The Pa to an u on ach be cor	anel finds that the subsidized rates proposed by BC Hydro directly contribute ineven playing field for exempt-utilities which may have a detrimental impact hieving the objectives of increasing EV adoption in BC, and therefore would intrary to the public interest of all British Columbians
17			In mak	ing this determination, the Panel finds that:
18 19 20 21			• TI w po se	ne equilibrium price for supply and demand in the competitive marketplace ill be distorted with BC Hydro's EV charging rate with subsidization, ptentially to the point where other suppliers are unable to continue providing ervice or preventing new suppliers from entering the market.
22 23 24 25 26 27 28		17.1	Please custon carbor regula some A TES	e discuss whether the rates proposed by FEI for the RG Connections hers could contribute to an uneven playing field amongst the various low- n energy providers competing in the market, some of which are being ted by the BCUC (BC electric utilities and Stream B TES providers) and of which are being exempt from BCUC regulation (municipal utilities, Stream b, Micro TES and Strata Corporations TES).
29	Resp	onse:		
~ ~				

FEI's proposed Renewable Gas Connections service will not contribute to an uneven playing field
 amongst low-carbon energy providers. In fact, as explained below, the playing field is currently
 tilted away from gas service including Renewable Gas in favour of electricity and other
 technologies.

FEI considers there to be a fundamental distinction between: (1) providers of the *fuel* which is then converted to heat (i.e., gas and electric utilities, such as FEI, PNG, FBC and BC Hydro); and (2) providers of *heat* which has been produced from fuel (i.e., regulated and exempt TES providers and municipal utilities). As such, homes, buildings and TES providers rely on a source fuel to



1 create heat. As explained in the response to BCUC IR1 13.1, with the exception of limited waste

heat opportunities, electricity and gas (including Renewable Gas) are the primary source fuels
used by consumers to produce heat. Therefore, any comparison between FEI and low-carbon

4 heat providers is necessarily grounded in the comparison of the predominant underlying fuel

- 5 source (i.e., the energy commodity) namely, electricity and gas.
- 6 Of these two fuel sources, the playing field is already clearly tilted in favour of electricity as the 7 heating fuel:
- 8 1. BC Hydro, the provincial government and the federal government offer significant subsidies and incentives to customers installing electric heat pumps, which are much greater than the relatively modest incentives offered by FEI on certain high-efficiency furnaces and boilers. For example, the BC Hydro website currently indicates that a potential rebate of up to \$11,000 is available for installation of electric heat pumps.⁴²
- To further incentivize the use of electric heating, the provincial government increased the
 PST on gas appliances from 7 percent to 12 percent, while removing the PST on heat
 pumps.
- BC Hydro's launch of an extensive marketing effort to advertise its service based on these
 incentives and subsidies to among other things convert from natural gas to heat pumps or
 replace gas appliances with electric appliances. By contrast, while FEI is able to advertise
 its services, the provincial government has not made funds available to emphasize that
 Renewable Gas is a viable alternative low carbon solution.
- 4. While Renewable Gas forms part of the CleanBC Roadmap, the provincial government
 does not subsidize or incentivize outcomes consistent with the increased reliance on
 Renewable Gas in the future.
- 5. As outlined in Section 3.5 of the Application, local government policies, bylaws and regulations have changed to favour electric-only energy solutions. These local government measures were enacted with relative haste, departing from the typical building code adoption process whereby new codes are implemented after sufficient time has elapsed to allow the market time to adapt and provide compliant solutions.
- 29 6. BC Hydro, the entity that provides electricity to most FEI customers, is a crown utility and 30 as such is owned by the government and people of British Columbia. There are significant advantages inherent in this structure that do not inure to FEI. This further contributes to 31 the unlevel playing field to the benefit of BC Hydro. BC Hydro, with its Crown status, has 32 33 access to a provincial funding backstop that it sometimes uses to recover costs, keep its 34 rates low and minimize its borrowing costs. The provincial government's 2019 decision to 35 write-off BC Hydro's rate smoothing deferral account is one recent example of BC Hydro 36 being able to utilize taxpayers to cover costs. On February 14, 2019, the provincial

⁴² The BC Hydro website indicates that a \$3,000 rebate is available from BC Hydro, a \$3,000 rebate is available from CleanBC, and potentially another \$5,000 rebate may be available from a Canada Greener Homes program.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 100

government issued a news release stating that... "as part of transitioning to enhanced oversight, government has accepted a recommendation from the review for BC Hydro to stop using the rate-smoothing regulatory account and to write off its balance to zero in 2018-19. This will limit rate increases and relieve ratepayers of the burden of directly paying off \$1.1 billion in deferred costs over the next five years."

5 6

1 2

3

4

7 The following response is provided by Concentric.

8 The preamble to this series of IRs refers to subsidized rates. To be clear, as discussed in the 9 responses to BCUC IR1 13.2 and 16.2, FEI's proposed Renewable Gas Connections service is 10 cost based. Consistent with long-standing ratemaking principles applied by regulators throughout 11 North America, including the BCUC, FEI's proposed pricing reflects the rolled-in or average cost 12 of procuring a natural gas portfolio to comply with government policies. Further, and notably, there 13 is no difference in the ratemaking approach proposed here by FEI and that employed to recover 14 electricity costs. As is the practice for electric commodity rates, FEI gas costs are averaged and 15 collected from similarly situated customers receiving the same service through the same facilities 16 regardless of when they commenced service. To suggest that new residential customers solely 17 bear the cost of the government's GHG emission reduction mandate ignores the fact that the 18 cause of the cost is not due to the customer, but instead flows from the mandate.

19 If the BCUC rejects FEI's proposal and instead establishes vintaged rates where two similarly 20 situated customers receive the same service through the same facilities but are charged different 21 rates based on when they commenced service, a case of unjust discrimination is created that will 22 further tilt the playing field toward electricity. As a result, new residential customers will likely 23 choose electricity as the means of heating. Such pricing is not technology agnostic, and will result 24 in inefficient outcomes.

- 25
- 26

27

32

- 17.2 Please discuss whether FEI's proposal to set the rate of a 100 percent low-carbon
 offering for the RG Connections customers at the level of conventional natural gas
 could result in barriers to entry for new low-carbon energy suppliers wanting to
 enter the low-carbon energy market.
- 33 Response:

34 Please refer to the response to BCUC IR1 17.1.

35 The following response is provided by Concentric.

Any cost-based rate may act as either a barrier to new low-carbon options or a stimulus for new
 low-carbon options. However, that does not provide a justification for departing from cost-based
 ratemaking or traditional cost of service principles.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 101

- 1 2 3
 - 4 17.3 To the extent that FEI's partial cost recovery for RG Connections customers may 5 contribute to an uneven playing field amongst all low-carbon energy providers, 6 please discuss the risk that FEI's proposal could be detrimental to achieving 7 provincial GHG emissions reduction targets, and therefore may be contrary to the 8 public interest of all British Columbians.

10 **Response:**

FEI's rolled-in cost-based proposal supports and accelerates achievement of objectives in the CleanBC Roadmap. While the CleanBC Roadmap proposes that all new residential buildings be net zero by 2030, FEI's proposal will assure achievement of this objective upon implementation, well before 2030. FEI's proposal does this without contributing to the uneven playing field that already exists amongst low-carbon energy providers. Please refer to the response to BCUC IR1 17.1.

17



1	18.0	Referer	nce:	PROPOSED RENEWABLE GAS PROGRAM	
2 3				Exhibit B-11, Section 5.3.2, p. 62, Section 7.3.2, p. 92–93, Section 7.3.3, p. 93, Section 7.4.2, p. 100	
4				Renewable Gas Connections	
5		On page	es 92 t	o 93 of the Application, FEI states:	
6 7 8		(F r	C. Re Reside resider	newable Gas Connections: This alternative would provide all New ential Connections with Renewable Gas to meet GHG restrictions on new ntial construction FEI considered three options for this service:	
9 10 11		((1) 100 wo in t	D percent Renewable Gas to All New Residential Connections: This option uld provide 100 percent renewable gas to all New Residential Connections he province.	
12 13 14		((2) Les per Ne	ss than 100 Percent Renewable Gas: This option would designate a centage of Renewable Gas at less than 100 percent Renewable Gas to w Residential Connections.	
15 16 17 18		((3) On per onl cor	ly Municipalities with Restrictive Policies: This option would provide 100 rcent (or a lesser percent) Renewable Gas to New Residential Connections y in municipalities with restrictive policies in place for new residential instruction.	
19		Further on page 93 of the Application, FEI states:			
20 21 22		/ (As note only op - met t	ed above, FEI considered three options for Alternative C. FEI concludes that ption 1 – 100 percent Renewable Gas for all New Residential Connections the identified need.	
23 24 25 26		18.1 F a v f	Please allow N value b actors	e provide the pros and cons for the option, similar to Option (2) above, to New Residential Connections a choice of Renewable Gas blend (e.g., any between 0-100%) that is tied to the property with specific considerations for including, but not limited to:	
27			a.	Who is responsible to meet the GHG emission policy,	
28			b.	Who is responsible to enforce the GHG emission policy,	
29			C.	FEI's flexibility in response to customer needs,	
30 31			d.	FEI's flexibility in response to future environmental regulation changes,	
32	Resp	onse:	_		
33	The Renewable Gas Connections service enables compliance with a patchwork of building				

regulations in order to maintain energy choice for new residential construction in BC. New building
 GHG emission regulations are set and enforced by local governments. All new home builders
 must demonstrate to the local government how their new home complies with applicable local


- 1 regulations, as a building permit is not granted until the homebuilder can demonstrate such
- 2 compliance. Note that the eventual end use customer (home owner) will rarely be the one making
- a decision or determination on GHGi or heating/energy sources. Rather this decision is typically
- 4 made by the builder or developer in order to receive a building permit.

5 Demonstrating compliance is straightforward when a sufficiently low carbon energy type such as 6 electricity or Renewable Gas is used. The homebuilder must have a building energy and 7 emissions model developed that calculates a building's energy consumption, the emissions 8 associated with each energy's function in the building, and the size of the building. While 9 percentages of Renewable Gas of less than 100 percent may theoretically satisfy local GHG 10 emissions regulations, the following issues prevented FEI from adopting this approach as part of 11 the proposed offering:

- 12 1. Lack of Uniformity/Standardization of the Step Code and GHGi Targets: As described 13 in Section 3.5 of the Application, the implementation of GHG emission targets for 14 residential new construction has resulted in a complex patchwork of regulations across 15 BC. The targets vary substantially from 3-6 kgCO2e/m2, with some governments 16 indicating a desire to move to 1 kgCO2e/m2. Table A-2, in Appendix A of the Application 17 provides some of the current requirements, providing evidence that there is no consistency 18 in approach or adoption of GHGi targets across FEI's service territory. Such variability 19 makes it difficult for homebuilders to know what percentage of Renewable Gas would 20 consistently satisfy local requirements and necessitate a "one-size-fits-all" approach. The 21 uncertainty that this creates means that homebuilders would need to spend both time and 22 money to determine what percent Renewable Gas blend would allow their new building 23 construction to proceed. In practice, given the uncertainty of demonstrating compliance 24 with local regulations when using some percentage of Renewable Gas less than 100 25 percent, homebuilders would likely either: (1) select 100 percent Renewable Gas of their 26 own accord; or (2) select electricity instead.
- 27 2. Complexity and Uncertainty of Achieving the Step Code GHGi targets: As described 28 in Section 1.5 of Appendix A, FEI examined the complexity of achieving the Step Code 29 targets with additional GHGi measures. Notwithstanding the variation in GHGi targets around BC, FEI found that the percent of Renewable Gas required to meet any particular 30 31 GHGi target would vary due to a number of factors such as building size, shape, or climate 32 zone. For example, FEI found that the Renewable Gas blend required to meet a 33 1kgCO2e/m2/year GHGi target could range between 86 and 100 percent. This variability 34 once again makes it extremely difficult for the homebuilder to establish the precise 35 percentage of Renewable Gas required to meet the local government regulation during 36 the home design and permitting stage. Once again, homebuilders would likely choose to 37 avoid this cost and uncertainty, and opt for a different solution.
- 38 3. Uncertainty on who will enforce Step Code GHGi targets: It is not known how GHGi
 39 oversight or enforcement would work if municipalities are granted the authority to adopt
 40 GHGi targets in the Step Code. Further, it is not known what recourse or mechanism a
 41 builder would have to advocate for their solution. At present it appears as though a builder



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 104

would have to justify their solution to the individual local government staff. This could
 create challenges if there were percentages of Renewable Gas lower than 100 percent as
 municipal staff will likely not have the level of knowledge necessary to evaluate buildings
 with varying levels of Renewable Gas. 100 percent Renewable Gas for all local
 governments is therefore a simpler solution.

6 Ultimately, the option described in the question would create difficulties and uncertainty for 7 homebuilders trying to satisfy local government GHGi targets. Further, homebuilders will not know 8 in advance of performing at least one, and perhaps several costly modeling iterations, what 9 percentage of Renewable Gas will be required when applied to the particular home, located in a 10 particular geographic/climatic location, with its particular size, shape, orientation, and specific 11 window to wall ratios. The only gas-based option that ensures compliance across British Columbia 12 is an offering using a mandatory 100 percent Renewable Gas.

13 14 15 16 If BCUC directs FEI to implement the option to allow New Residential 18.1.1 17 Connections a choice of Renewable Gas blend at any value between 0 18 to 100%, please explain how the other customers could be impacted 19 through the LCG Charge and the S&T LC rider assuming the price LCG 20 Charge for Renewable Gas Connections is: 21 a. Set to match conventional natural gas rate (e.g., CCRC plus 22 carbon tax). 23 b. Set to match the approved Biomethane Energy Recovery 24 Charge (BERC) rate (e.g., CCRC plus carbon tax plus \$7 25 premium), 26 c. Set to match the weighted average cost of renewable gas. 27 28 Response:

For the reasons described in FEI's response to BCUC IR1 18.1, it would not be feasible to implement a service where New Residential Connections were able to select a blend of Renewable Gas for the life of the building. Nonetheless, the following describes the impact of the three pricing options listed in the IR in the hypothetical scenario that New Residential Connections were able to select a blend of Renewable Gas:

 Rate set to match conventional natural gas rate: For the reasons discussed in the response to BCUC IR1 18.1, with this rate, New Residential Connections in jurisdictions with GHGi regulations would likely only select 100 percent Renewable Gas if they chose to use gas. As more jurisdictions adopt more GHGi regulations, this option will, in effect, be the same as FEI's proposed Renewable Gas Connections service. Over the long term, this rate would produce the best outcome for other customers, the most equitable access



3

4

5

- to the gas system, and a positive contribution towards provincial GHG emission policy, specifically the policy of achieving zero carbon new buildings by 2030. Moreover, new residential customers would continue to have the option to connect to the existing gas system, which would help mitigate rate increases, and maximize utilization of the gas system as a tool for clean energy delivery in BC.
- 6 2. Rate set to match the approved Biomethane Energy Recovery Charge: With a rate 7 set to match the approved BERC rate, homebuilders will likely strongly, if not exclusively, 8 favour electricity and electric heat pump technology, unless there were a significant 9 concern about the electric system capacity in a specific location, which underscores the 10 benefits of maintaining energy choice in British Columbia. This rate is well in excess of a 11 level that would approximate cost parity between gas and electricity service. Please refer 12 to the response to BCUC IR1 13.7. Under such a scenario, other customers would be 13 negatively impacted by rising rates, attributable to both decreasing load on the gas system 14 and increasing Renewable Gas supply costs. Please refer to the responses to BCUC IR1 15 13.2, 13.4, and 14.1 for further discussion.
- 16 3. Rate set to match the weighted average cost of Renewable Gas: If the rate were set 17 to match the weighted average cost of Renewable Gas, it is most likely that new 18 homebuilders would choose not to connect to the gas system, unless there is a significant 19 concern about the electric system capacity in a specific location, which underscores the 20 benefits of maintaining energy choice in British Columbia. Under such a scenario, other 21 customers would be negatively impacted by rising rates, attributable to both decreasing 22 load on the gas system and increasing Renewable Gas supply costs. Please refer to the responses to BCUC IR1 13.2, 13.4, and 14.1 for further discussion. 23

24 With all three of the above options, there would be no impact to other customers' LCG Charges 25 as the other LCG Charges for Voluntary Renewable Gas customers are determined irrespective 26 of the LCG Charge or recoveries from the Renewable Gas Connections offering. Generally 27 speaking, the closer the LCG Charge is set to the average Renewable Gas acquisition cost per 28 GJ, regardless of connection type, the lower the S&T LC rider becomes. However, as discussed 29 in option 3, a decrease in connections causes a loss in throughput, and reduction in customers, 30 over which to spread both system fixed costs and Renewable Gas costs. FEI's other charges, 31 including delivery, demand, and basic charges, will increase as there will be less volume and 32 customers over which to recover FEI's transmission and distribution system costs. Also, FEI is 33 enabled under regulation to acquire Renewable Gas up to 30 PJ with the objective to reduce GHG 34 emissions. Since FEI will continue to acquire Renewable Gas up to this limit, the S&T LC rider 35 will also increase as these Renewable Gas costs are recovered over lower throughput, resulting 36 in higher bills for all customers.

- 37
- 38
- 39



- 1 On page 100 of the Application, FEI states: 2 FEI is proposing that all New Residential Connections will receive 100 percent 3 Renewable Gas, where New Residential Connections are all residential dwellings 4 [footnote omitted] served by a service line installed after the date of implementation 5 of the service, including new construction activity, conversions and retrofits. 6 On page 62 of the Application, FEI states: 7 Ultimately, most conversion customers are willing to take Renewable Gas service 8 so as long as there is very little or no cost to them. Very few of this customer type 9 are aware of Renewable Gas as an energy solution or its associated benefits, and 10 consider that the attributes of conventional natural gas meet their expectations. 11 FEI's proposed changes to the Renewal Gas Program have been designed to 12 address these barriers by, in particular, shifting away from an opt-in only structure. 13 18.2 Please explain why conversions and retrofits are also proposed to receive 100
- 1318.2Please explain why conversions and retrofits are also proposed to receive 10014percent Renewable Gas, considering the applicability of potentially varying15regulations (e.g., municipal, local Government) for new builds, conversions and16retrofits.
- 17

FEI clarifies that *any* activity that drives the need for a new residential service line is eligible for the Renewable Gas Connections service. New construction (i.e., greenfield, tear down and rebuild etc.) will require a new service line. A new service line may also be required if a customer undertakes changes to their building or equipment, such as adding a gas appliance, removing an existing appliance and installing a new gas appliance, or converting an existing appliance from another fuel to gas (e.g., changing a barbeque from propane to gas). If a new service line is required, then that customer will be a Renewable Gas Connections customer.

- The defining feature for the applicability of the Renewable Gas Connections service is the need for a new service line, whether it be for new residential construction, rebuild, retrofit or conversion, for a number of reasons:
- As all new residential construction would require a new service line, it aligns with existing
 and pending local and provincial regulations that limit emissions in new residential
 construction.
- A new service line is an objective and clear criteria that does not require subjective
 decision making or any determination on the part of FEI in respect to what qualifies as
 "new construction".
- 35 3. FEI will be able to designate customers with a new service line in its data systems and
 36 design processes to manage the new offering.

FORTIS BC

FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 107

- 4. GHGi regulations at the local government level are complex. It is difficult for FEI to know 1 2 if a particular connection is subject to GHGi regulations via a permitting process. For 3 example, a greenfield construction may be subject to GHGi regulations, but not a tear 4 down and rebuild. The City of Vancouver and provincial government are also 5 contemplating changes to bylaws that can affect existing buildings. If these changes 6 include GHGi or other emission regulations for customers converting or retrofitting their 7 home, it will be challenging for FEI staff to determine if that customer is impacted by such 8 a rule.
- 5. Determining the scope and scale of a renovation or conversion on a case-by-case basis
 and whether that renovation or conversion requires a building permit that is subject to a
 GHGi requirement is not practical given FEI's role in the construction process, and
 associated resources that would be required to undertake such an analysis.
- 6. From FEI's perspective, new construction, conversion/retrofit customers are the same in
 that they will use a variety of gas appliances and they require a new service line. Treating
 a customer who requires a new service line because of new construction differently, from
 the perspective of their gas supply, then a customer that requires a new service line
 because of a conversion or retrofit, would be discriminatory.
- 18

23

192018.2.121Bease provide the forecast proportion of demand from the Renewable21Gas Connections that pertains to conversions and retrofits, as opposed22to new builds, including any assumptions made.

24 **Response:**

Please refer to the response to BCSEA IR1 11.1 where FEI updated the forecast of RenewableGas demand from new residential customers.

The table below provides the forecast residential Renewable Gas demand for years 2021 to 2032 broken out between conversion or retrofit customers (shown as Conversion Customers) and new build customers (shown as Remainder). In preparing the table, FEI has estimated that approximately 17 percent of residential customer additions are conversion or retrofits.

31 32

Table 1: Forecast Residential Renewable Gas Demand for Conversion Customers and New BuildCustomers (PJ)

		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
	Demand - Renewable Gas Connections	0.0	0.0	1.6	3.1	4.6	6.0	7.5	8.9	10.4	11.8	13.2	14.6
	Demand - Conversion Customers	0.0	0.0	0.3	0.5	0.8	1.0	1.3	1.5	1.7	2.0	2.2	2.5
33	Demand - Remainder	0.0	0.0	1.3	2.5	3.8	5.0	6.2	7.4	8.6	9.8	11.0	12.2
55													

34

35



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 108

- Please explain why conversions and retrofits are proposed to follow the 1 18.2.2 2 same pricing scheme with reference to the price sensitivities in 3
 - comparison to new build customers.

- 6 Please refer to the response to BCUC IR1 18.2. FEI has no specific insight into the price
- 7 sensitivities of these homeowners as compared to new build customers.

8



1	19.0	Referen	nce:	RENEWABLE GAS CONNECTIONS
2 3				Exhibit B-11, Section 3.5.1, p. 34, Section 3.5.2, p. 35 and Section 7.4.2, p. 100
4				Permanency of the RG Connections offering
5		On pag	e 34 of	the Application, FEI states:
6 7 8 9			Howeve municip nature constru	er, with FEI's current Renewable Gas Program, FEI cannot satisfy bal requirements because of the lack of permanency due to the voluntary of the program. As such, FEI is not able to provide service to newly acted residential homes in the DNV.
10		On pag	e 36 of	the Application, FEI also states:
11 12 13 14 15			Further lack of prograr city pla Gas so	, city planners currently favour electricity-based solutions, often reflecting a understanding at the planning level or a concern about the existing n's lack of permanence as discussed in Section 3.5.1 above. As a result, nners are often resistant to builders or developers proposing Renewable lutions for their buildings.
16		On page	e 100 c	of the Application, FEI also states:
17 18 19 20 21		: : : : : :	All Rer served the buil its life (the sys	newable Gas Connections will be designated as low carbon and will be by a tariff that is tied to the building, rather than the customer. In this way, lding remains on a gas service receiving 100 percent Renewable Gas for (as opposed to the service tied to the individual customer who may leave tem at any time.)
22 23 24 25 26		19.1	Please Connec duration require	confirm, or otherwise explain, that a key requirement of the proposed RG ctions offering is the attachment of the tariff to the building for its life n, without which the new offering would not meet municipal GHGi ments and eventually those of the BC Building Code.
27	<u>Respo</u>	nse:		
28	Confirm	ned.		
29 30				
31 32 33 34		19.2	Please expect	provide the expected life of a new residential build. For example, would FEI that a new residential build would have a useful life of at least 50 years?



2 FEI's estimate of the residential teardown rate in its 2021 Conservation Potential Review (CPR)

3 suggests that housing turnover in BC occurs at a rate of approximately 2 percent per year. This

4 amounts to an expected life of approximately 50 years for residential buildings.

5 However, new residential buildings comprise a broad range of building types, including detached

6 single family homes, townhouses, quadruples, walk up apartment buildings, and high rise condo

7 apartment buildings. Different building techniques and materials are often used across and within

8 these different building types; therefore, the expected life of new residential buildings often varies.

9 Further, there is generally a difference between a residential building's structural lifespan and its

10 marketplace lifespan. For example, a residential building may be demolished prior to the end of

11 its useful structural lifespan due to a change in ownership. In this respect, the turnover rate of

12 BC's housing stock may provide some useful, albeit potentially imprecise, information regarding

13 the expected life of new residential buildings.

Finally, there can also be a difference between a residential building's expected life and the life of the building's heating appliances. It is ultimately the homeowner's selection of appliances, including the energy type of those appliance, which determines whether or not the home will make active use of the gas system. While the rate for Renewable Gas Connections service may be tied to the home, there is no guarantee that the homeowner will not (at some future date) discontinue gas service and convert to electric appliances.

- 20
- 21
- 22
- 2319.3Considering that FEI will be obligated to sell 100% RG to all RG Connections24customers for the lifetime of all the buildings connected, please discuss the long-25term RG supply risk that FEI could face once the existing 20-year supply contracts26have expired in light of the uncertainty related to the competition for RG supply27and climate policies.
- 28

29 Response:

30 While there may be some degree of supply uncertainty in the future, the convenience of renewing

31 supply contracts with an existing off-taker is an advantage for FEI in the future and helps mitigate

32 this risk. FEI may, in fact, be able to secure better pricing as assets are paid down in the future.

Further, increased demand for Renewable Gas service due to climate policy will be balanced with
 increased supply and should ultimately result in a net neutral risk in the future. FEI is also

35 confident that the Renewable Gas supply market will continue to grow. The *BC Renewable and*

36 Low-Carbon Gas Supply Potential Study provides the following outlook:⁴³

⁴³ Evint Consulting and Canadian Biomass Energy Research Ltd., BC Renewable and Low-Carbon Gas Supply



- Canadian sourced supply of RNG derived from anaerobic digestion alone could account for 70 PJ by 2030.
- Renewable and low-carbon gases in BC could be as high as 444 PJ by 2050.
- 590 PJ of renewable natural gas from anaerobic digestion is available for import from the
 United States.

6 When all sources of Renewable Gas are considered, FEI is confident that there is ample supply7 to meet the estimated short-term demand by 2030 and the long-term demand by 2050.

- 8 Finally, other sources of Renewable Gas, such as hydrogen, further mitigate the long-term supply9 risk.
- 10
 11
 12
 13 19.3.1 Please discuss how FEI would address a hypothetical situation, in 20 years or more, where FEI does not have enough RG supply to meet its obligations to the RG Connections customers and what impact this might

18 **Response:**

16

17

19 FEI does not foresee a scenario where Renewable Gas supply would be insufficient for existing

have on having the RG service tied to the building?

20 Renewable Gas Connections customers for the following reasons.

First, as discussed in the response to BCUC IR1 2.1, there is ample supply within the 20-year horizon. Renewable Gas will also expand into new technologies and feedstocks such as hydrogen which will increase the potential available volumes.

Second, Renewable Gas will not cease production at the end of each 20-year contract and FEI is confident that, based on its reputation and the convenience of renewing agreements, a high percent of existing suppliers will opt to renew with FEI. Even in the absence of such renewals, FEI will have the opportunity to re-contract supply from a greater number of potential suppliers.

Ultimately, both gas and electric utilities face long-term supply questions for both conventional and renewable energy. At the turn of this century, it was a widely held belief that North America was running out of conventional natural gas. This was mitigated by changes in technology and an opening up of new resources. A similar risk occurs in electricity distribution, particularly when

32 electric utilities are also facing calls for all new energy supply to be renewable only. Further, as

Potential Study, January 28th, 2022, p. 66: <u>https://www.cdn.fortisbc.com/libraries/docs/default-source/news-events/bc-renewable-and-low-carbon-gas-supply-potential-study-2022-03-11.pdf</u>.



	FortisBC Energy Inc. (FEI or the Company)	Submission Date:
TM	Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
	Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 112

energy policy has been changing rapidly in recent years, FEI cannot foresee how the energy
 policy landscape may or may not affect its service offerings 20 years or more into the future.

At a high level, in the event of an unexpected supply issue, FEI would take steps to mitigate potential shortfalls as described in the response to BCUC IR1 10.2, and accelerate adoption of hydrogen for industrials, thus taking pressure off the supply of Renewable Gas for new residential connections.

- 7
- 8
- 9
- 1019.4Please discuss any other risks to having the tariff attached to the building for its11life duration instead of having it attached to the customer, as is typically the case.
- 12

13 **Response:**

- 14 FEI does not see any additional risks associated with having the tariff attached to the building for
- 15 its life duration, as opposed to having it attached to the customer.

16 FEI cannot foresee a policy change rendering the proposed Renewable Gas Connections service

17 unnecessary or obsolete, and believes that the probability of a policy change of this kind is low,

18 as all levels of government are working towards reducing GHG emissions. Please refer to the

19 response to City of Richmond IR1 3.2 for a discussion on the permanency of Renewable Gas

20 Connections service.



1	20.0	Refer	ence:	PROPOSED TARIFF REVISIONS
2 3				Exhibit B-11, Appendix D-2, New FEI RS 1 PLC, RS 2 PLC, and RS 3 PLC; Section 7.4.2,
4 5 6				p. 100; FEI Application for Approval of the System Extension Fund Decision to Order G-338-20Applicability of RG Connections Rate Schedules
7 8		In App 1PLC	pendix D as follov	-2 of the Application, FEI describes the applicability of the Rate Schedule vs:
			Applicab	le
9			This Rate Carbon G approved metered single me disconne	e Schedule is only available to and is mandatory for Permanent Connection Low Bas Service Customers for firm Gas supplied at one Residential Premises for use in appliances for all residential applications in single-family residences, separately single-family townhouses, rowhouses, condominiums, duplexes and apartments and etered apartment blocks with four or less apartments. Customers who are currently cted are not eligible to enrol.
10			1. Perma Energy and m	nent Connection Low Carbon Gas Service Customers are connected to the FortisBC y System by a service line installed on or after the effective date of this rate schedule ust take 100% Low Carbon Gas for their Gas commodity.
11 12 13		20.1	Please tariff is for Rat	explain where, in the proposed rate schedule, FEI provides clarity that the tied to the building for its life duration. Please provide similar explanations e Schedules 2PLC and 3PLC.
14 15 16			20.1.1	If FEI were directed to provide this condition in its rate schedule, please provide the draft wording.
17	<u>Respo</u>	onse:		
18 19 20	To ma followi Gener	ake it c ing und al Term	lear that erlined r ns and C	the service is tied to the building for its life duration, FEI proposes the evisions and words to be added to the proposed definitions in FEI's Tariff onditions (GT&Cs), as follows.
21		Perm	anent C	onnection Low Carbon Gas Service
22 23 24 25			Means <u>permar</u> manda Rate S	firm Gas Service <u>which must consist</u> of 100 percent Renewable Gas <u>on a</u> <u>nent basis for the life of the premises served</u> that is exclusive to and tory for Permanent Connection Low Carbon Gas Service Customers under chedules:
26			(a) 1PL	C for Residential Permanent Connection Low Carbon Gas Service;
27			(a) 2PL	C for Small Commercial Permanent Connection Low Carbon Gas Service;
28 29			(b) 3PL and	C for Large Commercial Permanent Connection Low Carbon Gas Service;
30 31			(c) 5PL	C for General Firm Permanent Connection Low Carbon Gas Service.



3

4

5

6

7

FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 114

Permanent Connection Low Carbon Gas Service Customer

Means a Customer taking Gas Service for Residential Premises or Eligible Commercial Premises that are connected to the FortisBC Energy System by a service line installed on or after the effective date of the Permanent Connection Low Carbon Gas Service and whose Gas Service must consist of 100 percent Renewable Gas on a permanent basis for the life of the premises served.

8 FEI also proposes to insert the underlined words below in each rate schedule under the

9 Applicability section as follows:

Rate Schedule	Proposed Wording
RS 1PLC	Applicable This Rate Schedule is only available to and is mandatory for Permanent Connection Low Carbon Gas Service Customers for firm Gas <u>consisting of 100 percent Renewable</u> <u>Gas on a permanent basis for the life of the premises served</u> , supplied at one Residential Premises for use in approved appliances for all residential applications in single-family residences, separately metered single-family townhouses, rowhouses, condominiums, duplexes and apartments and single metered apartment blocks with four or less apartments. Customers who are currently disconnected are not eligible to enrol.
RS 2PLC	Applicable This Rate Schedule is only available to and is mandatory for Permanent Connection Low Carbon Gas Service Customers with a normalized annual consumption at one Eligible Commercial Premises of less than 2,000 Gigajoules of firm Gas, for firm Gas consisting of 100 percent Renewable Gas on a permanent basis for the life of the premises served, for use in approved appliances in commercial, institutional or small industrial operations. Customers who are currently disconnected are not eligible to enrol.
RS 3PLC	Applicable This Rate Schedule is only available to and is mandatory for Permanent Connection Low Carbon Gas Service Customers with a normalized annual consumption at one Eligible Commercial Premises of greater than 2,000 Gigajoules of firm Gas, for firm Gas consisting of 100 percent Renewable Gas on a permanent basis for the life of the premises served, for use in approved appliances in commercial, institutional or small industrial operations. Customers who are currently disconnected are not eligible to enrol.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 115

Rate Schedule	Proposed Wording
	2.1 Description of Applicability
RS 5PLC	This Rate Schedule only applies to and is mandatory for the sale of firm Gas, <u>consisting</u> of 100 percent Renewable Gas on a permanent basis for the life of the premises <u>served</u> , no portion of which may be resold, through one meter station to a Permanent Connection Low Carbon Gas Customer at one Eligible Commercial Premises. For greater certainty, firm Gas service under this Rate Schedule means the Gas FortisBC Energy is obligated to sell to a Customer on a firm basis subject to interruption or curtailment pursuant to Sections 10 (Default for Bankruptcy) and 13 (Force Majeure) of Rate Schedule 5 and the General Terms and Conditions of FortisBC Energy.

2 FEI retains in its customer information system the date upon which a service line is installed 3 connecting a premises to FEI's distribution system. If the Application is approved as proposed by 4 FEI, then all new Residential Premises or Eligible Commercial Premises connecting to the FEI 5 system by a service line installed on or after the effective date of the Permanent Connection Low 6 Carbon Gas Service will only be eligible to receive Permanent Connection Low Carbon Gas 7 Service from FEI under the appropriate PLC rate schedule. As such, in FEI's customer information 8 system, the Permanent Connection Low Carbon Gas Service premises will only be eligible for 9 service under the applicable Permanent Connection Low Carbon Gas Service rate schedules (RS 10 1PLC, RS 2PLC, RS 3PLC or RS 5PLC). Once a Permanent Connection Low Carbon Gas Service 11 is established for that premises it remains permanent for that premises, and any customer (initial 12 or subsequent customer for the life of that premises) requesting gas service at that premises 13 (entering into a Service Agreement) will only be able to be served using an applicable PLC rate 14 schedule. 15 16 17 18 On page 100 of the Application, FEI states: 19 FEI is proposing that all New Residential Connections will receive 100 percent 20 Renewable Gas, where New Residential Connections are all residential dwellings 21 served by a service line installed after the date of implementation of the service, including new construction activity, conversions and retrofits. [Emphasis added] 22 23 20.2 In the case of a retrofit of a residential building already connected to the FEI 24 system, please clarify how FEI proposes to capture the retrofit building in the 25 appropriate RG Connections rate schedule if the service line is not installed after 26 the date of the implementation of the rate schedule. 27



2 The case of a retrofit of a residential building already connected to the FEI system will not be 3 covered under the Renewable Gas Connections service. As noted, the Renewable Gas Connections service only applies to residential customers who have a service line installed after 4 5 the date of implementation of the service. In other words, homes that are not already connected 6 to the gas system. With respect to retrofits, this means that, in practice, the New Residential 7 Connections service only apply to situations where the retrofitted home requires a new service 8 line which would indicate that the home at present is heated by an alternative energy type such 9 as wood, oil, propane or electricity.

- 10 11 12
- 1320.3Please discuss whether the applicability of the RG Connections offering may be14too broad considering it is linked with the implementation date of the rate schedules15rather than with the date on which the new residential buildings must comply with16a stringent GHGi target.
- 17

18 **Response:**

19 The proposed Renewable Gas Connections service is appropriate. The alternative of linking the

applicability date to the date or dates the regulation comes into effect would be burdensome for

21 FEI to administer, and potentially complex and confusing for FEI's customers and local building

22 authorities to understand and navigate.

23 As described in in Section 3.5.1 of the Application, regulations and policies vary by local 24 government, and as between specific building projects. Making the applicability of the proposed 25 offering specific to each jurisdiction and building project, and timing implementation according to 26 when the regulation(s) comes into effect, is extremely complex. GHGi requirements may be set 27 by local government at the permit level for a specific home or development, or be required as part 28 of a rezoning application. In some cases, local governments may use a combination of one or 29 more of these mechanisms to affect the desired GHG reduction outcome. It would then fall on FEI 30 to follow all of these activities at every local government across its entire service territory and 31 track the timing and applicability of the GHGi target. FEI would also need to gain the confidence 32 of both homebuilders and building authorities that it is both aware of all building regulations, and 33 that new homes which fall under any new enacted or updated regulations will in point of fact be 34 provided with service under the Renewable Gas Connections service. Without the confidence of 35 homebuilders and local authorities, homebuilders may simply dismiss gas as an option in order 36 to avoid any uncertainty.

To illustrate the complexity of aligning the GHG regulation date, the table below shows the diversity of dwelling types and implementation dates adopted in a sample of local government policies with the objective of improving energy efficiency and achieving emissions reduction in buildings (for more details, see Appendix A of the Application). If the Renewable Gas Connections



м	FortisBC Energy Inc. (FEI or the Company) Revised Renewable Gas Program Application – Stage 2 (Application)	Submission Date: May 16, 2022
	Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 117

- service were tied to the effective date of the GHGi target, then, in the City of Vancouver, it would 1 2 be applicable to high rise multi-residential buildings effective June 2021 and to single family 3 homes effective January 2022. In comparison, in the District of West Vancouver, the applicability 4 date for both of these dwelling types would be in February 2021. Both the diversity of and ongoing 5 changes to building codes and local government policies and regulations would require that FEI draft updated tariffs, seek approval for the updated tariffs, and change messaging to homebuilders 6 7 and building authorities in any affected municipalities. This would take place numerous times 8 throughout the year as regulations and policies are evolving in the 135 communities served by 9 FEI.
- 10 The complexity and diversity of these local government GHG regulations means that an 11 implementation date tied to the rate schedules is the most practical, cost effective, simple and 12 equitable for FEI's customers. Furthermore, the construction industry requires certainty that an 13 approved Renewable Gas tariff will be available to secure approval of their construction permits 14 from their local government. If there is a time lag where there is a local government's adoption of 15 GHG targets and the approval of a Renewable Gas Connections tariff, this will have an adverse 16 effect on builders/developers securing building permit approvals which incorporate gas 17 appliances.

Policy / Bylaw	Building Energy Requirement	Types of Buildings Impacted	Effective Date	
	TEUI = 110 kWh/m ² , TEDI = 25 kWh/m ² 5.5 kgCO ₂ e/m ²	Residential occupancy Low-Rise (Up to 6 storeys), except Hotel and Motel		
	TEUI = 120 kWh/m², TEDI = 30 kWh/m² 6 kgCO ₂ e/m²	Residential Occupancy High-Rise (over 6 storeys), except Hotel and Motel		
Vancouver Building Bylaw ⁴⁴ (June 2021)	TEUI = 140 kWh/m², TEDI = 20 kWh/m² 8 kgCO ₂ e/m²	Hotel and Motel occupancies	June 1, 2021	
(00.00 202.)	TEUI = 120 kWh/m ² , TEDI = 20 kWh/m ² 3 kgCO ₂ e/m ²	Personal Business, and Mercantile occupancies		
	TEUI = 100 kWh/m ² , TEDI = 20 kWh/m ² 3 kgCO ₂ e/m ²	Office occupancies		
Vancouver Building Bylaw ⁴⁵ (Jan 2022)	TEUI Varies with conditioned area TEDI = 20 kWh/m ² 3 kgCO ₂ e/m ²	Residential Buildings of 1 to 3 Storeys, and Houses (excluding Hotels/Motels)	January 1, 2022	
	Either Step 5 or Step 3 with a Low Carbon Energy System (3 kgCO ₂ e/m ²)	Single family, townhouse and other Part 9 ⁴⁶ residential buildings		
District of West Vancouver	Either Step 5 or Step 2 with a Low Carbon Energy System (3 kgCO ₂ e/m ²)	Part 9 Detached secondary suites	February 2021	
	Either Step 4 or Step 2 with a Low Carbon Energy System (3 kgCO ₂ e/m ²)	Part 3 ⁴⁷ residential Multi-family and apartment buildings.		

18 Table 1: Building Energy and Emissions Requirements for a Sample List of Local Governments

⁴⁴ <u>https://vancouver.ca/files/cov/vbbl-part-10-unofficial-wording-effective-june-1-2021.pdf.</u>

⁴⁵ https://vancouver.ca/files/cov/vbbl-part-10-unofficial-wording-effective-jan-1-2022.pdf.

⁴⁶ Part 9 refers to housing and small buildings (that are up to three storeys in height, and an area not exceeding 600 m² in area).

⁴⁷ Part 3 refers to commercial and MFD that exceed three storeys or exceed 600 m² in area.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 118

Policy / Bylaw	Building Energy Requirement	Types of Buildings Impacted	Effective Date
	Either Step 5 or Step 3 with a Low Carbon Energy System (3 kgCO ₂ e/m ²)	Part 9 Single family home, coach house, smaller townhouse.	
District of North Vancouver	Either Step 4 or Step 3 with a Low Carbon Energy System (3 kgCO ₂ e/m ²)	Part 3 Residential Larger multi-family and apartment projects	July 2021
	Either Step 3 or Step 2 with a Low Carbon Energy System (3 kgCO ₂ e/m ²)	Part 3 Commercial, Office and Retail buildings	
City of North Vancouver	Either Step 5 or Step 3 with a Low Carbon Energy System (3 kgCO ₂ e/m ²)	Newly constructed Part 9 residential buildings	July 2021
City of Burnaby	Either Step 3 or Step 2 with a Low Carbon Energy System (6 kgCO ₂ e/m ²)	Rezoning applications for Part 3 residential and commercial buildings	July 2019
City of Surroy	Either Step 3 or Step 2 with a Low Carbon Energy System (6 kgCO ₂ e/m ²)	Part 3 Residential new construction	April 2019
City of Surrey	Either Step 4 or Step 3 with a Low Carbon Energy System (3 kgCO ₂ e/m ²)	Part 3 Residential new construction	2023-2024
	Either Step 3 or Step 2 with a Low Carbon Energy System (6 kgCO ₂ e/m ²) or \leq 1.2 tCO ₂ e / year	Part 9 Single family dwellings and duplexes, townhomes and apartments	December 2020
	Either Step 3 or Step 2 with a Low Carbon Energy System	Part 3 Residential Buildings more than 6 stories or non combustible construction	January 2021
City of Richmond	Either Step 4 or Step 3 with a Low Carbon Energy System (3 kgCO ₂ e/m ²) or \leq 0.6 tCO ₂ e / year	Part 9 Single family dwellings and duplexes, townhomes and apartments	January 2022
	Either Step 5 or Step 4 with a Low Carbon Energy System (3 kgCO ₂ e/m ²) or \leq 0.6 tCO ₂ e / year	Part 9 Single family dwellings and duplexes, townhomes and apartments	January 2025

- 3 4
- 5
- 6 7

8

20.3.1 If the RG Connections offering was only offered to new buildings subject to a stringent GHGi target, please revise Figure 8-3 to reflect a lower demand from the RG Connections and a higher demand for the other two offerings.

9 Response:

10 FEI does not believe that only offering Renewable Gas to new buildings subject to stringent GHGi

11 targets would change the demand for Renewable Gas under the Voluntary Renewable Gas

12 service, as the differential in Renewable Gas volume would be redirected to the Renewable Gas

13 Blend service.

14 Stringent GHGi targets have been adopted by local governments in the Lower Mainland, primarily 15 within the greater Vancouver area. However, other communities have declared Climate 16 Emergencies, and the Provincial government's Building and Safety Standards Branch is 17 developing a GHGi standard for inclusion in the BC Building Code. Moreover, the CleanBC



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 119

- Roadmap describes how new homes and buildings shall no longer emit carbon pollution by 2030. 1
- 2 While FEI is unable to predict with precision when local governments will adopt stringent GHGi
- 3 targets, it believes that the adoption of targets of this kind will ultimately extend beyond
- 4 communities in the Lower Mainland. On this basis, FEI's analysis in this response focuses on new
- 5 additions from the communities with known GHGi targets, either currently or those that will be in 6
- force soon.

7 Prior to the introduction of GHGi targets, approximately 29 percent of FEI's new residential 8 connections came from these municipalities. Therefore, in the requested Figure 8-3 below, the 9 load from the Renewable Gas Connections offering is approximately 29 percent of the load 10 presented in Revised Figure 8-348 of the Application. As can be seen in the figure below, under this assumption, in 2032 the demand from the Renewable Gas Connections decreases from 14.6 11

12 PJ to 4.2 PJ and the demand from Renewable Gas Blend increases from 20.2 PJ to 30.7 PJ.

13 Requested Figure 8-3: Forecast Volumes of Renewable Gas Supply, Customer Demand and 14 Allocation to Sales Customers (PJ)



15

16 17

⁴⁸ FEI provided a Revised Figure 8-3 in response to BCSEA IR1 11.1.

FORTIS BC^{*}

FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 120

1	20.2.1.1	Places selected the impact on the SPT I.C. rider in 2022 and
I	20.3.1.1	Please calculate the impact on the S&T LC fider in 2023 and
2		2030 of the lower demand from the RG Connections customers
3		(in real 2022 dollars) relative to what is proposed in the
4		Application.
5		
	_	

6 Response:

As discussed in Section 7.4 of the Application and corrected in the response to BCSEA IR1 11.1,
FEI expects to begin with approximately 3 percent blend beginning January 1, 2024. Based on
the revised lower forecast of Renewable Gas Connections demand in the question, and due to
more of FEI's acquired Renewable Gas flowing to customers through the S&T LC rider (i.e., to
Renewable Gas Blend customers), the rider would increase in 2024 from \$1.43 per GJ to \$1.72
per GJ. In 2030, the rider would increase from \$3.02 per GJ to \$3.72 per GJ.

- 13
- 14

15 16

17

18

19

20

21

22

- 20.3.2 Alternatively, if the BCUC were to approve a rate higher than the rate of conventional natural gas for the RG Connections offering (e.g., the weighted average RG supply cost), please confirm, or otherwise explain, that FEI would have in effect removed customer choice to new residential customers who are not yet subject to GHGi targets if they are required to take this 100% RG offering due to the timing of their building's construction.
- 2320.3.2.1 Please reconcile this scenario with one of FEI's three stated24objectives in this Application, i.e., to maintain energy choice for25customers.
- 26

27 <u>Response:</u>

28 Confirmed, if the BCUC were to approve a rate that is higher than the rate of conventional natural 29 gas for all new residential customers, including those who are not yet subject to GHGi targets, it 30 would effectively suppress or eliminate customer choice for these customers. By proposing a 31 single program for all of British Columbia, FEI maintains equal access to the gas delivery system.

32 First, a higher rate of this kind would have the effect of reducing or eliminating gas for these 33 customers who are not yet subject to GHGi targets in their jurisdiction, despite gas being the most 34 common energy solution for heating. Therefore, this would have the effect of creating a solution 35 that results in outcomes worse than the status quo. It would be better to have no Renewable Gas 36 municipalities rather than one priced such that Connections offering in these 37 customers/developers would not utilize the offering. However, as noted in the Application, it is 38 impractical, difficult to manage and implement and difficult to convey to customers, a Renewable 39 Gas solution that has different prices or offerings for each municipality. Please refer to the



response to BCUC IR1 13.7 for a comparison of the price of Renewable Gas to the price ofelectricity.

3 Second, FEI believes that requiring these new residential customers to incur a cost for gas service 4 that is beyond that of all other similar customers would be neither just nor reasonable. As is 5 explained in the response to BCUC IR1 20.3, there has been considerable development in local 6 GHGi regulations in recent years. In particular, the adoption of a variety of differing GHGi targets 7 by local governments cannot be accurately foreseen and is challenging to track for FEI. Due to 8 this uncertainty, and the complexity of monitoring municipal GHGi developments, FEI believes 9 that all new residential connections should be treated identically. FEI believes therefore that the 10 appropriate cost of gas service for all customers under the Renewable Gas Connections offering 11 is one that mimics the cost of conventional gas service.

12 Finally, the gas utility must reduce the GHG emissions associated with the gas system in order to 13 meet the targets set in the CleanBC Roadmap. All FEI sales customers incur the cost of reducing 14 GHG emissions to suit public policy. All FEI sales customers, including those in the Renewable 15 Gas Connections service, pay the S&T LC rider to recover the cost of Renewable Gas supply required to reduce emissions. The Renewable Gas resource that has been paid for by all 16 17 customers is allocated in part to maintain access to the gas system, and thereby energy choice, 18 for new customers. This in turn helps ensures the long-term viability of the gas system and the 19 50,000 km of existing pipeline infrastructure to the benefit of all energy consumers in BC.

20 The following response is provided by Concentric.

21 In addition, as discussed in the response to BCUC IR1 13.2, a higher rate than what FEI has 22 proposed for the Renewable Gas Connections service would be a vintaged pricing approach for 23 existing customers, i.e., where the rate a customer pays depends on when service was initiated. 24 Where, as would be the case here, two similarly situated customers receive the same service 25 through the same facilities but are charged different rates based on when they commenced 26 service, a case of unjust discrimination is created. The NEB has previously held that existing 27 customers have "no acquired rights" to the lower, embedded cost of an existing system and, as 28 demonstrated herein, many regulators agree that the "wealth entitlement" that would result from 29 vintaged pricing for existing customers at the expense of new customers is inappropriate.

- 30
- 31
- 32
- 33 34
- 35 36

37

20.3.3 Please confirm, or otherwise explain, that FEI will still seek BCUC approval of the RG Connections offering for all new builds connected after the rate schedules are implemented even if the BCUC were to approve a different LCG Charge than that proposed in the Application.



Not confirmed. FEI clarifies that it is only seeking approval of the Renewable Gas Connections
service at the proposed LCG Charge, as there is no other charge that is practical for this service.
FEI requests that the BCUC either approve the Renewable Gas Connections service with the
LCG Charge as filed, or reject it with reasons for EEI's consideration.

- 5 LCG Charge as filed, or reject it with reasons for FEI's consideration.
- 6
- 7
- 8

16

17

18

19

20

FEI's System Extension Fund (SEF) is designed to provide funding to eligible residential
 ratepayers who must pay a contribution in aid of construction towards a main extension to
 connect to FEI's natural gas distribution system. By Order G-338-20, the BCUC approved
 the SEF on a permanent basis.

- 20.4 Please confirm, or otherwise explain, that the SEF will continue to be available to
 the residential natural gas connections, even if FEI's proposed 100% RG
 connection is approved.
 - 20.4.1 If yes, please discuss how the continuation of the SEF for natural gas connections will complement or contradict FEI's proposed 100% RG connection.
 - 20.4.2 Please clarify whether the SEF eligibility and funding amount would differ depending on new builds, conversions, or retrofits.

2122 **Response:**

23 Confirmed. The SEF will continue to be available to the residential natural gas connections, even

24 if FEI's proposed 100 percent Renewable Gas Connections service is approved.

The SEF and the proposed Renewable Gas Connections service are both designed to maintain equity among customers, while addressing separate issues. The SEF addresses a capital cost barrier faced by some customers, while the Renewable Gas Connections service addresses the barrier imposed by local GHGi policies and regulations which would otherwise prevent new residential customers from connecting to the gas system. The SEF is described in more detail below.

The SEF creates more equity between homeowners facing high contributions (CIAC) in order to connect to gas, and other homeowners who often do not need to pay a CIAC due to their closer proximity to existing gas mains. The fund provides potential new customers with direct financial assistance to partially offset the cost of CIACs that effectively prevent or deter homeowners from connecting to the gas system, thereby limiting their energy options. The concept is similar to BC Hydro's longstanding Uneconomic Extension Assistance Fund and is consistent with the concept of common rates or rolled-in pricing.



м	FortisBC Energy Inc. (FEI or the Company) Revised Renewable Gas Program Application – Stage 2 (Application)	Submission Date: May 16, 2022
	Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 123

- 1 Participation in the SEF is optional for customers required to pay a contribution to connect to the
- 2 gas system. As an alternative, these customers may elect to participate in the contributory main
- 3 approach whereby they pay the CIAC initially, and are reimbursed over the subsequent 5 years
- 4 if/as new customers connect to the new gas main, and pay their share of the original CIAC. The
- 5 eligibility conditions to participate in, and the funding available through the SEF do not differ
- 6 depending on the home being a new build, conversion, or retrofit.
- 7



4

5

1 E. RENEWABLE GAS BLEND FOR SALES CUSTOMERS

2 21.0 Reference: PROPOSED RENEWABLE GAS PROGRAM

Exhibit B-11, Section 7.4.1, p. 98

Renewable Gas Blend

On page 98 of the Application, FEI states:

6 ... Based on projected supply, FEI anticipates that, beginning in 2024, the initial 7 blend will be one percent Renewable Gas and 99 percent conventional natural 8 gas. The percentage of Renewable Gas will increase as new supplies of 9 Renewable Gas come online. FEI's sales customers would not need to sign up to 10 receive the Renewable Gas Blend, nor would they have an option to decline the 11 Renewable Gas Blend. The integration of Renewable Gas into the gas supplied to 12 sales customers would be seamless from the customer perspective, with the 13 percentage Renewable Gas blend provided shown on their bill.

- 1421.1As the RG blend will be displayed on the customers' bills, please clarify whether15the actual blend paid by the customer through the RG Blend component will equal16to FEI's forecast amount (e.g., one percent for 2024) or whether it will be based on17the actual RG supply available for the RG blend during the year with specific18reference for the initial year of implementation and subsequent years.
- 19

20 Response:

Customers will receive the volume of Renewable Gas Blend that was determined in the prior
year's forecasting process used to set the S&T LC rider. This volume will be adjusted annually.
Please refer to Section 8.4.2.1 of the Application for how the S&T LC rider is set.

24 The forecast will be used to determine what percentage of Renewable Gas can be reasonably 25 included in the Renewable Gas Blend in each year, based on the available supply and demand 26 for Renewable Gas from all the program components. For example, if FEI determines that an 27 initial percentage of 1 percent is reasonable to provide to customers in 2024, pursuant to the 28 forecasting exercise required for the S&T LC rider rate setting process, customers will then 29 receive an invoice where 1 percent of their gas consumption is Renewable Gas. If, in a subsequent year, FEI determines (using the forecasting exercise) that some higher percentage 30 31 of Renewable Gas can be sold to customers through the Renewable Gas Blend service, customer 32 bills will indicate that their gas consumption now includes this higher percentage of Renewable 33 Gas.



1	22.0	Refer	ence:	RENEWABLE GAS BLEND FOR SALES CUSTOMERS
2			I	Exhibit B-11, Section 7.4.1.1, p. 99; Section 8.7, p. 126
3			l	Balancing of RG supply and demand
4		On pa	ge 99 of	the Application, FEI states:
5 6 7 9 10			As note supply, obligatio legislatio <u>Renewa</u> <u>voluntar</u> <u>Program</u>	d in Section 6.3.2, FEI is already acquiring significant Renewable Gas and FEI will need to acquire even more Renewable Gas to meet its ons under the CleanBC Roadmap which it expects will become part of on in late 2022. As FEI brings on additional Renewable Gas supply, <u>the</u> <u>able Gas Blend service will allow FEI to sell any volumes not sold to</u> <u>to y or Renewable Gas Connections customers under the Renewable Gas</u> <u>h</u> . [Emphasis added]
12		On pa	ge 126 o	the Application, FEI states:
13 14 15			To man and the following	age the variations in demand to ensure both the continuity of the service integrity of the offerings, FEI may use several options. These include the g, which are applicable to the Voluntary offerings:
16			•	Explore the potential to increase available supply;
17			•	The use of purchased carbon offsets;
18			•	Pause new enrolments into the Voluntary Program; and
19			• ;	Service curtailment
20 21 22 23 24 25			While F Gas, Fl Account months in volur custome	El will endeavour to maintain a positive inventory balance of Renewable El may occasionally experience a negative volume balance in the LCG t. In such cases, FEI will address the imbalance over the following 12 to 24 by increasing its supply of Renewable Gas and/or limiting any increases mes to its voluntary customers and Renewable Gas Blend for sales ers.
26 27 28 29		22.1	Please balancir words, a be usec	confirm, or otherwise explain, that the RG Blend offering will act as a ng mechanism to balance FEI's RG supply with RG demand. In other any volumes not sold <u>firs</u> t to Voluntary or RG Connections customers will up in the RG Blend offering.
30 31 32 33			22.1.1	If yes, please clarify the need to rely on carbon offsets, or to limit any increases in volumes sold to voluntary customers or to curtail RG delivery to manage the variations in demand instead of reducing temporarily the percentage of RG blend for RG Blend customers.
34 35 36				22.1.1.1 For example, would the blend fluctuate on a yearly basis and decrease one year if more volumes are needed for the Voluntary and/or RG Connections customers (with no impact on



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 126

1	the overall percentage of RG in FEI's system, which would
2	remain the same regardless of how RG is split amongst the
3	offerings)?

5 Response:

6 The Renewable Gas Blend service will be used as one of several balancing mechanisms available 7 to FEI to balance the Renewable Gas supply with the Renewable Gas demand. Please refer to 8 the response to BCUC IR1 10.2 where FEI explains how it intends to prioritize its Renewable Gas

9 supply to meet demand.

10 FEI only intends to increase the volume of Renewable Gas delivered to customers through the 11 Renewable Gas Blend offering when it is confident that the supply of Renewable Gas allows this, 12 without creating an imbalance between supply and demand. Once a given proportion of 13 Renewable Gas is included in the Renewable Gas Blend, that proportion would be maintained in 14 subsequent years. For example, once the proportion of Renewable Gas in the Renewable Gas 15 Blend reaches 3 percent, FEI would not reduce the proportion of Renewable Gas to 2 percent in 16 a subsequent year. As described in the response to BCUC IR1 10.2, FEI would then need to 17 achieve balance between Renewable Gas supply and demand using another method.

- 18
- 19

- 20
- 21 22.2 In cases where RG demand exceeds RG supply, please clarify whether FEI would 22 be able to maximize the RG revenues from the RG Program, and minimize cross-23 subsidization from all sales customers, by limiting the volumes sold to voluntary 24 customers, including those who pay the full RG cost of supply like NGV and T-25 Service customers, rather than by reducing the percentage of RG blend for RG 26 customers.
- 27

28 Response:

29 In order to maintain rate stability, FEI does not plan to reduce the percentage of Renewable Gas 30 included in the Renewable Gas Blend once the percentage has been made available to 31 customers. Therefore, the percentage of Renewable Gas in the Renewable Gas Blend will only 32 remain stable or increase over time.

33 Please also refer to the responses to BCUC IR1 10.2 and 22.1.

34 35		
36		
37	22.3	Please clarify the circumstances where FEI could experience a negative volume
38		balance in the LGC Account.
39		



- Please refer to the response to BCUC IR1 10.2, where FEI describes how it intends to maintain a balance between the supply of, and demand for, Renewable Gas. Under the revised Renewable Gas Program, FEI will have several options available to manage Renewable Gas supply and demand to reduce the risk of experiencing a negative volume balance in the LCG Account. However, should FEI experience a disruption affecting a substantial part of its supply, either in isolation or in tandem with unexpected growth in demand, the capacity of FEI's other mechanisms to balance supply and demand may be exceeded.
- As noted in the preamble, FEI will address any negative balance by increasing its supply of
 Renewable Gas and/or limiting any increases in volumes to its voluntary customers and
 Renewable Gas Blend for sales customers in subsequent periods. Given FEI's longstanding
 experience in acquiring Renewable Gas supply, and historical Renewable Gas demand levels,
 FEI expects the probability of such an event occurring to be small. Moreover, this risk is further
- 14 reduced as FEI's sources of Renewable Gas supply become more diversified.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 128

1 23.0 Reference: RENEWABLE GAS BLEND FOR SALES CUSTOMERS

2 3

4

5

Exhibit B-11, Section 6.3.2, Figure 6-3, p.78, Section 7.4.1.1, p. 99, Section 8.6, Figures 8-4 to 8-6, pp.122-125

Benefits of RG Blend Offering

On page 99 of the Application, FEI states:

6 Assuming all FEI sales customers consume approximately 140 million GJs a year, 7 one percent Renewable Gas would equal 1.4 million GJs, or the same as 8 converting over 30 thousand furnaces to electricity (or other low emission energy 9 sources). Critically, these emission reductions can occur rapidly, and at scale, with 10 no required investment of time, effort or money on the part of customers. The end 11 use customer does not need to change any equipment nor sign up for a program. 12 FEI simply reduces the carbon content of the gas stream without the need for additional provincial or municipal regulation at the building level, or for changes in 13 14 infrastructure on the part of customers, or FEI.

- 15 23.1 If the RG program consisted of only the RG Blend offering (meaning, there would
 16 be no RG Connections or Voluntary RG for sales customers offerings), please
 17 confirm, or otherwise explain, that FEI's 10-year RG supply forecast (Figure 6-3,
 18 p. 78) would remain the same.
- 19 20

23.1.1 If confirmed, please indicate what would be the percentage of RG in the RG Blend offering each year for the next 10 years.

21

22 **Response:**

Confirmed. The 10-year Renewable Gas supply forecast would remain the same without the Renewable Gas Connections and Voluntary Renewable Gas services. This means that the blend percentages would equal the supply volume, as set out in the Application as a percent of the total volume of gas delivered to Sales Service customers. Below FEI provides the expected percentage of Renewable Gas embedded in customers' delivered energy between 2023 and 2032 assuming no Renewable Gas Connections or Voluntary Renewable Gas services.

29	9 Table 1: Expected Renewable Gas Blend (%)										
	Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
30	Percent RG Blend	4%	9%	11%	14%	17%	19%	22%	24%	29%	35%
31											

32 If Renewable Gas Blend was the only service approved FEI would not be able to add customers 33 in the new construction sector and would forego the addition of approximately 2 percent of its 34 residential and commercial customers each year as discussed in response to BCUC IR1 12.3.2. 35 FEI would continue to manage its Renewable Gas inventory such that the Renewable Gas Blend

36 increased year-over-year.



1223.1.23Please confirm, or otherwise explain, that FEI would recover all the costs
of the RG Program (consisting only of the RG Blend offering) through the
S&T LC rider. If so, please explain how FEI would calculate the S&T LC
rider.6

7 **Response:**

8 Confirmed. If the Renewable Gas Program consisted of only the Renewable Gas Blend service,

9 FEI would recover all the costs of the Renewable Gas program through the S&T LC rider. The

10 mechanism by which FEI has proposed to calculate the S&T LC rider would effectively be the 11 same as proposed in the Application, but would be simpler because FEI would only collect the

- same as proposed in the Application, but would be simpler because FEI would only collect the cost of acquiring Renewable Gas through the rider. FEI has provided an updated Table 8-3 below
- 13 illustrating the calculation.



3

Updated Table 8-3: Calculation of S&T LC Rider if No Renewable Gas Voluntary or Renewable Gas Connections Available

Line		Pr	ojected	F	orecast	
<u>No.</u>	Particulars	A	mount	<u>/</u>	Amount	<u>Reference</u>
						Average price of all Renewable Gas
1	Renewable Gas Supply Price (\$/GJ)	\$	24.00	\$	23.00	acquisitions
2	Renewable Gas Purchased (TJ)		2,000		3,500	Projected/Forecast supply
3	Total Renewable Gas Supply Cost (\$000)	\$	48,000	\$	80,500	Line 1 x Line 2
4	Supply and Contract Mgmt (\$000)	\$	2,100	\$	2,100	
5	Total RG Cost (\$000)	\$	50,100	\$	82,600	Line 3 + Line 4
6						
7	Renewable Gas Inventory in (TJ)					
8	Open		-		1,800	Prior Years Closing Balance
9	Additions		2,000		3,500	Line 2
10	Demand New Residential & Voluntary		-		-	Projected/Forecast Demand
11	Supply available to Flow as LCG		2,000		5,300	Line 8 + Line 9 + Line 10
			(()	Projected Amount: Note 1;
12	LCG through S&T rider		(200)		(5,000)	Forecast Amount: - Line 11 + Line 13
						- Projected Amount: Line 11 + Line 12;
	Close		1.800		300	Forecast Amount: Desired Inventory
13			_,			Buffer
14						
15	Renewable Gas Inventory in dollars (\$000)					
16	Open Inventory at Avg Supply Cost	Ś	-	Ś	45 100	Prior Years Closing Balance
17	Supply Cost	Ŧ	50 100	Ŧ	82 600	Line 3
-,			50,200		02,000	Line 10 x Avg Price to Renewable Gas
	Sales Revenue - Renewable Gas Connections and		-		_	Connections and Voluntary Renewable
18	Voluntary Renewable Gas					Gas
19	Net Supply Cost	¢	50 100	¢	127 700	
15		Ļ	50,100	Ŷ	127,700	Projected Amount: Note 2:
20	Costs moved as LCG		(5,000)		(120,800)	Forecast Amount: - Line 19 + Line 21
20						Projected Amount: Line 19 + Line 20
21	Close	\$	45,100	\$	6,900	Forecast Amount: Line 1 x Line 13
21						
22	Storago & Transport Bidor					
25				ć	120 000	Line 20
24	Salas Custamar Voluma (TI)			Ş	120,000	- Liffe 20
25	Sales Customer Volume (1)			ć	150,000	Line 24 (Line 25
20	Storage & Transport Rider (\$/63)			Ş	0.81	Line 247 Line 25
27						
~~	Percent of Renewable Gas embedded in sales customers					
28	gas demand				3.3%	- Line 12 / Line 25
29		_		_		
30	Note 1: The Projected Amount is the approved percent of	Re	newable	e Ga	s embedd	ed in customers gas demand from the
31	prior year's S&T LC rider filing multiplied by an up	dat	ed proje	ctic	on of gas d	emand for the Projected year.
32						
33	Note 2: The Projected Amount is the S&T rider approved i	n tl	he prior	yea	r's S&T LC i	rider filing multiplied by an
34	updated projection of gas demand for Renewable	Ga	ns (Line 1	2)		



ты	FortisBC Energy Inc. (FEI or the Company) Revised Renewable Gas Program Application – Stage 2 (Application)	Submission Date: May 16, 2022
	Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 131

- As shown on lines 10 and 18, no volume goes to, and zero cost recovery comes from, Renewable Gas Connections or Voluntary Renewable Gas customers. This has the effect of flowing all costs through the S&T LC rider, except for the cost of inventory that FEI will use to manage possible supply disruptions. Without the Renewable Gas Connections and the Voluntary Renewable Gas services, the S&T LC rider would be approximately double for all years through 2032.
- 6 7 8 9 23.1.3 Please revise Figures 8-4 to 8-6 accordingly, adding the years 2022 and 10 2030 to these graphs, all else being equal. Please state all assumptions 11 used.

As requested, FEI has provided updated versions of Figures 8-4 through 8-6 below. FEI uses the same assumptions as provided in response to BCUC IR1 12.3.2 except that FEI has removed all programs except the Renewable Gas Blend service and also provides these graphs in real 2022 dollars for comparability with provisus responses on bill impacts.

17 dollars for comparability with previous responses on bill impacts.

18 19

Requested Figure 8-4: Annual Bill for Rate Schedule 1 (with only the Renewable Gas Blend Service)





TM	FortisBC Energy Inc. (FEI or the Company) Revised Renewable Gas Program Application – Stage 2 (Application)	Submission Date: May 16, 2022
	Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 132

- 1 If the proposals in the Application are approved, in 2030, when accounting for Carbon Tax in real
- 2 2022 dollars, the Annual Bill for an RS 1 customer would equal \$1,760 or a 43 percent increase
- 3 from 2022 bills.
- 4 With the loss of the new construction sector without the Renewable Gas Connections service and
- 5 the loss of Voluntary Renewable Gas revenue, the annual bill for an RS 1 customer in 2030 will

Requested Figure 8-5: Annual Bill for Rate Schedule 2 (with only the Renewable Gas Blend

6 equal \$1,959 in real 2022 dollars or a 59 percent increase from 2022 bills.

7 8



9

10 If the proposals in the Application are approved, in 2030, when accounting for Carbon Tax in real

11 2022 dollars the Annual Bill for an RS 2 customer would equal \$6,250 or a 51 percent increase

12 from 2022 bills.

13 With the loss of the new construction sector without the Renewable Gas Connections service and

14 the loss of Voluntary Renewable Gas revenue, the annual bill for an RS 2 customer in 2030 will

15 equal \$6,886 in real 2022 dollars or a 70 percent increase from 2022 bills.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 133



Requested Figure 8-6: Annual Bill for Rate Schedule 3 (with only the Renewable Gas Blend Service)



3 4

If the proposals in the Application are approved, in 2030, when accounting for Carbon Tax in real
2022 dollars the Annual Bill for an RS 3 customer would equal \$64,300 or a 57 percent increase
from 2022 bills.

8 With the loss of the new construction sector without the Renewable Gas Connections service and 9 the loss of Voluntary Renewable Gas revenue, the annual bill for an RS 3 customer in 2030 will 10 equal \$70,549 in real 2022 dollars or a 70 percent increase from 2022 bills.

- 12
 13 23.1.4 Please revise Figures 8-4 to 8-6 accordingly, adding the years 2022 and 2030 to these graphs and adjusting for throughput loss due to the loss of the new construction sector. Please state all assumptions used.
 16
 17 <u>Response:</u>
- 18 Please refer to the response to BCUC IR1 23.1.3.



3 4

5

6

7

- - 23.2 Please confirm, or otherwise explain, FEI considers that a higher percentage of RG blend for sales customers would help achieve faster and cost-effective decarbonization of the existing building stock.

8 **Response:**

9 FEI understands this IR to be asking for FEI's opinion on the ability of the Renewable Gas Blend
10 service to decarbonize the existing building stock, in the absence of both Renewable Gas
11 Connections and Voluntary Renewable Gas services.

12 FEI confirms that the Renewable Gas Blend service is a cost-effective means of achieving the 13 decarbonization of the existing building stock. In particular, Renewable Gas injected into the gas 14 system directly displaces conventional natural gas sourced from fossil fuel deposits. A blend 15 consisting of 1 percent Renewable Gas across all FEI's sales customers will immediately reduce 16 the GHG emissions of existing, natural gas burning homes by 1 percent. For example, FEI 17 estimates that in the City of Vancouver this would be approximately equivalent to over 5,000 18 detached homes switching to zero emission heating without the need for homeowners to invest 19 time, energy, or money, to retrofit their homes. A greater percentage of Renewable Gas will have 20 a correspondingly greater effect on the GHG emissions of the existing building stock.

21 However, FEI is not proposing to prioritize the Renewable Gas Blend service over other 22 components of the proposed Renewable Gas Program, as this would underserve other market 23 segments. This in turn would deprive these segments of a gas-based solution to their energy and 24 GHG emission needs, potentially putting upward pressure on rates, and jeopardizing the long-25 term viability of the gas system as a whole. For example, diverting Renewable Gas away from 26 the Renewable Gas Connections service would prevent new residential customers from 27 connecting to the gas system due to a lack of a satisfactory service offering. In this case the gas 28 system would be limited to serving a shrinking pool of existing customers with infrastructure and 29 a cost base that would not likewise contract. This would in turn drive up costs for all remaining 30 customers. Similarly, the Renewable Gas Blend service may not be sufficient to satisfy the needs 31 of large institutional customers. If the Voluntary Renewable Gas service was not available then 32 these customers may ultimately leave the gas system, further compounding the impact to 33 remaining customers. Moreover, any potential to generate additional revenues from Voluntary 34 Renewable Gas participants to help pay for Renewable Gas would be lost.

- 35
- 36
- 37
- 23.3 Please discuss the pros and cons of a diversified pathway where FEI focuses on
 decarbonizing the existing building stock. Compare to the pros and cons for other
 low-carbon energy strategies such as electrification, low-carbon district energy or



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 135

low-carbon on-site thermal energy which can be argued as strategies to decarbonize the new construction sector.

4 <u>Response:</u>

5 Analysis conducted by FEI and Guidehouse in the Pathways Report⁴⁹ concludes that a Diversified

6 Pathway that includes a meaningful role for the existing gas system, to provide heat to buildings,

7 fuel for commercial vehicles and energy to industry with renewable and low-carbon gases, is a

8 lower cost and more resilient decarbonization pathway for British Columbia.

A diversified approach to decarbonization would see throughput maintained on the gas system at
current levels to 2050. The gas delivered by the system would be made up of nearly three-quarters
Renewable Gas. The Diversified Pathway would also see significant growth in energy delivered
by the electricity system, primarily to decarbonize the transportation sector. The pros of a
diversified pathway to decarbonize building energy demand are:

- 14 **Cost-Effectiveness:** Using the existing gas delivery system, which has been specifically 15 designed to service heat loads in BC, to deliver increasing quantities of Renewable Gas 16 is a less costly pathway than reducing or eliminating gas system load in favour of sole 17 reliance on the electricity system to deliver building heat. In particular, significant new 18 electricity infrastructure that would be required to meet peak heating loads, along with 19 additional loads (e.g., from the transportation sector). After accounting for these capital 20 investments in the electrical system, the Diversified Pathway is approximately \$100 billion 21 less costly than an approach that relies on electrification of building heating and 22 commercial vehicles.
- 23 A recent cold snap in BC is a timely example of the heating load should red by FEI's 24 existing infrastructure and the challenges of switching a load of that size and importance 25 over to alternative sources. On December 27 2021, a cold day in South-West BC, FEI's 26 gas system delivered the equivalent of 20,120 MW at 8:00 am for heating services to its 27 customers. This was almost double the output of BC Hydro's peak on the same day. 28 Shifting this load to the electrical system would require significant excess firm generating 29 capacity, along with potentially sizeable upgrades to the electric transmission and 30 distribution systems.
- Greater Resiliency: The Diversified Pathway enhances the overall resilience of the energy system because the gas and electric systems are operating in tandem to meet BC's energy demand. The Pathways Report⁵⁰ evaluates an Electrification Pathway that would see the share of electricity consumption grow to 50 percent of all energy use. This would require significant investments in resiliency within the electricity system to be able to reliably deliver critical heating energy to building residents. Moreover, the Electrification

⁴⁹ Guidehouse Inc., *Pathways for British Columbia to Achieve its GHG Reduction Goals*, August 2020: <u>https://www.cdn.fortisbc.com/libraries/docs/default-source/about-us-documents/guidehouse-report.pdf</u>.

⁵⁰ Guidehouse Inc., *Pathways for British Columbia to Achieve its GHG Reduction Goals*, August 2020: <u>https://www.cdn.fortisbc.com/libraries/docs/default-source/about-us-documents/guidehouse-report.pdf</u>.



FortisBC Energy Inc. (FEI or the Company) Revised Renewable Gas Program Application – Stage 2 (Application)	Submission Date: May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 136

Pathway relies on electricity to deliver approximately two thirds of the GHG emission reductions required by 2050.

Scalable Solution to Reducing GHG Emissions: According to the *BC Renewable and Low-Carbon Gas Supply Potential Study*,⁵¹ provincially sourced renewable gases and low carbon gases can supply up to 440 PJ by 2050. The report estimates that the required
 infrastructure investment would be approximately \$20 billion for this level of supply. This
 investment amount is relatively modest compared to the cost of electricity generation
 mega-projects, while delivering significantly more energy and supporting economic
 growth.

10 A con of the Diversified Pathway to decarbonize building demand could be the role, and 11 uncertainty associated with, technological advancements to: (1) reduce the cost of Renewable 12 Gas supply; (2) provide continued efficiency improvements for end-users in the form of gas-fired 13 heat pumps; and (3) enable the gas system to deliver higher concentrations of hydrogen. Even 14 so, similar technology deployment issues also apply to an Electrification Pathway. In addition to 15 the significant increase in peak demand, increased generation and storage will be required. 16 Sizeable upgrades to the transmission and distribution systems may also be required, including 17 new regional interconnects.

18 Based on the above analysis, when considering the new construction sector, FEI does not see

any material differences from the stated pros and cons above. FEI also notes that all pathwaysfor new construction have potential in reducing the carbon intensity of new construction. Please

- refer to the below table for the requested pro and con comparison between different pathways for
- 22 new construction decarbonization.
- 23

Table 1: New Construction Qualitative Pros (+) and Cons (-) Comparison

Theme Pathway	Costs	Resiliency	GHG Reduction Potential	New Infrastructure Requirements
Diversified Pathway	+	+	+	+

⁵¹ Evint Consulting and Canadian Biomass Energy Research Ltd., *BC Renewable and Low-Carbon Gas Supply Potential Study*, January 28th, 2022: <u>https://www.cdn.fortisbc.com/libraries/docs/default-source/news-events/bc-renewable-and-low-carbon-gas-supply-potential-study-2022-03-11.pdf</u>.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 137

Electrification Pathway	+/-	+/-	+	-
Low Carbon Energy District Heating	+/-	+	-	-
Low Carbon on-site Thermal Energy	+/-	+/-	+/-	+/-

- 1 Note: +/- means neutral valuation having both positive and negative.
- 2 FEI notes the following:
- In the Diversified Pathway, the continued use of gas delivery infrastructure can be a critical component of a decarbonized energy system in British Columbia. The cost of energy impacts are minimized over the long-term while still being able to effectively and efficiently meet peak demand scenarios. The scalability of the gas system remains robust as "drop-in" fuels such as RNG and hydrogen can continue to utilize existing infrastructure, while reducing the need for significant expansion in the energy delivery system.
- 9 In the Electrification Pathway, FEI sees some concerns to be addressed. First, new 10 construction electrification will mean increasing the amount of higher energy demand 11 scenarios on the electricity system (e.g., peak demand scenarios). Second, the 12 requirement for expensive equipment will increase the costs on both spec builders and 13 custom homes when British Columbia is already in a housing affordability crisis. Third, 14 there would be an increased potential for reliability issues as the dependence on the 15 electricity systems grows. FEI also sees a potential lack of scalable low-carbon electric 16 supply (need for great than 9,000 MW). While electrification, theoretically, can reduce 17 emissions it is wholly dependent on the scalability of low-carbon electricity. Lastly, there 18 is a need for large transmission capacity investments, and subsequent cost, associated 19 with increased demand from electrification.
- Low carbon energy district heating can provide resilient and low-carbon energy to connected buildings. However, there are large barriers regarding the applicability of these systems in existing urban environments including significant upfront costs, space and density requirements and access to low-carbon energy supplies. Further, in most cases low carbon district heating would require either electricity or Renewable Gas as the source fuel to create heat. Therefore, the challenges noted for electricity also translate to a district



3 4

5 6

7

8

9

10

11

12

FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 138

system using electric heat pumps for example. FEI believes that the challenges associated with district heating mean it lacks the GHG reduction potential due to limited scalability.

23.4 Please evaluate the rate design of having only the S&T LC rider recovering all RG Program costs (where the RG Program consists only of the RG Blend offering) against the Bonbright rate design criteria, as well as the following metrics: maximizing revenues from the RG Program, minimizing cross-subsidization from FEI's sales customers, and the ability to attract new customers and keeping rates affordable for all ratepayers, and meeting Government policy. To do so, please complete the following table:

	Cost recovery through S&T LC rider
Bonbright criteria	
1. Recovery of the revenue	
requirement	
2. Fair apportionment of costs	
3. Efficient price signals	
4. Customer understanding and	
acceptance	
5. Practical and cost-effective	
6. Rate stability	
7. Revenue stability	
8. Avoid undue discrimination	
Additional criteria	
9. Maximizing revenues from the RG	
Program	
10. Minimizing cross-subsidization	
from FEI sales customers	
11. Ability to attract new customers	
12. Keeping rates affordable for all	
ratepayers	
13. Meeting Government policy	

13

14 Response:

15 **The following response is provided by Concentric:**

Please refer to the response to BCUC IR1 13.2. In addition, please see the table below. This response assumes the hypothetical that the Renewable Gas Program includes the Renewable Gas Blend service only. Under this hypothetical, FEI could not satisfy government policies regarding new residential dwellings because it would not offer a 100 percent Renewable Gas service. As a result, new residential customers would have no choice but to take electricity (see the response to BCUC IR1 13.4). Thus, FEI would realize no revenue from new customers joining its system. Further, with no Voluntary Renewable Gas service, customers with GHG targets and


- 1 no available Renewable Gas option to meet those targets may leave the system. FEI's customer
- 2 base would shrink over time, causing its rates to rise as fixed costs FEI has invested in its
- 3 distribution system on behalf of its customers are spread over a smaller number of customers.

Bonbright Criteria	Cost Recovery Through S&T LC Rider
1. Recovery of the revenue requirement	Compromised. Rates will continue to be designed to recover the revenue requirement. However, with no offering available for new residential dwelling customers or options to allow large volume commercial customers to achieve their GHG targets as posited in this IR, FEI will be unable to connect new customers. This coupled with existing customers exiting the system will cause throughput to dwindle, leaving a shrinking customer base to absorb a growing amount of costs causing a rate spiral which will be detrimental to existing customers. More frequent rate cases will be necessary and regulatory lag will compromise FEI's ability to recover its revenue requirement.
2. Fair apportionment of costs	No. The benefit of governmental policy limiting the use of conventional natural gas supplies in order to achieve lower carbon emissions is understood to be for all residents of BC, not just new residential dwellings. The costs imposed on utilities of achieving compliance with governmental objectives are best socialized across the entire set of utility customers. With no offering available for new residential dwelling customers as posited in this IR, new customers only choice will be electricity (See BCUC IR 1.13.4), less Renewable Gas will be used to satisfy provincial policies, and the costs of compliance will not be fairly apportioned.
3. Efficient price signals	No. With no offering available for new residential dwelling customers or options to allow large volume commercial customers to achieve their GHG targets as posited in this IR, economically efficient price signals will not be sent to all customers. Existing customers will not be provided with the proper price signals to reduce their use of higher-carbon gas supplies. Existing customers will be unable to respond and make the most efficient use of the utility system and the resources provided by that utility. This includes making efficient use of existing infrastructure and other resources and avoiding wasteful or inappropriate use of the utility's product.
4. Customer understanding and acceptance	Compromised. Renewable Gas Blend service is simple and easy for customers to understand. However, with no offering available for new residential dwelling customers or options to allow large volume commercial customers to achieve their GHG targets as posited in this IR, customer understanding of the cost of compliance with governmental mandates is compromised. See 3, above.
5. Practical and cost- effective	Compromised. Renewable Gas Blend, as part of a larger set of Renewable Gas offerings, is practical and cost-effective. Without the other offerings, however, true practicality and cost-effectiveness are not achieved. See 1 to 3, above.
6. Rate stability	No. See 1, above
7. Revenue stability	No. See 1, above.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 140

Bonbright Criteria	Cost Recovery Through S&T LC Rider
8. Avoid undue discrimination	No. With no offering available for new residential dwelling customers, acquired rights or wealth transfer are created for existing customers. This is contrary to long- standing regulatory policy.
Additional criteria	
9. Maximizing revenues from the Renewable Gas Program	Compromised. Subject to the limitations identified in 1 to 3, above, as program costs are recovered, revenues from the Renewable Gas Program as it is defined by this IR are maximized. However, with no offering available for new residential dwelling customers or options to allow large volume commercial customers to achieve their GHG targets as posited in this IR, true maximization of an appropriately broader and more inclusive Renewable Gas program are not maximized.
10. Minimizing cross- subsidization from FEI sales customers	Compromised. There is no cross-subsidization within the Renewable Gas Program as defined by this IR. However, the limited nature of this program creates "entitled rights"/wealth transfer to existing customers by not making a viable gas choice available to new residential connections, and placing much more of the burden of decarbonization on households that are not current gas customers. This may be considered a cross subsidy.
11. Ability to attract new customers	No. As discussed in 1, above, with no offering available for new residential dwelling customers or options to allow large volume commercial customers to achieve their GHG targets as posited in this IR, FEI will be unable to attract new customers. This coupled with existing customers exiting the system will cause throughput to dwindle, leaving a shrinking customer base to absorb a growing amount of costs causing a rate spiral which will be detrimental to existing customers.
12. Keeping rates affordable for all ratepayers	No. See 1 and 11, above.
13. Meeting Government policy	Compromised. Renewable Gas Blend service will make a modest contribution to provincial carbon emissions reductions targets but it will not support full compliance. To fully support compliance with government policy, offerings for new residential dwelling customers or options to allow large volume commercial customers to achieve their GHG targets are necessary.



1 24.0 Reference: Why Choose Natural Gas?⁵²; FEI's Application for a CPCN for the Tilbury LNG Storage 2 3 Expansion Project, Exhibit B-15, BCUC IR 14.6 ⁵³ 4 Competitive advantage of natural gas over electric heat pumps 5 FortisBC includes the following comparison on its website regarding the annual fuel comparison on its website regarding the ann

5 FortisBC includes the following comparison on its website regarding the annual fuel cost 6 of space heating using a natural gas furnace compared with other alternatives, including 7 electric heat pumps.



Estimated annual fuel cost — space heating Vancouver Island and Sunshine Coast

8

In response to BCUC IR 14.6 in Exhibit B-15 in FEI's Application for a CPCN for the Tilbury
 LNG Storage Expansion Project, FEI provided an estimate of the cumulative rate impact
 from major infrastructure projects over the next ten years with the caveat that the actual
 rate impact will not be dependent on these projects alone as there are various factors
 beyond the Order in Council (OIC) and Certificate of Public Convenience and Necessity
 (CPCN) projects that will affect FEI's revenue requirement, such as the demand forecast,
 taxes, O&M expenses, and other capital additions.

⁵² FortisBC Inc., "<u>Why choose natural gas</u>", retrieved from: <u>https://www.fortisbc.com/services/natural-gas-services/why-choose-natural-gas/annual-fuel-cost-comparison</u>.

⁵³ https://docs.bcuc.com/documents/proceedings/2021/doc_64139_b-15-fei-redacted-response-to-bcuc-ir-no1.pdf.







- 24.1 Please discuss whether FEI agrees that the estimated \$815 in annual heating gas costs for residential customers is likely to increase by 2030 for the following reasons:
- 5

3 4

6 7

8

9

10 11

12

13

- Increasing percentage of RG blend in FEI's system;
- Potential increase in RG supply costs for FEI as demand for RG may start exceeding RG supply by 2030;
- Increasing delivery rates and storage and transport rates due to normal FEI business (i.e., CPCNs and OIC-related capital expenditures, demand forecast, O&M expenses and other capital additions);
- Potential loss of throughput to electricity to meet the CleanBC Roadmap Greenhouse Gas (GHG) emissions reduction targets.

14 **Response:**

The cost of energy for all BC residents is expected to increase in the future, especially in light of the growing response to meeting the commitments of the CleanBC Roadmap, regardless of the energy type.

- 18 Regarding the first and third bullets above, FEI has provided rate forecasts including all of the19 listed items in Section 9.4 of its 2022 LTGRP.
- Regarding the second bullet above, FEI is confident that there is ample Renewable Gas supply
 to meet the estimated short-term demand by 2030 and the long-term demand by 2050. While it is
- 22 difficult to predict if there will be any supply demand imbalances in the future (and the associated
- effect on the cost of supply), the Renewable Gas acquisition price will more likely be affected by
- 24 the cost of production rather than demand outstripping supply.



- 1 Regarding the fourth bullet, FEI's rate forecasts in its 2022 LTGRP account for the potential loss of throughput due to electrification. FEI expects that BC Hydro electricity rates will also rise to account for the costs associated with acquiring and delivering new renewable energy to meet demand, in addition to costs such as large capital projects, O&M expenses, etc.
- 5
- 6
- 7 8

10

11

12

- 24.2 Considering the four factors listed above, please revise the "Estimated annual fuel cost space heating" graph to compare, for the years 2023 and 2030, the annual heating cost for a residential customer of heating with a gas furnace versus electric heat pumps (in both BC Hydro and FBC service areas), in real 2022 dollars.
- 13 **Response:**

FEI notes that the "four factors listed above" would only impact the 2030 information that has been
requested as all of those factors are already embedded in current rates. Further, FEI cannot
complete the requested analysis for 2030 for the following reasons:

- FEI does not have BC Hydro's rate forecasts for 2030.
- FEI does not know what the cost of electricity will be in 2030.
- BC Hydro has not determined and/or received approval for how it will treat costs related to the Site C project.
- FEI does not know how BC Hydro will treat the costs of additional acquisitions of clean power that may be needed to ensure an adequate supply of clean energy in 2030.
- FEI does not know what electrical infrastructure will be required to serve increasing and
 evolving electrical loads for the Electric Vehicle or other markets that BC Hydro expects
 to electrify.
- The evolution, development and adoption of heating equipment can change rapidly. FEI does not know what type of heating equipment will be in place in 2030, nor the costs associated with that equipment, in order to complete a reasonable analysis.
- FEI does, however, provide indicative 20-year rate forecasts (including 2030) in Section 9.4 of its 2022 LTGRP that incorporates the four factors listed above. FEI believes that the information provided in the 2022 LTGRP is necessary context to understand rate forecasts over the long term and that the 2022 LTGRP would be the appropriate proceeding in which to explore these broader impacts.
- Regarding the request for current information, please refer to the response to BCUC IR1 13.7 where FEI compares the heating cost of gas furnaces using conventional natural gas rates
- 36 (column E) to electric heat pumps (columns G through J).



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 144

1 2			
3 4 5 6	24.3	Based o electric assump	on these revised graphs, would FEI still have a competitive advantage over heat pumps by 2030? Please explain why or why not. Please state all tions used.
7 8 9	<u>Response:</u>	24.3.1	If not, please estimate the impact on FEI's throughput, and subsequently, on customers residential rates
10	Please refer t	o the res	ponse to BCUC IR1 24.2.



3

1 25.0 Reference: RENEWABLE GAS BLEND FOR SALES CUSTOMERS

Exhibit B-11, Section 7.4.1, p. 98

Carbon tax credit

4 On page 98 of the Application, FEI states:

5 The integration of Renewable Gas into the gas supplied to sales customers would 6 be seamless from the customer perspective, with the percentage Renewable Gas 7 blend provided shown on their bill.

- FEI will recover the costs of the Renewable Gas Blend through an S&T LC rider
 designed to recover the costs of the Renewable Gas Program not otherwise
 recovered from other components of the program. <u>Customers will also receive an</u>
 <u>offsetting carbon tax credit for any volume of Renewable Gas they receive.</u>
 [Emphasis added]
- Please clarify the need for an offsetting carbon tax credit to customers. Would the
 resulting blend of conventional natural gas and RG in FEI's system not have a
 lower GHG intensity than conventional natural gas and therefore directly result in
 a lower carbon tax charge?

17

18 Response:

19 The Renewable Gas embedded in the blend of gas that a customer receives is subject to a carbon 20 tax, but that tax is then credited back to the customer, resulting in the customer not having to pay 21 the taxable amount. FEI must use the process described below to ensure that the Renewable

22 Gas embedded in a customer's gas stream is not taxed under the Carbon Tax Act.

23 When FEI remits the carbon tax revenues to the provincial government, it does so on the full 24 volume of gas sold (both conventional and Renewable Gas). Within this remittance, FEI indicates 25 how much of the volume was Renewable Gas. The provincial government then reimburses FEI 26 for any carbon tax revenue remitted by FEI that applied to the Renewable Gas portion. However, 27 the process of charging carbon tax on all gas delivered and then providing a credit is not how FEI 28 bills its customers; this approach would be confusing for customers because customers would 29 receive a tax credit on a current bill for taxes they paid in some earlier period. To avoid this, FEI 30 provides customers with the carbon tax credit on their current bill in recognition of the Renewable 31 Gas embedded in the gas delivered for the current period.



4

5

15



1 F. VOLUNTARY RENEWABLE GAS PROGRAM

```
2 26.0 Reference: VOLUNTARY RENEWABLE GAS PROGRAM
```

Exhibit B–11, Section 5, pp. 61, Section 8, Figure 8-3, p. 122, Appendix B-1, p. 31

Forecast Volumes of RG Demand

6 On page 61 of the Application, FEI states:

7Despite research suggesting that 46 percent of customers place a priority on8emission reductions and the environment, only one percent of customers have9elected to participate in the Renewable Gas Program, which represents only 0.110percent of the throughput on FEI's gas system. This suggests that while customers11say they want to reduce their GHG emissions and say they are willing to pay a12premium to do so, only a very small number actually take action and sign up for13Renewable Gas.

14 Appendix B-1, p. 31 shows the following survey question result:



- 17
- On page 122 of the Application, the bottom row of Figure 8-3 shows that the demand from
 the Voluntary Renewable Gas blend is expected to grow from 0.7 PJ in 2021 to 6.6 PJ in
 2022.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 147

Figure 8-3: Forecast Volumes of Renewable Gas Supply, Customer Demand and Allocation to Sales Customers (PJ)



26.1	FEI describes a current low uptake of the Voluntary Renewable Gas program
	(0.1% of throughput), and survey results show that existing RNG customers are
	more likely to say that the cost of RG should be spread out across all customers.
	Given this, please explain the reasoning behind the projected 9-fold increase in
	Voluntary RG demand by 2032 (from 0.7 PJ to 6.6 PJ).

8 Response:

9 The projected increase in demand under the Voluntary Renewable Gas service is primarily 10 attributable to large commercial and NGV customers who are interested in acquiring much larger 11 volumes than the residential and small commercial customers who, until relatively recently, made 12 up the bulk of program participants. After 10 years in the market, RS 1 customers account for a 13 little over 130,000 GJ per year worth of demand. However, FEI has fielded interest from large 14 volume commercial and NGV customers seeking to purchase hundreds of thousands or millions 15 of GJ individually.

- 16
- 17
- 18
- 19 20

26.1.1 Please break down the demand from 2021 to 2032 from Voluntary RG customers by residential, commercial and industrial sectors.

- 21
- 22 Response:

23 Please refer to the table below. In addition to the demand from Voluntary Renewable Gas

24 participants in the residential, commercial and industrial sectors, FEI has also included the 25 forecast demand from NGV customers. FORTIS BC^{**}

FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 148

1

7

8

9

10

11

12

Table 1: Voluntary Renewable Gas Annual Demand Forecasts (PJ)

Sector	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Residential	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.
Commercial	0.5	1.8	2.4	3.1	3.2	3.3	3.3	3.4	3.5	3.6	3.7	3.
Industrial	-	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.
NGV	0.1	0.8	0.9	1.4	1.6	1.7	1.9	2.0	2.1	2.2	2.2	2.3
Total	0.7	3.0	3.7	5.0	5.3	5.5	5.7	6.0	6.2	6,4	6.5	6.0

covered by the proposed RG Connections program which will already be receiving 100% RG. Please confirm, or explain otherwise, that such customers would be lost to the Voluntary RG program as they would not be able to elect to buy more than 100% RG. If so, please confirm that this attrition has been factored into the projected Voluntary RG demand.

13 Response:

14 Confirmed. FEI agrees that it is likely some customers will move into new buildings receiving the 15 Renewable Gas Connections service over time. Attrition of this kind has not been factored into 16 the projected Voluntary Renewable Gas demand as FEI does not believe that it would have a 17 material effect on the Renewable Gas demand. The Renewable Gas Connections service is 18 limited to residential buildings, and residential customers make up a small portion of the overall 19 demand in the Voluntary Program. Moreover, the turnover rate for the residential building stock 20 in BC is approximately 2 percent, meaning the effect of the attrition in any given year would be 21 under 0.5 percent of the total Voluntary Renewable Gas service demand.

- 22
- 23

32

24

25 26.1.3 Under FEI's RG Blend proposal, customers will gradually gain greater 26 exposure to RG through the RG Blend over the next decade, and 27 Voluntary RG customers will receive a higher portion of their RG from the 28 RG Blend, as long as their blend election remains constant. Please 29 explain if the assumptions in the Voluntary RG demand forecast account 30 for a potential decrease in Voluntary RG demand as the RG Blend 31 increases.

33 Response:

34 When FEI prepared its forecast, it first forecast the Renewable Gas Connections volume, then 35 the Voluntary Renewable Gas volume, and the Renewable Gas Blend made up the difference. 36 Because of this, FEI did not explicitly incorporate the effect of increasing Renewable Gas Blend 37 percentages in its forecast of demand for Voluntary Renewable Gas; if this had been done, there



would be lower Voluntary Renewable Gas demand and higher Renewable Gas Blend demand, 1 2 but the total would be unchanged.

3 4			
5			
6	26.2	If the de	emand from Voluntary RG customers is lower than expected such that
7		supply a	consistently exceeds demand, please explain if this would result in FEI
8		seeking	BCUC approval to increase to a higher Gas Blend to absorb the extra
9		supply, o	or an attempt to decrease supply going forward.
10 11		26.2.1	If the Gas Blend would absorb the extra supply, please confirm if this means that Voluntary RG customers would not themselves be drivers of

- 12 13
- demand.
- 14 Response:

15 FEI confirms that if the demand from either Renewable Gas Connections or Voluntary Renewable 16 Gas customers is lower than expected or the volume of supply FEI acquires is higher than 17 expected, such that the supply of Renewable Gas consistently exceeds demand, FEI will increase 18 the percentage of Renewable Gas in the Renewable Gas Blend.

19 FEI will set the percentage of the Renewable Gas Blend for the upcoming year, pursuant to the 20 details provided in the annual filing to set the S&T LC rider, as described in Section 9.5 of the 21 Application.

22 On this basis, demand will match supply regardless of the volumes consumed by Voluntary 23 Renewable Gas and Renewable Gas Connections customers. As noted in the response to BCUC 24 IR1 12.2, FEI will acquire Renewable Gas supply to meet provincial targets. As FEI forecasts the 25 demand for and supply of Renewable Gas each year, it intends to maintain a buffer supply of 26 Renewable Gas at the outset of each year to accommodate potential supply fluctuations, or 27 greater than anticipated demand. Please also refer to the response to BCUC IR1 10.2.



3

1 27.0 Reference: PROPOSED RENEWABLE GAS PROGRAM

Exhibit B–11, Section 7.4.3, pp. 102-103

Voluntary Renewable Gas Offering

- 4 On pages 102 to 103 of the Application, FEI states:
- 5 For example, customers under Rate Schedules 1, 2, or 3 can chose percentages 6 of 5, 10, 25, 50 or 100 percent, while Rate Schedule 5 customers can chose a 7 percentage between 5 percent and 100 percent in 5 percent increments... As FEI 8 implements the Renewable Gas Blend, sales customers subscribed to a Voluntary 9 Renewable Gas offering will see their selected percentage of Renewable Gas 10 comprised of a Baseline of Renewable Gas via the new S&T LC rider and the 11 remainder via the Low Carbon Gas Charge. For example, a sales customer 12 electing to voluntarily receive 10 percent Renewable Gas will receive one percent through the S&T LC rider and nine percent via the Low Carbon Gas Charge. 13
- As the percentage of RG increases for the RG Blend customers to 5 percent or
 greater, please describe the potential impact to any Voluntary sales customers
 who previously elected 5 percent RG, which would subsequently fall below the
 baseline of RG recovered via the new S&T LC rider.
- 18

19 Response:

20 As the percentage of the Renewable Gas Blend increases, FEI would remove percentages of 21 Renewable Gas offered to Voluntary Renewable Gas customers that are below the percentage 22 provided through the former offering. For example, if a customer was signed up for 5 percent 23 Renewable Gas through the Voluntary Renewable Gas service and the Renewable Gas Blend 24 reached 5 percent, the customer would be removed from the Voluntary Renewable Gas service 25 and would receive Renewable Gas volumes through the Renewable Gas Blend service. Any 26 customers who may then wish to remain in the Voluntary Renewable Gas service may only 27 purchase Renewable Gas in excess of the Renewable Gas Blend percentage.

- 28
- 29
- 30

31

32

33

- 27.1.1 If such customers would be eventually eliminated from the voluntary sales customer category, please describe if FEI has factored this into the RG demand forecast.
- 3435 **Response:**

The effect of customers being eliminated from the Voluntary Renewable Gas service and shifting
 to Renewable Gas Blend is not factored into the Renewable Gas demand forecast; however, the

- total demand for Renewable Gas would be unchanged. This is because any volume reductions
- 39 in the Voluntary Renewable Gas service would be transferred to the Renewable Gas Blend.

FORTIS BC

1 2

FortisBC Energy Inc. (FEI or the C	Submission Date:	
Revised Renewable Gas Program Application	 Stage 2 (Application) 	May 16, 2022
Response to British Columbia Utilities Commission (BCU	C) Information Request (IR) No. 1	Page 151

- 27.2 Please describe if FEI has considered structuring the Voluntary
 Please describe if FEI has considered structuring the Voluntary
 Renewable Gas offering so that any elected proportion of RG would be
 in addition to the Gas Blend, rather than a difference between their
 election and the Gas Blend. For example, a sales customer electing to
 voluntarily receive an additional 10% RG beyond the 1% Gas Blend
 would receive 11% RG in total.
- 10

11 Response:

12 Yes, FEI considered structuring the Voluntary Renewable Gas service to be in addition to the 13 Renewable Gas Blend. However, FEI determined this option was not viable due to the possibility 14 that customers would receive greater than 100 percent Renewable Gas. For example, if a customer selected 100 percent Renewable Gas through the Voluntary Renewable Gas service 15 16 and the Renewable Gas Blend was set at 1 percent, the customer would receive 101 percent 17 Renewable Gas – which exceeds what is possible. In addition, FEI determined that structuring 18 the offerings in this way would be difficult to communicate to the customer. In particular, if the 19 customer had only asked for 10 percent Renewable Gas, under this structure, FEI would actually 20 be delivering 11 percent Renewable Gas. This problem would compound as the Renewable Gas 21 blend increased to higher percentages.



1 28.0 **Reference: VOLUNTARY RENEWABLE GAS OFFERING** 2 Exhibit B-4, BCUC IR 8.5; Exhibit B-11, Section 7.4.3, pp. 102-103; 3 Section 2.1, p. 15 4 Continuation of the 2015 BERC Rate for Voluntary RG Sales 5 Customers 6 In response to BCUC IR 8.5, FEI stated: 7 FEI agrees that price elasticity of RNG demand could differ among classes of 8 customers due to factors such as mandated GHG emissions reduction targets for 9 some customers, while others may adopt RNG on a purely voluntary bases [sic]. 10 Other factors may include Clean Fuel Standards, clean power purchase contracts, 11 corporate renewable energy targets, monetization of green credits, and municipal 12 building code requirements. Customers who adopt RNG on a purely voluntary 13 basis may be more sensitive to the price of RNG whereas other customers who 14 need to meet GHG emission reduction targets for example might be less sensitive 15 to the price of RNG. As noted in the response to BCUC IR1 8.1, FEI believes a 16 further discussion of customers' willingness to pay is better addressed in the 17 forthcoming comprehensive review and assessment of the RNG Program. 18 [Emphasis added]

- 19 On page 102 of the Application, FEI states:
- 20 As discussed in section 5, customers have various reasons for wanting to 21 purchase more Renewable Gas than may be sold through the Renewable Gas 22 Blend. These reasons include meeting their own or government-mandated GHG 23 emission reduction goals. The provincial government's Carbon Neutral 24 Government Regulation and the BC-LCFS are examples of government 25 regulations that drive customer interest in purchasing large volumes of Renewable 26 Gas. By providing a Renewable Gas option for these customers, the Voluntary 27 Renewable Gas offering helps to maintain the long-term viability of the gas system 28 and maintain energy choice for these customers.
- 29 On page 103 of the Application, FEI states:
- 30With the exception of NGV and T-Service Customers as discussed below, FEI31proposes to set the Low Carbon Gas Charge equivalent to the current BERC (i.e.32CCRC + carbon tax + \$7 premium). FEI considers that the rate setting33methodology approved by the BCUC in 2015 continues to be just and reasonable34for sales customers, excluding NGV customers. The Low Carbon Gas Charge is35further described in Section 8.4.1.
- 28.1 Please explain why the \$7/GJ premium for Voluntary RG sales customers,
 and reasonable and
 would continue to be appropriate until the proposed RG Program review around



2028 (i.e., five years after a final decision in this Application). Please provide supporting evidence.

4 <u>Response:</u>

5 Please refer to the response to BCUC IR1 11.1 for a discussion of why a blend based voluntary 6 opt-in service remains an appropriate and desirable offering, which is important context to this 7 response.

8 When approving the BERC, the BCUC noted that one objective for FEI was to maximize recovery 9 of program costs from Renewable Gas customers. The \$7 per GJ premium strikes a balance that 10 not only seeks to maximize revenues but does so in a manner that:

- enables FEI to increase the amount of Renewable Gas in the supply portfolio that is
 dedicated to customers that wish to, or are required to, purchase greater amounts of
 Renewable Gas than is in the blended rate;
- advances GHG emission reduction goals;
- reduces other customers' contributions to the S&T LC rider; and
- retains customers and mitigates potential upward rate pressure if those customers left the
 system.

18 Specifically, under the revised Renewable Gas Program all FEI sales customers will contribute 19 toward the recovery of Renewable Gas supply costs through the S&T LC rider. Those customers 20 who wish to purchase additional Renewable Gas will have the option to do so by paying the 21 premium, which is an amount beyond what they will already paying through the S&T LC rider. 22 These customers will voluntarily take on a greater share of the cost of Renewable Gas acquisition 23 which in turn reduces the remaining cost which must be recovered from all other ratepayers 24 through the rider. In this way, other sales customers will benefit in the form of a reduced S&T LC 25 rider. Other sales customers will also benefit from FEI's ability to retain customers who would 26 otherwise leave the system if they did not have a feasible Voluntary Renewable Gas alternative.

27 FEI has no reliable information on which to propose a change to the \$7 per GJ premium for the 28 Voluntary Renewable Gas service. Please refer to Sections 5.2.2 and 5.8 of the Application. Given 29 the responses to the customer surveys, as well as the program history and anecdotal feedback 30 collected by FEI staff, FEI's customers are sensitive to the price premium for Renewable Gas. 31 The higher the price of Renewable Gas, the less likely they are to purchase it. This is especially 32 the case for customers that have many options to reduce GHG emissions, including switching to 33 electricity or other fuels, energy efficiency, renewable distributed energy resources, carbon 34 offsets, or any combination thereof.

For the reasons described in Section 5.8 of the Application, FEI cannot perform a price elasticity analysis to reasonably determine what customers may actually be willing to pay for Renewable Gas, and what effect changes in price may have on the demand for Renewable Gas under the



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 154

- Voluntary Renewable Gas service. Absent such information there is no means of estimating whether a change in price would be likely to prove beneficial. Given the sensitivity of customers to price, and the availability of options to reduce GHG emissions, increasing the rate for Voluntary Renewable Gas can only increase the likelihood that customers will not purchase Renewable Gas or leave the gas system altogether in favour of other options to reduce their GHG emissions. This result will have a detrimental impact on all sales customers. As such, FEI is opposed to any increase to the \$7 per GJ price.
- As FEI described in detail in its BERC Rate Methodology Comprehensive Assessment Report filed as Exhibit B-1 in this proceeding, and related IR responses and submissions, the \$7 per GJ premium has been successful, and has led to positive net growth in customer participation as well as RNG sales volume and revenues. The historical success of the \$7 per GJ premium, as established in the first stage of this proceeding, remains the best evidence for setting the rate for the Voluntary Renewable Gas service. Therefore, FEI submits that the \$7 per GJ premium for Voluntary Renewable Gas continues to be just and reasonable.
- 15
- 16 17
- 18 28.2 Considering that different types of Voluntary RG sales customers may have 19 different price sensitivity due to their different motivations to purchase RG, please 20 discuss the pros and cons of having different rates according to the type of 21 voluntary customers and their price sensitivity (or willingness to pay). For example, 22 a lower premium for Voluntary RG residential customers who enroll in RS 1LC that 23 typically would not have to meet Government-mandated GHG goals or corporate 24 renewable energy targets and a higher premium for Voluntary RG sales customers 25 who enroll in RS 2LC, 3LC and 5LC that have to meet Government-mandated 26 GHG goals or corporate renewable energy targets.
- 27 28.2.1 Please discuss the impact of having such differentiated rates against objectives like maximizing revenues from the RG Program, minimizing cross-subsidization from all sales customers, and FEI's ability to attract Voluntary RG customers of each type.

32 Response:

31

FEI is not proposing differentiated pricing among Voluntary Renewable Gas residential,
 commercial, and industrial sales customers because the impacts of differentiated rates for these
 customers is uncertain.

While differentiated rates may change sales volumes from target groups, it is far from clear whether the change in sales will result in an overall increase in revenues to offset programs costs to help inform this question. FEI has no reliable information on which to establish the appropriate pricing for different residential, commercial, and industrial sales customer types within the Voluntary Renewable Gas service. Specifically, FEI cannot perform a price elasticity analysis to



- 1 reasonably determine what different customer segments may actually be willing to pay for
- 2 Renewable Gas, and what effect changes in price may have on the demand for Renewable Gas
- under the Voluntary Renewable Gas service. Absent such information there is no means of
 estimating whether a proposed differential pricing scheme would be likely to prove beneficial.
- 5 Please also refer to Sections 5.2.2 and 5.8 of the Application.

6 This means that moderately lowering the price for customers may lead to greater sales, but it is 7 unclear whether the revenues associated with these sales through the LCG Charge will be lower, 8 higher, or similar to revenues before the rate change. Thus, the impact of these revenues on the 9 costs collected from all FEI sales customers through the S&T LC rider is uncertain. Similar 10 circumstances arise if the price was raised for public sector organizations. It is unclear whether 11 the revenues raised from such an increase would cover reductions in sales as the result of these 12 organizations seeking other ways of reducing GHG emissions.

13

14

- Please discuss whether discriminatory pricing may be justified if the objectives are
 to maximize the recovery of program costs from RG customers and minimize the
 cross-subsidization from all sales customers.
- 19

20 Response:

21 The following response is provided by Concentric:

22 Differential pricing for the Voluntary Renewable Gas service is justified. Differential pricing is not 23 unduly discriminatory in the context of the Voluntary Renewable Gas Service because voluntary 24 customers have chosen to take the service and have the option to take the same service as all 25 sales customers, including the Renewable Gas Blend. Please refer to FEI's response to BCUC 26 IR1 13.2 for further discussion of just versus unjust discrimination in the context of the Voluntary 27 Renewable Gas service. However, one cannot generally make the statement that discriminatory 28 pricing can be justified if the objective is to avoid cross subsidization between "old" and "new" 29 customers, where those two customer groups are otherwise provided with the same or nearly the 30 same service.

- 31
- 32
- 33 34
- On page 15 of the Application, FEI states:
- FEI attributes the increased customer demand for RNG to the perceived value of the Renewable Gas Program in reducing GHG emissions, and importantly, allowing certain customer classes to comply with increasingly stringent emission reduction regulations. Public sector building owners, municipalities, and public



transportation entities were all expressing interest in purchasing significant
 volumes RNG at this time.

- 28.4 If Public Sector Organizations (PSO), municipalities and public transportations
 entities must comply with increasingly stringent emissions reduction regulations,
 and purchasing RG is one way for them to meet these regulations, please discuss
 the price sensitivity for this segment of customers.
 - 28.4.1 Please explain why it would be just, fair and reasonable for these entities to continue to be subsidized by all sales customers for their increased cost of doing business.

11 Response:

7

8

9

10

12 This response also responds to BCUC IR1 28.5 regarding corporations.

13 As discussed in Section 5.2.2.4 of the Application, all customer segments remain sensitive to the 14 premium paid for Renewable Gas above conventional natural gas; therefore, the likelihood of 15 signing up for Renewable Gas service declines as the cost to the consumer increases. However, 16 FEI has no additional information regarding the particular price sensitivities of PSOs, 17 municipalities, public transportation entities, or corporations, and no reliable information on which 18 to establish differential pricing for these customers within the Voluntary Renewable Gas service. 19 Please refer to Sections 5.2 and 5.8 of the Application for further discussion of FEI's evidence 20 regarding the price sensitives of its customers.

Under FEI's proposal, Voluntary Renewable Gas customers will pay a greater share of the Renewable Gas acquisition costs than other sales customers. This is because Voluntary Renewable Gas customers will pay the S&T LC rider to recover costs associated with the Renewable Gas Program and a premium on the volumes of Renewable Gas that they purchase. Voluntary Renewable Gas customers will reduce the cost of Renewable Gas to be borne by all other sales customers.

27 Further, while FEI has no information regarding the particular price sensitives of these customers, 28 FEI is aware that these customers are price sensitive generally and have other options to reduce 29 GHG emissions, including energy efficiency, fuel switching, renewable distributed energy 30 resources, carbon offsets, or any combination thereof. Therefore, charging these customers a 31 rate higher than the current \$7 per GJ premium can only make it more likely that these entities 32 will choose an option other than Renewable Gas to reduce GHG emissions, and potentially leave 33 the gas system, which would reduce program participation and volumes, and increase the 34 Renewable Gas costs borne by other sales customers.

Accordingly, FEI proposes to continue to price Voluntary Renewable Gas service on a standalone cost basis using \$7 per GJ as a proxy for the Renewable Gas cost differential over the cost of conventional natural gas. This approach is just, fair and reasonable because it helps to achieve

38 provincial goals for decarbonization while limiting the premium paid by Voluntary Renewable Gas



	FortisBC Energy Inc. (FEI or the Company)	Submission Date:
TN	Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
	Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 157

customers to one which keeps these customers on the gas network and sustains their contribution
 to the recovery of fixed costs.

3 4		
5 6 7 8	28.5	If certain corporations decide to purchase RG voluntarily to meet renewable energy targets or improve their Environmental, Social and Governance (ESG) score, please discuss the price sensitivity for this segment of customers.
9 10 11		28.5.1 Please explain why it would be just, fair and reasonable for these entities to rely on all sales customers to pay for a portion of their RG purchase.
12	Response:	
13	Please refer t	o the response to BCUC IR1 28.4.
14 15 16		
17 18 19 20 21 22 23	28.6	Please quantify the level of cross-subsidization that occurs under a continuation of the \$7/GJ premium (in real 2022 dollars) and the impact on the S&T LC rider if such cross-subsidization were to end, i.e., if FEI were to set the LCG Charge for the Voluntary RG for Sales customers equal to the forecast cost of acquisition per GJ, like for the NGV sales customers and T-Service customers, all else being equal.
24	Response:	
25 26 27 28	FEI has provi the estimated Voluntary cus and T-Service	ded the table below setting out the estimated S&T LC rider (\$/GJ). The first line is rider assuming Voluntary customers pay a \$7 premium, the second line assumes tomers pay the full cost of acquisition for the Renewable Gas they receive (like NGV e customers), and the third line is the percent difference between lines one and two.

29 Note that FEI did not factor in Voluntary customer attrition due to the higher price of Renewable

30 Gas.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 158



Table 1: Estimated S&T LC Rider based on Application Proposal (\$7 premium) vs Full Acquisition Cost of Renewable Gas

\$/GJ	2024	2025	2026	2027	2028	2029	2030	2031	2032
Estimated S&T LC Rider									
assuming proposals in	1.43	1.78	2.02	2.42	2.44	2.72	3.02	3.71	4.40
application									
Estimated S&T LC Rider per question	1.22	1.56	1.81	2.20	2.29	2.58	2.89	3.59	4.28
Percent difference	17%	14%	12%	10%	7%	6%	5%	3%	3%

- 3 4
- 5
- 6

7

8

- 28.7 If the LCG Charge for the Voluntary RG for sales customers was set equal to the RG weighted average supply cost per GJ, please discuss the impact on FEI's demand forecast for the Voluntary RG offering. Please include assumptions used.
- 9 10

11 <u>Response:</u>

Please refer to Section 8.6 of the Application for a description of some of the assumptions madein the demand forecast, including the Voluntary Renewable Gas service demand.

As explained below, if the LCG Charge for the Voluntary Renewable Gas service for sales
customers was set equal to the Renewable Gas weighted average supply cost per GJ, it is unlikely
that the demand in FEI's forecast would materialize over the forecast period.

First, based on FEI's history with a voluntary Renewable Gas offering to date, and the feedback provided by customers described in Appendix B-1 to the Application, FEI believes that residential and small commercial customers would not elect to receive this service. Demand from these customer groups, however, represents a small portion of the forecast demand for the Voluntary Renewable Gas service.

22 Second, based on the survey feedback (described in Appendix B-2 to the Application) and 23 feedback from Key Account Managers, FEI believes that participation from large 24 commercial/institutional customers would decline significantly. Given the relatively large volumes 25 purchased by these customer groups, there would also be a significant decrease in demand. In 26 practice, FEI expects that participation in the Voluntary Renewable Gas service by these 27 customers would be limited to those with firm and committed GHG emission targets, and who 28 also face high capital cost or technical barriers to electrification. However, the use of lower cost 29 purchased carbon offsets, instead of higher cost Renewable Gas, may ultimately be a better 30 option for many of these customers, further limiting potential demand for Renewable Gas from 31 these customer groups.

- 32 Finally, based on both the survey feedback described in Appendix B-2 to the Application and from
- 33 Key Account Managers, FEI does not anticipate that its forecast demand from NGV customers



would change under the condition outlined in the question. The assumption that the cost of
 Renewable Gas would equal the weighted average supply cost per GJ was included in the
 demand forecast for these customers (as indicated in Section 8.6 of the Application).

As such, if the LCG Charge for the Voluntary Renewable Gas for sales customers was set equal
to the Renewable Gas weighted average supply cost per GJ, FEI believes that any demand in
the Voluntary Renewable Gas service would primarily be from NGV customers.

- 7
- 8 9
- 1028.7.1Please confirm, or otherwise explain, that if the RG demand from the11Voluntary RG customers turn out to be less than forecast, FEI would12increase the percentage of RG in the RG Blend offering to balance the13supply and demand, resulting in the same overall RG content in FEI's14system.
- 15

16 **Response:**

Confirmed. If the volume of Renewable Gas demand from the Voluntary Program is less than
expected, any Renewable Gas supply not used by Voluntary Program customers will increase
the percentage of Renewable Gas as part of the Renewable Gas Blend offering.

As FEI forecasts the demand for and supply of Renewable Gas each year, it intends to maintain a buffer supply of Renewable Gas at the outset of each year to accommodate potential supply fluctuations, or greater than anticipated demand. Please also refer to the response to BCUC IR1 10.2.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:	
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022	
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 160	

1	29.0	Refere	ence:	VOLUNTARY RENEWABLE GAS OFFERING
2				Exhibit B-11, Section 2.1, p. 15; Section 2.3, p. 24
3 4				Voluntary RG Offering for Customers Not Subject to External Constraints
5		On pa	ge 15 o	f the Application, FEI states:
6 7			FEI at the Re	tributes the increased customer demand for RNG to the perceived value of enewable Gas Program in reducing GHG emissions
8		On pa	ge 24 o	f the Application, FEI states:
9 10 11 12 13 14			The m their e driving motiva driven addres	hajority of participants during the first 10 years were fairly homogeneous in expectations and the regulations addressing GHG emissions were less of g a factor. Today, different customer segments have increasingly different ations to purchase Renewable Gas. These motivations appear to be primarily by regulatory changes, but may also be attributable to internal objectives to as GHG emissions.
15 16 17 18 19 20		29.1	Since BC rat discus could LC rid	the RG content of natural gas utilities is now mandated by the Province of ther than being spurred by the voluntary demand of sales customers, please is the possibility that voluntary customers not subject to GHG regulations simply stop their voluntary RG purchase in favour of simply paying the S&T er for the RG Blend.
21	Respo	onse:		

FEI agrees that it is possible that existing Voluntary customers could un-enroll from the program and elect to receive Renewable Gas Blend service. However, as discussed below, the extent of such a shift would likely depend on the underlying reason the customers joined the Renewable Gas Program.

As the majority of participants (by customer count) in the existing Program have opted for a Renewable Gas blend of 5 or 10 percent, some may feel Renewable Gas Blend service is an alternative that meets the same objectives as the Voluntary Renewable Gas service.

However, many customers are more concerned with the principle behind signing up for the Voluntary Renewable Gas service, namely, voluntarily incurring additional cost in support of reduced GHG emissions. As such, for customers of this kind, the value of the Voluntary Renewable Gas service is not tied to the percentage of Renewable Gas they receive.

At this time, FEI is unable to predict the underlying impact to Voluntary Renewable Gas service,
as it is likely that customers falling into either scenario form part of the existing program.

35

FORTIS BC

FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 161

1				
2		29.1.1	Please confirm, or otherwise explain, that while "notionally", these	
3			customers would individually pay for and receive less RG than if they	
4			elected to voluntary purchase a higher portion of RG than the blend, the	
5			RG content in FEI's system would be no more and no less, as a reduction	
6 7			In the RG demand from voluntary sales customers would be picked up	
/ 0			by the RG Blend offening.	
0	Posponso:			
9	Response.			
10 11 12	Confirmed, wi FEI to acquire and demand f	ith the ca more Re from NG∿	veat that demand from voluntary NGV customers may eventually require newable Gas so that FEI can meet the emissions cap in the CleanBC Plan / customers which do not contribute to the cap.	
13 14				
15				
16	29.2	Due to o	changing customers' motivations and provincial GHG reduction mandates	
17		for gas	utilities, please discuss the possibility that the Voluntary RG offering has	
18		become	more relevant to PSOs, municipalities, public transportation entities and	
19		other bu	sinesses for which ESG is important, and less so to the other segment of	
20		voluntar	y customers not subject to external constraints.	
21				
າງ	Dechence			

22 <u>Response:</u>

23 As existing Voluntary Renewable Gas customers participate in the program for a number of 24 reasons, FEI cannot confirm that the Voluntary Renewable Gas service is less relevant to the 25 customers that have already elected to participate in the existing Renewable Gas Program than 26 to PSOs, municipalities, public transportation entities and other businesses for which ESG is 27 important. However, PSOs, municipalities, etc. have recently expressed a stronger interest in the 28 Voluntary Renewable Gas service and FEI expects this interest to continue for the foreseeable 29 future. In contrast, Voluntary Renewable Gas customers that are not subject to external 30 constraints have not expressed as much interest in the Renewable Gas Program, perhaps 31 indicating that it is less relevant to their present energy decision-making.

- 32
- 33

34

3529.2.1For those voluntary customers not subject to external constraints who36may still want to elect a higher percentage of RG than the RG Blend, for37environmental reasons for example, please explain why it would be just,38fair and reasonable for these voluntary customers to rely on all sales39customers to pay for a portion of their RG purchase, especially since their40higher RG election does not lead to more RG in FEI's system.



2 Response:

3 Under the proposed Renewable Gas Program, any volumes of Renewable Gas not sold through 4 one of the other program components are used to decarbonize the gas supply for all sales 5 customers through the Renewable Gas Blend service. As noted in the response to BCUC IR1 6 28.1, the BCUC has stressed the need to maximize revenues from Renewable Gas sales. Under 7 the Renewable Gas Program, Voluntary Renewable Gas customers will pay more for Renewable 8 Gas than Renewable Gas Connections customers and, in doing so, will increase revenues relative 9 to what revenues would be in the absence of this service offering. This reduces the overall 10 Renewable Gas acquisition costs recovered from all sales customers through the S&T LC rider. 11 Moreover, Voluntary Renewable Gas participants also pay the S&T LC rider, ensuring that they 12 are equally contributing to this mechanism for Renewable Gas cost recovery as well.

This question implies that the only just and reasonable approach for Voluntary Renewable Gas participants would be for them to pay the full Renewable Gas cost. Such a pricing approach would significantly reduce interest in Voluntary Renewable Gas and, in doing so, would likely reduce revenues to a level lower than would occur under the proposed pricing approach. Such a result is inconsistent with the need to design the voluntary portion of the program in a way that maximizes revenues, thereby mitigating overall program costs, while supporting the provincial government's GHG emission reduction targets.

It is also important to recognize that the Voluntary Renewable Gas service creates other benefits to the public including: (1) enabling FEI to retain customers by offering an attractive clean energy option; (2) encouraging new demand on the system from customers seeking to expand operations in a manner that produces no GHGs; and (3) lowering costs for British Columbia energy users by utilizing existing gas infrastructure, and mitigating potential rate impacts and strains on the electric system associated with a major system build out.

- 26 27
- 28
- 2929.3If the voluntary customers not subject to external constraints stopped purchasing30RG voluntarily, at any premium rate, what would be the impact on FEI's forecast31demand from the Voluntary RG customers and from the RG Blend? Please revise32Figure 8-3 accordingly.
 - 29.3.1 What would be the resultant impact on the level of RG Blend in FEI's system (in percentage, in 2024, 2028 and 2032) and on the level of the S&T LC rider, all else equal?
- 3629.3.2What would be the resultant bill impact for customers in all three37offerings, all else equal? Please revise Figures 8-4 to 8-6 accordingly.
- 38

33

34



1 Response:

2 To respond to this question, FEI assumed that the Voluntary Renewable Gas demand that would be eliminated would be from residential (RS 1) and small commercial (RS 2) customers. FEI 3 4 assumes that the balance of Voluntary Renewable Gas demand for large commercial, industrial 5 and NGV customers would remain, as these customers typically have external motivations for 6 requiring Renewable Gas. The Renewable Gas demand that residential and small commercial 7 customers would have taken would then flow through the S&T LC rider, thereby increasing the 8 amount that sales customers would receive as Renewable Gas Blend starting in 2024. FEI 9 provides the requested Figure 8-3 below to reflect this as well as a graph showing the percentage 10 of Renewable Gas Blend, and also provides the requested Figures 8-4 through 8-6 to respond to BCUC IR1 29.3.1 and 29.3.2. 11



Requested Figure 8-3: Forecast Volumes of Renewable Gas Supply, Customer Demand and Allocation to Sales Customers (PJ)



- 15 The elimination of residential and small commercial Voluntary Renewable Gas demand causes a
- 16 small increase in the Renewable Gas Blend starting in 2024, increasing the S&T LC rider (\$/GJ)
- by approximately 2 percent on average from 2024 through 2032.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:		
Keviseu Renewable Gas Program Application – Stage 2 (Application)	May 10, 2022		
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 164		



This elimination of residential and small commercial Voluntary Renewable Gas demand results in

the following impact to customer bills with slightly more Renewable Gas flowing through the S&T

LC rider.







Requested Figure 8-4: Annual Bill for Rate Schedule 1 (No Voluntary RG Demand from RS 1 and RS 2)



Requested Figure 8-5: Annual Bill for Rate Schedule 2 (No Voluntary RG Demand from RS 1 and RS 2)









Requested Figure 8-6: Annual Bill for Rate Schedule 3 (No Voluntary RG Demand from RS 1 and RS 2)





FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 167

1 30.0 **Reference: VOLUNTARY RENEWABLE GAS OFFERING** 2 Exhibit B-11, Section 2, p. 3 3 Evaluation of Alternative Rate-Setting Mechanisms for Voluntary RG 4 **Sales Customers** 5 On page 3 of the Application, FEI states: 6 In the Decision, the BCUC Panel identified three overarching objectives which 7 guided its decision approving the BERC rate methodology, as follows: 8 1. Maximize the recovery of program costs from RNG customers. This 9 objective was laid out in the previous Commission decision. In order to 10 maximize the recovery of program costs, it may not be sufficient to 11 maximize the number of RNG customers, reduce the number of net RNG 12 customer drops or to maximize the volume of RNG sold. The revenue 13 received from biomethane customers must be maximized. [Bold in the 14 original, emphasis added] 15 16 30.1 For the Voluntary RG program for sales customers, please evaluate the alternative 17 rate-setting mechanisms against the Bonbright rate design criteria, as well as by 18 assessing the impact of each against the following metrics: maximizing revenues 19 from the RG Program, minimizing cross-subsidization from FEI's sales customers, 20 and ability to attract new voluntary customers. To do so, please complete the 21 following table: 22

	FEI's proposed LCG Charge: CCRC + \$7/GJ + carbon tax (\$/GJ)	Cost-based rate- setting mechanism: weighted average RG supply cost for all Voluntary Sales customers	Differentiated rate setting mechanism: higher rate for customers with GHG/ESG mandates and lower rates for others
	Bonbrigh	nt Criteria	
1. Recovery of the			
revenue requirement			
2. Fair apportionment			
of costs			
Efficient price			
signals			
4. Customer			
understanding and			
acceptance			
Practical and cost-			
effective			
6. Rate stability			
Revenue stability			



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 168

8. Avoid undue			
discrimination			
	Additiona	al Criteria	
9. Maximizing			
revenues from the RG			
Program			
10. Minimizing cross-			
subsidization from FEI			
sales customers			
11. Ability to attract			
new voluntary			
customers			
12. Meeting			
Government policy			

2

3 Response:

4 The following response is provided by Concentric.

5 Please refer to the responses to BCUC IR 11.1, 28.2, 28.4, 28.5 and 29.2.1 for background 6 information on which this response is based. Concentric understands the fundamental premise of 7 the question to be that a "cost-based" rate-setting approach based on the average Renewable 8 Gas cost for all voluntary customers or a differentiated rate approach for customers with 9 GHG/ESG mandates are viable options for voluntary customers and the general public. 10 Concentric disagrees with this premise. As discussed below, these options are not viable.

11 The "cost-based" rate-setting option will result in fewer customers without GHG mandates 12 participating in the program. Moreover, it would drive customers with GHG mandates away from 13 Renewable Gas and toward the use of electricity given the unlevel playing field that exists today, 14 as discussed in the response to BCUC IR1 17.1. Such a result is not only inconsistent with the 15 BCUC's objective of maximizing revenues, but will also likely put upward pressure on gas rates 16 as customers with GHG mandates substitute electricity for Renewable Gas to meet their clean 17 energy needs. It also increases the potential for underutilized assets and increasing rates. Such 18 outcomes are not in the long-term interests of FEI's existing customers or the public.

19 The option of establishing higher voluntary rates for customers with GHG/ESG mandates than 20 voluntary customers without such mandates is problematic for several reasons. First, it presumes 21 that FEI has sufficient information to assess the extent to which higher prices for such customers 22 would intersect with the BCUC's object of maximizing revenues. The responses to BCUC IR1 23 1.28.4 and 28.5 explain why FEI does not have sufficient information to make this determination. 24 This option, which would result in customers with mandates paying more for Renewable Gas than 25 customers participating in the program without such mandates, could represent undue discrimination. The reality is that the cost of participation in the program should not be based on 26 27 whether a customer has or does not have a mandate to purchase Renewable Gas because there 28 is no cost differential between the Renewable Gas molecules that FEI purchases on behalf of 29 both customer types. See the responses to BCUC IR1 13.2 and 28.3. Finally, this approach could



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 169

- 1 result in unintended consequences such as customers eliminating or reducing their mandated
- requirements or customers substituting electricity for Renewable Gas. Neither of these outcomes
- 3 are in the public interest.
- 4 The requested comparison of the hypothetical alternatives to FEI's proposal is provided in the
- 5 table below, which reflects the significant concerns related to the two alternative approaches.

	FEI's proposed LCG Charge: CCRC + \$7/GJ + carbon tax (\$/GJ)	Cost-based rate-setting mechanism: weighted average RG supply cost for all Voluntary Sales customers	Differentiated rate setting mechanism: higher rate for customers with GHG/ESG mandates and lower rates for others
Bonbright Criteria			
1. Recovery of the revenue requirement	\checkmark	\checkmark	\checkmark
2. Fair apportionment of costs	\checkmark	\checkmark	Ν
3. Efficient price signals	\checkmark	Ν	Ν
4. Customer understanding and acceptance	\checkmark	\checkmark	\checkmark
5. Practical and cost- effective	\checkmark	\checkmark	Ν
6. Rate stability	\checkmark	\checkmark	\checkmark
7. Revenue stability	\checkmark	Ν	Ν
8. Avoid undue discrimination	\checkmark	\checkmark	Ν
Additional Criteria			
9. Maximizing revenues from the RG Program	\checkmark	Ν	Ν
10. Minimizing cross- subsidization from FEI sales customers	\checkmark	\checkmark	\checkmark
11. Ability to attract new voluntary customers	\checkmark	N	N
12. Meeting Government policy	\checkmark	Ν	N



1	31.0	Reference:	MITIGATING RISKS OF DEMAND AND SUPPLY BALANCING
2			Exhibit B-11, Section 8.7, p. 126; Exhibit B-4, BCUC IR 5.1.1 and
3			BCUC IR 12.1; Exhibit
4			B-9, p. 3
5			Carbon offsets
6		On page 126	of the Application, FEI states:
7		Carbo	on offset gas is less costly on a \$/GJ basis than Renewable Gas. Based on
8		histor	ical purchases of carbon offsets made by FEI the price range per GJ for the
9		carbo	n offset component is approximately \$0.50 to \$1.50. [] The cost of carbon
10		tax m	ust also be factored in, and contributes to increase the cost of carbon offsets
11		gas.	

12 In response to BCUC IR 12.1, FEI provided the following table:

Table 1: RNG Shortfall and Carbon Offset Purchase

Item		2017 (Actual)	2018 (Actual)	2019 (Actual)	2020 (Actual)	2021 (Forecast)
A	Total RNG Supply (TJ)	153.8	176.2	224.5	250.4	770
в	Total RNG Sales (Demand TJ)	233.1	276.2	315	306.2	345.1
С	RNG Shortfall [A-B] (TJ)		-100	-90.5	-55.8	424.9
D	Average price of carbon offsets (\$/GJ)	\$ 1.00	\$ 1.00	\$ 1.00	\$ 1.00	\$ 1.00

13

14 31.1 Please update the above table with actual data for 2021, and if available, for 2022 15 forecast.

16 17 <u>Response:</u>

- 18 Please see the updated Table 1 below which now includes the actual data for 2021 and the
- 19 forecast for 2022.
- 20

Updated Table 1: RNG Shortfall and Carbon Offset Purchase

Item		2017 (Actual)	2018 (Actual)	2019 (Actual)	2020 (Actual)	2021 (Actual)	2022 (Forecast)
A Total RNG Supply (TJ)		153.8	176.2	224.5	250.4	715.2	1,963.4
В	3 Total RNG Sales (Demand TJ)		276.2	315.0	306.2	581.4	1738.0
С	C RNG Shortfall (TJ)		-100.0	-90.5	-55.8	-74.8	0.0
D	Average Price of Carbon Offsets (\$/GJ)	\$ 1.00	\$ 1.00	\$ 1.00	\$ 1.00	\$ 1.00	\$ 1.00

²¹ 22

23 FEI may either use RNG inventory to make up for a shortfall or it may need to rely on carbon

24 credits (with equal reductions to the appropriate volume of RNG) to make up for any ongoing RNG

shortfall. The RNG shortfalls are trued up on a monthly basis.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 171

At the beginning of 2021, there was a balance of zero RNG inventory so FEI could not use inventory to cover any shortfall. In the first four months of the year, the sales of RNG (Demand) were greater than the acquisition of RNG (Supply) in each month and therefore there was a cumulative deficit. For the rest of the year, monthly supply exceeded the monthly demand. Even though the annual volume of Supply was greater than Demand, there was a deficit of RNG from the first four months of the year equal to -74.8 TJ.

- 7
- 8

9

10

- 31.2 Please confirm, or otherwise explain, that FEI relied on the purchase of carbon offsets in the years 2017 to 2020 to remedy a shortfall in its RG supply to meet demand.
- 11 12

13 Response:

Confirmed. FEI also purchased offsets during the first four months of 2021, as described above,
but ended the year with enough supply to exceed the total customer demand.

- 16
- 17
- 18

23

- 1931.3Please confirm, or otherwise explain, that the shares of carbon offsets to meet the20RG demand are calculated by dividing Line C by Line B as follows: 20 percent21(2017), 36 percent (2018), 29 percent (2019) and 18 percent (2020), for a four-22year average of 25.75 percent.
- 24 **Response:**

Confirmed. The portion of Renewable Gas demand met in each year by carbon offsets is calculated as described in the question. The Renewable Gas Program has changed fundamentally in the last few years and FEI is seeing rapid growth in the supply of Renewable Gas as noted in the response to BCUC IR1 31.1.

- 29
- 30

31 32

- 31.4 Please indicate whether FEI forecasts it would rely on the purchase of carbon offsets to the same extent as the years 2017-2021 for the next 10 years.
- 33 34

35 **Response:**

FEI does not anticipate that it will rely on the purchase of carbon offsets to the same extent for
 the next 10 years, as it did between 2017 and 2021. FEI expects that, with an increasing supply
 of Renewable Gas, and the supply and demand management tools discussed in the response to
 BCUC IR1 10.2, imbalances between supply and demand will be limited. Even so, carbon offsets



1 2 3 4	may continue to be used on occasion to balance monthly supply and demand reflecting that the supply of Renewable Gas tends to be relatively constant over the short term, while demand fluctuates (e.g., peak periods during the winter months versus lower demand during the summer months).				
5 6					
7 8	On pa	ge 3 of Ex	whibit B-9, FEI states:		
9 10 11		The role supply a supply.	of carbon offsets in the portfolio will be examined, including a forecast of and how the costs of carbon offsets compare with the average cost of RG		
12 13 14	31.5	Please i emissior	ndicate whether FEI purchases its carbon offsets from the BC-operated is offset system or from another carbon offsets market.		
15	<u>Response:</u>				
16	FEI has purch	nased all o	of its offsets from a BC-based offset system provider.		
17 18					
19 20 21 22 23 24	31.6 Response:	As more discuss as dema	e jurisdictions adopt stricter GHG emissions reduction targets, please the likelihood of price increases for carbon offsets and market shortages and for such offsets increases over time.		
25 26 27	FEI expects th however, give be material.	nat increas en the rela	sed demand for Renewable Gas could increase the price of carbon offsets; ative cost of offsets versus Renewable Gas, the impact is not expected to		
28 29					
30 31 32 33	Pasnonsa	31.6.1	Please discuss the risks it could pose in the medium to long term (5 to 10 years) to FEI's RG Voluntary Program.		
34 35 36	FEI does not significant ris Program, FE	t consider k to the ' I will hav	[•] an upward shift in market demand for carbon offsets to represent a Voluntary Renewable Gas service. Under the revised Renewable Gas ve several options to manage Renewable Gas supply and demand.		

37 Accordingly, FEI does not anticipate needing to rely on carbon offsets often or at all.



1 Please refer to the responses to BCUC IR1 10.2 and 31.4.

2 3			
4 5 6 7 8 9	<u>Response:</u>	31.6.2	Please discuss the likelihood of carbon offset gas becoming more costly on a \$/GJ basis than Renewable Gas when increases in carbon tax are factored in.
10	Please refer t	o the resp	ponse to BCUC IR1 31.6.
11 12			
13 14	In res	oonse to E	3CUC IR 5.1.1, FEI stated:
15 16 17 18 19 20 21 22		FEI's cu form of e only pro demand Given th exactly, associat mechan	rrent goal is to purchase and sell true RNG as a tangible, carbon neutral energy, which customers can readily purchase on their bill. Currently, FEI vides carbon offsets as a compliance tool in the event supply is lower than and the need to balance the difference when sales exceed inventory. he fact that FEI expects supply and demand to rarely (or ever) match the purchase of carbon offsets to maintain the GHG emissions reductions ted with RNG demand provides for an appropriate GHG balancing ism.
23 24 25 26	31.7 Response:	Please o balancin	discuss the pros and cons of using the purchase of carbon offsets as a ig GHG mechanism versus adjusting the level of RG blend in FEI's system.
27 28	The approach	n of using	the Renewable Gas Blend has several advantages. First, it is easier to

understand for customers. The idea that a low carbon gas can directly displace conventional natural gas is straightforward and the link to a physical project can be shown. Second, the recently released *BC Renewable and Low-Carbon Gas Supply Potential Study*⁵⁴ indicates a large potential for projects within BC. For additional details on this study, please refer to the response to BCUC IR1 2.1. Additionally, FEI has established Renewable Gas supply projects throughout North America, further widening supply potential. Lastly, Renewable Gas contracts provide the advantage of locking-in prices and FEI has linked Renewable Gas production to the natural gas

³⁵ system in North America.

⁵⁴ Evint Consulting and Canadian Biomass Energy Research Ltd., *BC Renewable and Low-Carbon Gas Supply Potential Study*, January 28th, 2022: <u>https://www.cdn.fortisbc.com/libraries/docs/default-source/news-events/bc-renewable-and-low-carbon-gas-supply-potential-study-2022-03-11.pdf</u>.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 174

- 1 Carbon offsets have the advantage of being less costly today; however, a future market and future
- 2 availability is not guaranteed within BC, nor are future prices. Early evidence in FEI's customer
- 3 surveys (2010 Biomethane Application) indicated customers preferred the idea of a program that
- 4 purchases gas over the purchase of carbon credits. Carbon offsets, if unavailable in BC, may
- 5 need to be purchased from markets outside of North America.

6 While carbon offsets can be a useful tool for balancing and can potentially lower costs in the short-

7 term, the long-term objective is to lower the carbon emissions of FEI's natural gas system. This

8 objective can only realistically be achieved by substituting Renewable Gas for conventional

9 natural gas.


1	32.0	Refere	ence:	ENVIRONMENTAL ATTRIBUTES
2 3				Exhibit B-11, Section 1.1, p. 2, Section 5.7.2, p. 69; Order G-292-20, Appendix C
4				Environmental Attributes and BC-LCFS
5 6		In Orc submi	ler G-2 ssions d	92-20, the BCUC introduced the following question to guide participants' on scope:
7 8 9			Detail supply valued	the environmental attributes associated with any current or future RNG r. How should environmental attributes associated with RNG supply be and who should be entitled to claim those environmental attributes?
10		On pa	ge 2 of	the Application, FEI in footnote 2 states:
11 12 13 14 15 16 17			NGV of Standa and e consul gas sy buildin rate th	customers have access to the market created by the BC Low Carbon Fuel and [LCFS] whereby they can monetize carbon credits to offset their costs encourage their use of Renewable Gas. In addition, Renewable Gas med by this sector will not contribute to the CleanBC Roadmap target for the system to reduce emissions from natural gas used to heat homes and the gas and power industries or home. It is therefore appropriate that they pay a at recovers the full cost of any Renewable Gas.
18		On pa	ge 69 o	f the Application, FEI also states:
19 20 21 22			Cur LCFS. supply Renev	rently, only in-province Renewable Gas supply is recognized under the BC- FEI is working with the province to allow for out-of-province Renewable Gas to be recognized and approved under the regulation and therefore allow all vable Gas volumes to earn and monetize credits.
23 24 25 26 27 28			The cu segme and th not we while t for NG	urrent BERC was designed as a postage stamp rate applied to all customer ents including NGV customers. However, the nature of the BC-LCFS credits e benefit NGV customers could derive from the sale of BC-LCFS credits was ell understood. Today, NGV customers can access the BC-LCFS credits, he building sector customers cannot, suggesting a need to align the offering GV customers with existing policy.
29 30 31 32	Posn	32.1	Please supply the BC	e clarify what value can FEI or the customer generate for out-of-province RG given that only in-province RG supply is currently being recognized under C-LCFS.
33 34 35	FEI su on Fel	ibmitted bruary 2	l its first 24, 2022	out-of-province Renewable Gas Fuel Code application under the BC-LCFS 2. The application is under review and, once it is approved, NGV customers

36 will be able to generate credits under the BC-LCFS based on this Fuel Code.

FEI will be working with the Ministry of Energy, Mines and Low Carbon Innovation (EMLI) to determine how Fuel Codes will apply to Renewable Gas used in the transportation sector given



12

FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 176

- the different carbon intensities of the various Renewable Gas supply projects. As different
 Renewable Gas supply projects have different carbon intensities, they require different Fuel
 Codes.
- 32.1.1 As the voluntary RG purchases are notional, please clarify how the customer would differentiate whether their environmental attributes originated from FEI's in-province vs. out-of-province RG suppliers, particularly for NGV customers who may wish to validate and monetize their BC-LCFS credits.

13 Response:

NGV customers who purchase Renewable Gas will not be able to differentiate which sources theirsupply originated from.

16 To assist NGV customers in evaluating the environmental benefits of adopting Renewable Gas,

17 FEI provides an estimate of the carbon intensity of the Renewable Gas supply. For the purposes

18 of BC-LCFS compliance filings required to validate carbon credits, FEI uses the compliance year

19 Renewable Gas volumes produced from each qualified Renewable Gas source with a Fuel Code,

20 and distributes the volumes across all NGV Renewable Gas customers.

Please also refer to the response to BCUC IR1 32.1, which explains that more work is needed
 with the Ministry of Energy, Mines and Low Carbon Innovation to determine how the Fuel Codes
 will apply to Renewable Gas used in the transportation sector given the different carbon intensities

24 of the various Renewable Gas supply projects.

- 25 26 27
- 32.2 Please clarify whether customers under the Voluntary RG offering will have the
 environmental attributes by default or whether customers will have to notify FEI
 that they wish to retain the environmental attributes for their own use.
- 31

32 **Response:**

NGV customers will see their carbon tax credited on their bill and will also be able to claim
 associated reductions in GHG emissions. Carbon credits through the BC-LCFS must be applied

35 for separately through the provincial government for the NGV customer to receive the associated

- 36 benefit.
- 37

FORTIS BC^{**}

1

2 32.2.1 If the environmental attributes associated with the sale of RG to NGV 3 customers are retained by the customer but not monetized under the BC 4 LCFS, please confirm that FEI would still not be able to contribute to the 5 CleanBC Roadmap targets in any way. 6 7 Response: 8 Confirmed. FEI understands that under the current CleanBC policy proposal, Renewable Gas 9 consumed by the transportation sector will not contribute to the CleanBC Roadmap cap for natural 10 gas utilities in British Columbia. NGV customers will nonetheless see a carbon tax credit on their 11 bill for using Renewable Gas. 12 13 14 15 32.2.2 If the NGV customer who does not wish to retain the environmental 16 attributes, please explain whether FEI is able to (i) claim those 17 environmental attributes towards the CleanBC Roadmap targets and/or 18 (ii) monetize the environmental attributes under the BC-LCFS. 19 20 Response: 21 FEI would not be able to claim an NGV customer's environmental attributes as those attributes 22 do not count towards the CleanBC Roadmap target for natural gas utilities. This is because GHG 23 emission reductions for the transportation sector are not currently proposed to count towards the 24 target. Moreover, the generation of BC-LCFS credits is determined based on whether the NGV 25 customer is classified as a Part 3 Fuel Supplier (as defined by the BC-LCFS), rather than a 26 customer's desire to retain environmental attributes or not. FEI notes that the environmental 27 attributes attached to the fuel supply are not attached to the BC-LCFS credits and are therefore 28 independent from the generation and transfer of BC-LCFS credits. Although the BC-LCFS utilizes 29 a lifecycle analysis of the fuel to determine a carbon intensity of a particular fuel for carbon credit 30 generation, no environmental attributes are attached to the credits. 31 32 33 34 32.2.2.1 If FEI is able to monetize any unclaimed environmental 35 attributes under the BC-LCFS, please clarity how this revenue 36 will offset costs (i.e. an offset to the cost of acquisition for NGV 37 customers, the S&T LC rider, LCG Charge, or other). 38



1 Response:

Currently, revenues from the sale of any carbon credits that FEI is able to monetize under the BC-LCFS go back to all non-bypass customers in rates. To date, all carbon credits FEI has monetized to all non-bypass customers have been from providing conventional natural gas to low carbon transportation customers. Specifically, the sale of carbon credits goes into the Emissions Regulations Deferral Account and is amortized into delivery rates. FEI has not considered any other approaches to the use of the revenues from the sale of carbon credits under the BC-LCFS program.

- 9
- 10
- 11
- 12 32.3 For sales customer and T-Service customers under the Voluntary RG offering, 13 please clarify whether FEI or the customer will be entitled to retain the 14 environmental attributes. For instance, is there a risk of double counting if FEI and 15 customers both claim environmental attributes for their own reporting purpose?
- 16

17 Response:

18 For this response, FEI assumes that environmental attributes mean greenhouse gas (GHG) 19 reductions. For all customers, excluding customers who use Renewable Gas as a fuel for 20 transportation, the GHG reductions will be attributed to FEI. The provincial government is currently 21 developing legislation in support of CleanBC that will hold natural gas utilities in British Columbia 22 accountable for a certain quantity of GHG reductions. While the laws and regulations relating to 23 how to account for and to whom GHG reductions are attributed are not yet finalized, FEI is of the 24 understanding that when FEI delivers Renewable Gas to a sales or T-Service customer, the 25 associated GHG reductions will be counted towards FEI's obligations.

- 26
- 27
- 28
- 2932.4Please provide count and proportion of customers who wish to retain30environmental attributes for their own use versus customers who are amendable31to FEI keeping the environmental attributes. Include a breakdown by customer type32(i.e. NGV customers, and if applicable, T-Service customers and sales customers33excluding NGV) and by year for the past 5 years.
- 34

35 **Response:**

FEI does not have any data to indicate the proportion of customers who wish to retain environmental attributes for their own use versus customers who are amenable to FEI keeping the environmental attributes. FEI suspects that most if not all customers wish to retain environmental attributes for their own use.



G. ACCOUNTING TREATMENT, PROGRAM MECHANICS, RATE SETTING AND 1 2 CUSTOMER BILL IMPACTS 3 33.0 **Reference:** LOW CARBON GAS CHARGE 4 Exhibit B-11, Section 8.2, p. 108 5 LCG Charge terminology 6 On page 108 of the Application, FEI provides an example and related assumptions: 7 FEI both purchases and sells 7,500,000 GJs of Renewable Gas in the year, such 8 that there is no supply/demand imbalance. To simplify this example, FEI has also 9 assumed that it has forecasted the costs, supply, and demand exactly as they 10 occurred. The purchase and acquisition price is \$20 and the CCRC in that year is \$4 per GJ, and carbon tax is \$2 per GJ. As such, the LCG Charges are as follows: 11 12 Renewable Gas Connections LCG Charge is: \$6 per GJ (\$4 CCRC + \$2 13 carbon tax) 14 Voluntary Renewable Gas for sales customers LCG Charge is \$13 per GJ (\$4 15 CCRC + \$2 carbon tax + \$7 premium) 16 • Voluntary Renewable Gas for T-Service customers LCG Charge is \$20 per 17 GJ 18 Footnote 108: In this example, there are no sales to NGV customers. 19 Please clarify why FEI chose to use the same terminology, i.e., LCG Charge, to 33.1 20 identify charges that take on three different values for the three groups of 21 customers. 22 33.1.1 Would FEI be amenable to using different terminology to identify the 23 different charges? If so, please provide these terms. If not, why not? 24 25 **Response:** 26 The LCG Charge is a charge for Low Carbon Gas, regardless of which rate schedule it is used in. FEI chose this terminology to be consistent with how most of its current charges are described

in. FEI chose this terminology to be consistent with how most of its current charges are described
throughout its rate schedules. For example, FEI uses "Delivery Charge" within most of its rate
schedules, yet the value of the charge is different within each; the same applies for FEI's Basic
Charge, Demand Charges, and Storage and Transport Charges. Consequently, FEI would not be
amenable to using different terminology as it would not be consistent with current practice.

32

33



IN .	FortisBC Energy Inc. (FEI or the Company) Revised Renewable Gas Program Application – Stage 2 (Application)	Submission Date: May 16, 2022
	Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 180

33.2 While NGV customers are not included in the example above, please confirm, or
 otherwise explain, that if they were, the LCG Charge for NGV customers would
 have been the same as for the T-Service customers.

5 **Response:**

6 Confirmed.





1 34.0 Reference: OVERVIEW OF LOW CARBON GAS ACCOUNT

Exhibit B-11, Section 8.2, Figure 8-1, p. 108

- 3 LCG Account Including S&T LC Rider and LCG Charge
- 4 On page 108 of the Application, FEI provides the following figure:



Figure 8-1: LCG Account including S&T LC Rider and LCG Charge

- 5 6
- 34.1 Please confirm, or otherwise explain, that all capital, O&M, marketing, regulatory and gas costs are included in the "Renewable Gas Supply and Acquisition Cost."
- 7 8

9 Response:

Not confirmed. Customer education and awareness costs and regulatory costs for this proceeding
 are not included in the Renewable Gas Supply and Acquisition costs.

12 Section 9.4 of the Application discusses customer education and awareness costs and explains

13 that these costs will be forecast in FEI's annual review applications each year and accounted for

14 in FEI's O&M that is forecast outside of FEI's current MRP formula (and therefore will be

15 recoverable from all non-bypass customers).

16 Regulatory costs for this proceeding will also be recovered from all non-bypass customers. The 17 2021 Renewable Gas Program Comprehensive Review deferral account was approved by the 18 BCUC as part of the 2022 FEI Annual Review Decision and Order G-366-21. The costs related

19 to the review of the Application are therefore included in this deferral account and will be

20 recovered from all FEI non-bypass customers through amortization of the deferral account.



- 1 Please also refer to Section 8.3, page 112 of the Application, which explains that the Renewable
- 2 Gas Supply and Acquisition costs include the following:
- Payments to suppliers for the acquisition of Renewable Gas;
- Cost of Service of FEI–owned interconnections (this includes capital and O&M
 expenditures);
- Cost of Service of FEI–owned Renewable Gas production facilities (this includes capital and O&M expenditures);
- Costs related to the procurement of carbon offsets; and
- Costs for procurement of supply. These costs are related to program administration and
 management costs which primarily include the cost of FEI internal labour to procure
 Renewable Gas supply and administer the program.
- 12 13
- 14

16

17

- 34.2 Please confirm, or otherwise explain, that any notional gas supply (when FEI purchases RG from other jurisdictions) is included in the "Renewable Gas Supply Volumes (GJ)."
- 1819 **Response**:

20 Confirmed. The Renewable Gas that FEI acquires from locations other than BC is received in BC 21 via displacement. The displacement model for energy is not distinct to Renewable Gas, but is 22 used for transacting acquisition of conventional natural gas and for electricity. Gas and electrical 23 transmission and distribution grids cannot deliver specific packets of gas or power from a given 24 producer to a given customer. These grids, therefore, differ from services that deliver specific 25 packages to specific places, such as parcel services. Delivery by displacement makes it possible 26 to deliver a commodity with substantially less actual physical movement and, therefore, offers 27 considerable cost savings.



1	35.0	Reference:	RATE SETTING
2 3			Exhibit B-11, Section 7.4.3.2, p. 104, Section 8.4, Table 8-1, p. 114, Section 8.4.1.1,
4			pp. 115–116
5			LCG Charge and S&T LC Rider
6 7		On page 114 each compor	of the Application, Table 8-1 provides a summary of the rates charged for nent of the Renewable Gas Program:

		T-Service			
	Baseline R	tenewable Gas	Volur	ntary Renewable	Gas
	Renewable Gas Blend (for Sales Customers)	Renewable Gas Connections (residential dwellings)	Non-NGV Sales	NGV Sales	T-Service
Renewable Gas Service	No Renewable Gas Sign up Required	Default 100% Renewable Gas	Elect 10% Renewable Gas	Elect 10% Renewable Gas	Elect 10% Renewable Gas
Cost recovery via S&T LC rider for decarbonizing gas supply	1%	1%	1%	1%	0%
Cost recovery via LCG Charge for Incremental Renewable Gas % up to required or elected amount	0%	99%	9%	9%	10%
Total Renewable Gas % Customer Receives	1%	100%	10%	10%	10%
S&T LC rider (Section 8.4.2)	TBD Annually	TBD Annually	TBD Annually	TBD Annually	TBD Annually
LCG Charge (Section 8.4.1)	Not Applicable	Equivalent to CCRC + carbon tax	CCRC + carbon tax +\$7	Renewable Gas weighted average supply cost per GJ less S&T LC rider	Renewable Gas weighted average supply cost per GJ
Rate Schedules	1, 2, 3, 4, 5, 6, 7	New Rate Schedules: 1PLC, 2PLC, 3PLC, 5PLC	Rate Schedules 1B replaced by 1LC, 2B replaced by 2LC, 3B replaced by 3LC, 5B replaced by 5LC, and new Rate Schedule 7LC	New Rate Schedules 3VLC and 5VLC, amendments to Rate Schedule 46	Rate Schedule 11B replaced by 11LC Applicable to RS 22, 23, 25 and 27

Table 8-1: LCG Charge and S&T LC Rider Summary

Notes for rate schedule naming conventions:

LC: Low Carbon

PLC: Permanent Low Carbon VLC: Vehicle Low Carbon

- 8
- 9
- 10

35.1 Please provide the estimated S&T LC rider and various LCG Charges for each customer as outlined in Table 8-1 for 2023 to 2030 including any assumptions made.

11 12

13 Response:

14 FEI has provided the estimated LCG Charges and S&T LC rider on lines 1 through 13 in the table

15 below out to 2032. Lines 15 through 26 include the underlying cost and volume assumptions that

16 are used to calculate the charges.



Table 1: Estimated LCG Charge and S&T LC Rider by Service Type with Assumptions

Line		Unit	2023	<u>2024</u>	2025	<u>2026</u>	<u>2027</u>	<u>2028</u>	<u>2029</u>	<u>2030</u>	<u>2031</u>	<u>2032</u>
1	LCG Charge (per GJ of LCG delivered)											
2	RG Connections Sales Service	\$/GJ	7.13	7.86	8.59	9.32	10.05	10.78	11.51	12.24	12.24	12.24
3	RG Blend Sales Service	\$/GJ	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
4	Voluntary Non-NGV Sales Service	\$/GJ	14.13	14.86	15.59	16.32	17.05	17.78	18.51	19.24	19.24	19.24
5	Voluntary NGV Sales Service	\$/GJ	23.26	22.84	23.07	23.30	23.35	21.41	21.34	21.29	20.02	18.98
6	Voluntary T-Service	\$/GJ	23.52	24.27	24.84	25.33	25.76	23.85	24.06	24.31	23.74	23.38
7												
8	S&T LC Rider (per GJ of all Gas delivered)											
9	RG Connections Sales Service	\$/GJ	0.27	1.43	1.78	2.02	2.42	2.44	2.72	3.02	3.71	4.40
10	RG Blend Sales Service	\$/GJ	0.27	1.43	1.78	2.02	2.42	2.44	2.72	3.02	3.71	4.40
11	Voluntary Non-NGV Sales Service	\$/GJ	0.27	1.43	1.78	2.02	2.42	2.44	2.72	3.02	3.71	4.40
12	Voluntary NGV Sales Service	\$/GJ	0.27	1.43	1.78	2.02	2.42	2.44	2.72	3.02	3.71	4.40
13	Voluntary T-Service	\$/GJ	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
14												
15	Assumptions											
16	Conventional NG	\$/GJ	3.84	3.84	3.84	3.84	3.84	3.84	3.84	3.84	3.84	3.84
17	Carbon Tax	\$/GJ	3.29	4.02	4.75	5.48	6.21	6.94	7.67	8.40	8.40	8.40
18	RG Acquisition Cost	\$/GJ	23.52	24.27	24.84	25.33	25.76	23.85	24.06	24.31	23.74	23.38
19												
20	RG Supply	ΤJ	8,100	12,100	15,000	18,400	21,400	24,200	27,100	30,000	35,800	41,500
21	RG Demand											
22	RG Connections Sales Service	TJ	1,567	3,064	4,553	6,015	7,469	8,915	10,354	11,785	13,209	14,625
23	RG Blend Sales Service	ΤJ	-	5,513	6,437	6,856	8,182	9,309	10,557	11,828	16,080	20,232
24	Voluntary Non-NGV Sales Service	TJ	2,560	3,325	3,415	3,510	3,609	3,714	3,824	3,941	4,065	4,197
25	Voluntary NGV & T-Service	TJ	1,170	1,675	1,894	2,019	2,140	2,263	2,365	2,447	2,447	2,447
26	Total	TJ	5,297	13,576	16,300	18,400	21,400	24,200	27,100	30,000	35,800	41,500

2 3 4

- On page 104 of the Application, FEI states:
- FEI proposes that the rate for NGV and T-Service customers be set to recover 100
 percent of the average cost of Renewable Gas supply, on a cost per GJ basis.
- 9 Further on pages 115 to 116 of the Application, FEI states:
- 10For the purpose of calculating the LCG Charge for T-Service customers and NGV11customers, FEI will calculate the forecast weighted average cost of acquisition of12Renewable Gas (Forecast Cost of Acquisition), by forecasting the cost of13Renewable Gas supply (as described in Section 8.3) and dividing the forecast total14supply cost by the forecast supply volume of Renewable Gas for the forecast year.
- Since NGV sales customers will pay the S&T LC rider which includes some
 acquisition and under recovery costs, the S&T LC rider will be subtracted from the
 Forecast Cost of Acquisition to arrive at the LCG Charge for NGV sales customers.
- 1835.2Please explain why NGV customers are subject to the S&T LC rider given the total19amount charged will equate to the average cost of Renewable Gas consumed20regardless of whether the charges are from the LCG Charge or the S&T LC rider.
- 21



1 Response:

2 FEI proposed to set the LCG Charge for NGV Sales service customers in this way for ease of 3 administration. Ultimately, NGV customers pay the weighted average acquisition cost of 4 Renewable Gas whether taking service under a Sales rate schedule or a T-Service rate schedule. 5 6 7 8 35.3 Please explain how the variances between the forecast and actual weighted 9 average cost of supply impact the various aspects of the Renewable Gas Program, 10 including but not limited to: a. LCG Account 11 12 b. The LCG Charge for NGV and T-Service customers 13 The S&T LC rider C. 14 d. Risk of cross-subsidization between NGV and T-Service customers and 15 other sales customers. 16 17 **Response:** 18 Similar to FEI's Commodity Cost Recovery Account (CCRA), the LCG Account captures 19 variances between actual and forecast cost of supply and volume. FEI sets its rates on a 20 prospective basis and proposes to do the same with the LCG Charges and S&T LC rider. By 21 setting the charges each year based on a forecast there will be variances (positive or negative)

the S&T LC rider in the following year, or if any of the prior year's supply is held in inventory, will
 influence the LCG Charges for NGV and T-Service customers in the following year.

FEI notes that setting rates on a prospective basis is common to how all FEI's rates are set. While setting rates on a prospective basis nearly always results in variances, FEI endeavors to forecast

which will be accounted for in the LCG Account. The variances will either make up a portion of

27 accurately to minimize variances.

28



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 186

36.0 Reference: PROGRAM MECHANICS Exhibit B–11, Section 8, Figure 8-2, pp. 110-120 Cost Recovery Mechanism Figure 8-2 on page 110 of the Application shows an example of how the S&T LC rider for all sales customers would be calculated. The following image is an excerpt from Figure 8-2.

	Recoveries via LCGC Charge and S&T rider		Proportion Applicable to S&T Rider	S&T LC Rider (\$)	S&T LC Recoveries (\$)	Proportion Applicable to LCG Charge	LCG Charge (\$)	LCC Charge Recoveries (\$)	Total Recoveries (\$)	Total RG Volumes (GJ)
	RG Demand from RG Connections	500,000	1%	0.63	313,400	99%	6	2,970,000	3,283,400	500,000
	RG Demand from Voluntary Sales Customers	5,000,000	1%	0.63	3,134,000	99%	13	64,350,000	67,484,000	5,000,000
	Remaining RG Supply for Sales customers	1,000,000	100%	0.63	626,800	0%	0	-	626,800	1,000,000
	Natural Gas for FEI Sales Customers	93,500,000	100%	0.63	58,605,800	0%	0	-	58,605,800	-
	RG Demand from T-Service Customers	1,000,000	n/a	n/a	-	100%	20	20,000,000	20,000,000	1,000,000
		101,000,000			62,680,000	-		87,320,000	\$ 150,000,000	7,500,000
7										

- 8 36.1 Figure 8-2 above shows that, for voluntary sales customers, the S&T LC rider 9 applies to 1% of gas, and the LCG Charge applies to 99% of gas. Please confirm, 10 or explain otherwise, that this means that all voluntary sales customers have 11 elected 100% RG for the purposes of the example provided in Figure 8-2.
- 1236.1.1If confirmed, please provide a revised version of Figure 8-2 where the13proportion of RG elected by voluntary sales customers is 10% (rather14than 100%). Under this scenario, please also confirm that the remaining1590% of gas consumed by voluntary sales customers would be16conventional natural gas and would need to be accounted for either in a17separate line item or combined into the Natural Gas for FEI sales18customers line item.
- 19 36.1.2 If not confirmed, please explain what average RG proportion is being 20 assumed for voluntary sales customers in Figure 8-2. It is the BCUC 21 Staff's understanding that the S&T LC rider of 1% and the LCG Charge 22 of 99% only reconcile if voluntary sales customers elect 100% RG. For 23 example, if voluntary sales customers are assumed to elect only 10% RG 24 on average (1% through the RG Blend and 9% through Voluntary RG 25 offering), then it would be expected that the S&T LC rider would apply to 26 10% of the RG consumed (i.e., 1% out of 10%), and the LCG Charge 27 would apply to the remaining 90% of RG (i.e., 9% out of 10%).
- 28

29 Response:

Not confirmed. The example above is meant to demonstrate the mechanisms to recover the cost
 of Renewable Gas only and how the accounting entries would be applied to the LCG Account.
 The 5,000,000 GJ in this example is the volume of Renewable Gas delivered to Voluntary
 Renewable Gas sales customers, not the total gas delivered to these customers. The 5,000,000





- 1 GJ in the example is irrespective of the number of customers requesting Voluntary Renewable
- 2 Gas or their elected Renewable Gas percentage.
- 3 For example, 5,000,000 GJ could be the aggregate of 312,500 customers having a UPC of 80 GJ
- 4 per year electing 20 percent of their gas as Renewable Gas or 100,000 customers having a UPC
- 5 of 100 GJ per year electing 50 percent of their gas as Renewable Gas. Please see the table
- 6 below.
- 7

Table 1: Examples of Elections to Determine Renewable Gas Received

Customers	312,500	100,000
UPC	80	100
Product	25,000,000	10,000,000
RG %	20%	50%
Product	5,000,000	5,000,000

8

9 Regardless of how the total Renewable Gas of 5,000,000 GJ in the example is derived, for

10 illustrative purposes, it is meant to represent only the Renewable Gas delivered and not all of the

11 gas that a customer would/could take.

12

13

14 On page 120 of the Application, Table 8–4 shows an example of the calculation for a 15 residential customer's annual bill. As shown below, all three categories of customers 16 would be charged the same amount for the S&T LC rider, regardless of the percentage of 17 RG they receive:



Table 8-4: Example of the Calculation for a Residential Customer's Annual Bill

Line No.	Customer Type	Renewable Gas Connections	Renewable Gas Blend	Voluntary Renewable Gas	
1	Annual Demand	80.0	80.0	80.0	
2					
3	Percent RG Required	100%		10%	
4	Percent RG through S&T LC Rider	1%	1%	1%	
6	GJ RG	79.2	-	7.2	Max of (Line 1 x (Line 3 - Line 4) and Zero)
7	GJ RG through S&T LC Rider	0.8	0.8	0.8	Line 1 x Line 4
8	GJ Conventional Gas	<u> </u>	79.2	72.0	Line 1 - Line 6 - Line 7
9	Total	80.0	80.0	80.0	Line 6 + Line 7 + Line 8
10					
11	Charges and Riders				
12	Basic Charge	0.4085	0.4085	0.4085	Approved
13	Delivery Charge	4.915	4.915	4.915	Approved
14	Storage and Transport Charge	1.350	1.350	1.350	Approved
15	Storage and Transport LC Rider	0.429	0.429	0.429	
16	Conventional Cost of Gas	3.844	3.844	3.844	Approved
17	LCG Charge	8.593		15.593	Note 1
18	Carbon Tax	4.749	4.749	4,749	Estimated at 2025
19					
20	Annual Bill Revenue				
21	Basic Charge	149.21	149.21	149.21	Line 12 x 365.25
22	Delivery Charge	393.20	393.20	393.20	Line 13 x Line 9
23	Storage and Transport Charge	108.00	108.00	108.00	Line 14 x Line 9
24	Storage and Transport LC Rider	34.32	34.32	34.32	Line 15 x Line 9
25	Conventional Cost of Gas	-	304.45	276.77	Line 16 x Line 8
26	LCG Charge	680.57	-	112.27	Line 17 x Line 6
27	Carbon Tax	-	376.12	341.93	Line 18 x Line 8
28 29	Total	1,365.29	1,365.29	1,415.69	Sum of Lines 21 through 27

1

Note 1: Renewable Gas Connections = Carbon Tax (Line 18) + Conventional Cost of Gas (Line 16)
 Voluntary Renewable Gas = Carbon Tax (Line 18) + Conventional Cost of Gas (Line 16) + 7)

To interpret this billing mechanism, BCUC Staff has created the following illustration, where the full square represents total gas consumption by a voluntary RG customer electing 10% RG. A and B represent the volume of RG consumed, and C represents the potential double counting of RG billed due to the mechanism where all gas is subject to the S&T LC rider, regardless of whether it is RG or not. Overall, the customer is billed for 10% RG (i.e., 9% + 1%), matching their election.





3

4

36.2 Please confirm, or explain otherwise, that the illustration provided by BCUC Staff is a valid way to interpret the billing mechanism and can explain why all customers are billed the same amount of S&T LC rider regardless of their RG consumption.

5 6 <u>Response:</u>

7 FEI cannot confirm the validity of the illustration, as it is not clear what the two axes are intended

8 to represent. The percent of total gas that is Renewable Gas cannot be modelled as a separate

9 axis from the percent volume of total gas consumed, as the percent volume of total gas consumed

10 will always equal 100 percent.

11 Further, FEI does not agree that "C" represents a potential double counting of Renewable Gas

12 billed, whether due to the mechanism where all gas is subject to the S&T LC rider or for any other

- 13 reason. All gas delivered (both Renewable Gas and conventional natural gas) is subject to the
- 14 S&T LC rider because the S&T LC rider is derived using all gas delivered.
- 15 FEI provides an alternate illustration below, showing that the S&T LC rider is collected from all
- 16 Sales customers, and that by collecting only the **difference between** the required Renewable 17 Gas allocation for each service offering and the Renewable Gas Blend percentage that is used to
- 18 derive the S&T LC rider, double counting is avoided.



2

FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 190

Figure 1: Renewable Gas Delivered by Service Type

RG Blend	Voluntary RG	RG Connections
		С
	В	
A	A	A

- A = Renewable Gas paid for through S&T LC Rider
- B = Voluntary RG paid for with LCG Charge for Voluntary RG
- C = RG paid for with LCG Charge for RG Connections
- 3 Each rectangular area represents 100 percent of the gas consumed by each of these three types
- 4 of sales customers. Assuming FEI is delivering 3 percent Renewable Gas to all sales customers,
- 5 then A is 3 percent of the 100 percent gas delivered to these customers.
- 6 The Renewable Gas Blend is limited to the aforementioned 3 percent, so the white area is 977 percent of the gas billed and is conventional natural gas.
- 8 Assuming the Voluntary Renewable Gas customer elects to receive 15 percent of their gas as
- 9 renewable, then B equals 12 percent (A + B = 15 percent), with the white area being 85 percent 10 of the gas billed and is conventional natural gas.
- The Renewable Gas Connections customer receives the rest of their gas above 3 percent, or 97
 percent, as renewable so that 100 percent of the gas they are billed is renewable.
- Further, as can be seen in Table 8-3, lines 23 through 26, the S&T LC rider is calculated by dividing the costs to be recovered (line 24) by all sales volume (line 25). Then, by applying the rider to all sales volume when billing customers, the amount collected is equal⁵⁵ to the costs required to be collected through the rider. In Tables 8-3 and 8-4, this represents 1 percent of the elected 10 percent Voluntary Renewable Gas. The balance of Renewable Gas, 9 percent, is delivered with the Voluntary LCG Charge applied.
- 19

⁵⁵ There will be variances from the amounts used to forecast the rate. Please refer to the response to BCUC IR1 35.3 for a discussion on the treatment of variances.

FORTIS BC^{**}

1 37.0 Reference: LOW CARBON GAS CHARGE AND STORAGE AND TRANSPORT 2 LOW CARBON RIDER

Exhibit B-11, Section 8.2, Figure 8-2, p. 110

Recoveries via LCG Charge and S&T LC Rider

5 On page 110 of the Application, the bottom part of the table showing the calculations 6 related to the recoveries via the LCG Charge and S&T LC rider is copied below:

Recoveries via LCGC Charge and S&T rider		Proportion Applicable to S&T		S&T LC Recoveries	Proportion Applicable to	C (1)	LCC Charge	Total	Total RG
		Rider	S&I LC Rider (\$)	(5)	LCG Charge LC	G Charge (\$)	Recoveries (\$)	Recoveries (5)	volumes (GJ)
RG Demand from RG Connections	500,000	1%	0.63	313,400	99%	6	2,970,000	3,283,400	500,000
RG Demand from Voluntary Sales Customers	5,000,000	1%	0.63	3,134,000	99%	13	64,350,000	67,484,000	5,000,000
Remaining RG Supply for Sales customers	1,000,000	100%	0.63	626,800	0%	0		626,800	1,000,000
Natural Gas for FEI Sales Customers	93,500,000	100%	0.63	58,605,800	0%	0		58,605,800	-
RG Demand from T-Service Customers	1,000,000	n/a	n/a		100%	20	20,000,000	20,000,000	1,000,000
	101,000,000			62,680,000			87,320,000	\$ 150,000,000	7,500,000

7

15

3

4

8 37.1 In respect of the RG Demand from RG Connections and the RG Demand from 9 voluntary sales customers, please clarify why, on the one hand, the demand is 10 multiplied by 99% (i.e., the proportion applicable to LCG Charge), and then 11 multiplied by the LCG Charge at \$6/GJ to obtain the LCG Charge recoveries but, 12 on the other hand, the demand **is not multiplied by 1%** (i.e., the proportion 13 applicable to S&T LC rider) before being multiplied by the S&T LC rider at \$0.63/GJ 14 to obtain the S&T LC rider recoveries.

16 **Response:**

17 Since the S&T LC rider is calculated by dividing the costs to be recovered⁵⁶ by all volume delivered

18 to sales customers,⁵⁷ it must then be applied to all volume delivered to sales customers to

19 adequately recover the costs, and therefore, not only to 1 percent of the volumes.

Put another way, all Renewable Gas supply costs not otherwise recovered through the LCG Charge are spread across all sales customers' volumes. Therefore, to recover Renewable Gas supply costs not otherwise recovered through the LCG Charge, the S&T LC rider applies to all sales customer volumes.

- Table 8-4 from the Application further illustrates this calculation and shows the S&T LC rider being
 applied to the total customer volume.
- 26 FEI has provided a revised Figure 8-2 below adding a final column with the Effective Rate (\$/GJ).
- 27 The effective rate is calculated by dividing Total Recoveries (\$) by Total Sales Volume (GJ).

⁵⁶ Application page 110, Figure 8-2, Variable G (total under recoveries).

⁵⁷ Ibid, Variable A (total gas demand for FEI sales customers).



1 Revised Figure 8-2: Example of LCG Charge, S&T Rider Recoveries and LCG Charge Account

	Recoveries via LCGC Charge and S&T rider	Total Sales Volume (GJ)	Proportion Applicable to S&T Rider	S&T LC Rider (\$/GJ)	S&T LC Rider Recoveries (\$)	Proportion Applicable to LCG Charge	LCG Charge (\$/GJ)	LCC Charge Recoveries (\$)	Total Recoveries (\$)	Total RG Volumes (GJ)	Effective Rate (\$/GJ)
	RG Demand from RG Connections	500,000	1%	0.63	313,400	99%	6	2,970,000	3,283,400	500,000	6.57
	RG Demand from Voluntary Sales Customers	5,000,000	1%	0.63	3,134,000	99%	13	64,350,000	67,484,000	5,000,000	13.50
	Remaining RG Supply for Sales customers	1,000,000	100%	0.63	626,800	0%	0	-	626,800	1,000,000	0.63
	Natural Gas for FEI Sales Customers	93,500,000	100%	0.63	58,605,800	0%	0	-	58,605,800	-	0.63
	RG Demand from T-Service Customers	1,000,000	n/a	n/a	-	100%	20	20,000,000	20,000,000	1,000,000	20.00
2		101,000,000			62,680,000			87,320,000	\$ 150,000,000	7,500,000	

3 As shown in the table above:

- Renewable Gas Connections customers are paying an LCG Charge of \$6 for 99 percent
 of their supply and the S&T LC rider of \$0.63 for the remaining 1 percent, resulting in the
 effective rate of \$6.57.
- Voluntary Renewable Gas customers are paying an LCG Charge of \$13 for 99 percent of
 their supply and the S&T LC rider of \$0.63 for the remaining 1 percent, resulting in the
 effective rate of \$13.50.
- All other Sales customers pay only the S&T LC rider of \$0.63.
- T-Service customers pay the LCG Charge of \$20 that represents the cost of supply, but
 do not pay the S&T LC rider. Please note that NGV customers also pay the full acquisition
 cost of Renewable Gas.
- 14 Please refer to Attachment 37.1 for a fully functioning Excel spreadsheet.
- 15 16 17 18 Please add a column to this table to show the effective rate (in \$/GJ) charged by 37.2 19 FEI for RG consumed by each of these customer groups. 20 21 Response: 22 Please refer to the response to BCUC IR1 37.1. 23 24 25
- 2637.3Please provide the Excel spreadsheet, in fully functioning form, underlying the
calculations provided in Figure 8-2, p. 110.

29 **Response:**

28

30 Please refer to the response to BCUC IR1 37.1.



тм	FortisBC Energy Inc. (FEI or the Company) Revised Renewable Gas Program Application – Stage 2 (Application)	Submission Date: May 16, 2022
	Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 193

38.0 Reference: STORAGE AND TRANSPORT LOW CARBON RIDER Exhibit B-11, Section 8.4.1, Table 8-2, pp. 115-116 Voluntary RG for NGV Sales Customers On page 116 of the Application, FEI states: Since NGV sales customers will pay the S&T LC rider which in

- 5 Since NGV sales customers will pay the S&T LC rider which includes some 6 acquisition and under recovery costs, the S&T LC rider will be subtracted from the 7 Forecast Cost of Acquisition to arrive at the LCG Charge for NGV sales customers.
- 8 On page 115 of the Application, FEI provides Table 8-2:

Recovery	Renewable Gas Connections (for residential dwellings)	Voluntary Renewable Gas for Sales Customers	Voluntary Renewable Gas for NGV Sales Customers	Voluntary Renewable Gas for T-Service Customers	
Applicable Renewable Gas Volume	 S&T LC rider for the percentage of Renewable Gas Blend for sales customers. LCG Charge for the remaining Renewable Gas is provided via the Renewable Gas Connections 	 S&T LC rid of Renewal LCG Charg Renewable Voluntary F offering. 	er for the percentage ble Gas Blend. ge for the remaining Gas provided via the Renewable Gas	 No S&T rider LCG charge for the percentage of Voluntary Renewable Gas selected. 	
Applicable Rate	CCRC plus carbon tax per GJ.	CCRC plus carbon tax +\$7 per GJ.	Forecast Cost of Acquisition per GJ less S&T LC rider	Forecast cost of Acquisition	
Rate Setting Process	The LCG Charge will be ac to account for changes in t CCRC ¹⁰⁹ and the enacted per GJ.	usted quarterly e approved arbon tax ¹¹⁰ Forecast Cost of Acquisition updated annually (described further below)		Forecast Cost of Acquisition updated annually (described further below)	

Table 8-2: Cost Recovery via the LCG Charge

- 9
- 1038.1Please clarify why FEI cannot treat the Voluntary RG for NGV sales customers in11a manner similar to the voluntary RG for T-Service customers. Specifically, why is12it necessary for FEI to charge the S&T LC rider first and then remove the S&T LC13rider later.
- 14
- 15 **Response:**

Because NGV customers taking Sales Service are already paying for the Renewable Gas Blend (like all other Sales Service customers), these customers are already paying the S&T LC rider on all of their gas consumption, including their Renewable Gas. If then FEI were to charge them the full acquisition cost of Renewable Gas, without first deducting the S&T LC rider, then these

20 customers would effectively be paying greater than the full acquisition cost of Renewable Gas for

21 the Renewable Gas they receive as voluntary.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 194

1	39.0	Refere	ence: S	STORAGE & TRANSPORT LOW CARBON RIDER
2			E	xhibit B-11, Section 8.4.2.1, Table 8-3, p. 118
3			S	Storage and Transport Low Carbon Rider Calculation
4		On pa	ge 117 of	the Application, FEI states:
5 6 7 8 9			The follc S&T LC the Fore the calco filing.	wing table [Table 8-3] provides an example of how FEI will determine the rider. In this example, FEI is setting the S&T LC rider for 2025; therefore, cast year is 2025 and the Projection year is 2024. As discussed above, ulations will be undertaken late in 2024 as FEI prepares its S&T LC rider
10 11 12		39.1	On line \$23/GJ reconcile	1 of Table 8-3, the RG supply price is shown to be \$24/GJ in 2024 and in 2025. This is in contrast to a price of \$20/GJ in Figure 8-2. Please e these RG prices.
13 14 15			39.1.1	Please provide all assumptions used by FEI to estimate the average price of all RG acquisitions at \$24/GJ in 2024 and \$23/GJ in 2025.
16	<u>Respo</u>	onse:		
17 18 19 20 21 22 23	Table 8-3 and Figure 8-2 are examples used to illustrate the mechanisms proposed in th Application on how Renewable Gas supply costs are recovered through various charges an riders. The two examples, while relatively close to the expected acquisition cost, are not intende to equal each other nor to equal the forecast acquisition costs. The \$20, \$23 and \$24 amount were simply used as they were relatively close to the expected acquisition costs. FE acknowledges it would be less confusing had it used a consistent unit cost per GJ whe developing these two examples.			
24 25				
26 27 28 29 30 31 32	Respo	39.2	Please of calculate by custo Voluntar	clarify why FEI is using the average price "New Res and Voluntary" to the sales revenue on line 18 instead of breaking down the sales revenue omer group using their respective price (i.e., New Res, Voluntary Sales, y NGV, Voluntary T-Service)?
33	Please	e refer to	o the resp	oonse to BCUC IR1 39.1.
34 35		_	F	



ĨN	FortisBC Energy Inc. (FEI or the Company) Revised Renewable Gas Program Application – Stage 2 (Application)	Submission Date: May 16, 2022
	Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 195

39.3 Please provide the Excel spreadsheet, in fully functioning form, underlying the
 calculations provided in Table 8-3, p. 118.
 3

4 <u>Response:</u>

- 5 Please refer to Attachment 39.3 for the Excel spreadsheet used to develop the illustrative example
- 6 from Table 8-3.



1	40.0	Referenc	e: :	SAMPLE ANNUAL BIL	L CALCU	LATION		
2			Į	Exhibit B-11, Section 8	3.5, Table	8-4, p. 12	0	
3			l	Example of the Calcul	ation for a	Residen	tial Cus	tomer's Annual Bill
4		The follow	ving is	an excerpt of Table 8-	4 on page	120:		
		11 12 13 14 15 16 17	Charg Basi Deliv Stor Stor Com	es and Riders c Charge very Charge age and Transport Charge age and Transport LC Rider ventional Cost of Gas Charge	0.4085 4.915 1.350 0.429 3.844 8.593	0.4085 4.915 1.350 0.429 3.844	0.4085 4.915 1.350 0.429 3.844 15.593	Approved Approved Approved Note 1
5		18	Carb	on Tax	4.749	4.749	4.749	Estimated at 2025
6 7		40.1 Pl ar	ease nd is n	confirm, or otherwise ex ot based on actual tarif	plain, that s.	this exam	ple is sł	nown for the year 2025
8 9 10 11	<u>Respo</u>	40 onse:).1.1	If confirmed, please cl excerpt as "approved.	arify why F "	El refers t	o the rat	tes shown in the above
12 13	Confir Applic	med that tl ation, and	he ite not ar	ms shown as "Approve ly forecast of 2025 rates	d" are the s.	approved	rates a	t the time of filing the
14 15 16	•	The line i Schedule the BCUC	tems 1 Ba C at th	from Table 8-4 referred sic, Delivery, Storage 8 e time of filing the Appli	d to as "Ap Transport cation.	oproved" i t and Cos	n this e t of Gas	xample were the Rate charges approved by
17 18	•	The Stora the Applic	age ar	d Transport LC Rider is	s based on	the amou	unt calcu	ulated in Table 8-3 ⁵⁸ of
19	•	The LCG	Charg	ge is calculated as set o	out in Note	1 to Table) 8-4.	
20 21	•	Finally, fo \$95/tonne	or Ca e⁵⁰ wh	rbon Tax, FEI assume ch equates to \$4.749 p	ed that by er GJ.	[,] 2025 ca	arbon ta	x would be equal to
22 23	Please spread	e refer to t dsheet sho	he re: wing l	sponse to BCUC IR1 3 now Tables 8-3 and 8-4	9.3, Attach were calco	nment 39. ulated.	3 for a	fully functioning Excel

⁵⁸ Shown on Table 8-3, Line 26 as \$0.43.

⁵⁹ \$95/tonne starts with carbon tax being set to equal \$50/tonne in 2022, then adds \$15/tonne each subsequent year until carbon tax equals \$170/tonne in 2030 as set out in the Update to the Pan-Canadian Approach to Carbon Pollution Pricing 2023-2030 (\$50 + \$15 + \$15 + \$15 = \$95): <u>https://www.canada.ca/en/environment-climatechange/services/climate-change/pricing-pollution-how-it-will-work/carbon-pollution-pricing-federal-benchmarkinformation/federal-benchmark-2023-2030.html.</u>



	FortisBC Energy Inc. (FEI or the Company)	Submission Date:
м	Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
	Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 197

1 2		
3 4 5 6	40.2	Please provide all assumptions used by FEI to estimate all charges and riders shown in the above excerpt for the year 2025.
7	<u>Response:</u>	
8	Please refer t	o the response to BCUC IR1 40.1.
9 10		
11 12 13 14	40.3	Please provide the Excel spreadsheet, in fully functioning form, underlying the calculations provided in Table 8-4, p. 120.
15	<u>Response:</u>	
16	Please refer t	o the response to BCUC IR1 40.1.
4 -7		



41.0 **Reference: CUSTOMER BILL IMPACTS** 1 2 Exhibit B-11, Section 8.6, Figures 8-4 to 8-6, pp. 122-125 3 **Customer Bill Impacts** 4 On pages 122-123 of the Application, FEI states: 5 This demand and supply forecast was used to calculate customer bill impacts 6 shown in Figures 8-4 to 8-6. To isolate the impact to customers' bills from 7 increasing Renewable Gas supply and changes in carbon tax, FEI has held all 8 other rates at the current approved levels and held customer count, use per 9 customer and total demand equal to those in FEI's Annual Review for 2021 Rates. 10 The following three figures display the annual bills of customers in each of RS 1, 11 2 and 3, by service type (Renewable Gas Connections, Voluntary Renewable Gas 12 for Sales Customers and remaining sales customers). Each figure includes years 2024, 2028 and 2032 on the x axis with the annual dollar amount on the y axis. At 13 14 the top of each set of columns, in a text box, is the percent of Renewable Gas 15 delivered and costs recovered through the S&T LC rider. 16 For example, FEI provides Figure 8-6 to show the annual bill for Rate Schedule 3 as



Figure 8-6: Annual Bill for Rate Schedule 3

18

17

follows:

19 On pages 123 to 125 of the Application, FEI provides the estimated bill impacts for RS 1, 20 2 and 3 for 2024, 2028 and 2032. Below is a summary of the bill impacts in tabular format:



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 199

2		Rate Schedule	Annual Bill Increase from 2024 to 2032 for Non- Voluntary Customers	Effective Annual Increase
3		RS 1 – Residential Service	\$1,390 to \$1,900	37% over 8 years or 4.0% annual growth
4		RS 2 – Small Commercial Service	\$4,800 to \$6,800	42% over 8 years or 4.5% annual growth
5		RS 3 – Large Commercial Service	\$48,375 to \$70,110	45% over 8 years or 4.7% annual growth
7 8 9	41.1	Please confirm, or other expressed in real 2022 of	wise explain, that all \$ amo dollars.	ounts in Figures 8-4 to 8-6 a
0	<u>Response:</u>			
1 2	Not confirme nominal doll	ed. Please refer to the res ars.	ponse to BCUC IR1 12.2.3	3 for a discussion of real a
3 4				
5 6 7 8	41.2 Response:	Please add the years 20	022 and 2030 to Figures 8-4	to 8-6.
9	Please refer	to the response to BCUC	IR1 12.3.2.	
20 21				
22 23 24 25 26	41.3	For Figures 8-5 and 8-6 Please confirm, or othe construction customers	5, please add a column for erwise explain, that FEI ex will fall in RS 2 and RS 3, as	the RG Connections offerin pects that 2 percent of ne s stated on page 122.
27	Response:			
28 29 30	Confirmed. through mu Renewable	FEI expects that 2 percent Iti-family dwellings/stratas Gas Connections are provi	of new construction custom . Requested Figures 8-5 ded below.	ners will fall in RS 2 and RS and 8-6 with a column
21	Please refe	r to the responses to BCI	IC IR1 12.3.2 and BCSEA	IR1 11 1 for discussions

32 corrected bill impacts and Renewable Gas Connections demand. The following Figures are

33 expansions on the Corrected Figures 8-4 through 8-6 included in response to BCUC IR1 12.3.2.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 200

Requested Figure 8-5: Annual Bill for Rate Schedule 2 (with RG Connections Column added)









FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No.	Page 201

1 2 3 4 41.4 For each service type (Renewable Gas Connections, Voluntary Renewable Gas 5 for sales customers and remaining sales customers), please calculate the 6 percentage bill increase from 2022 to 2030 for customers in each of RS 1, RS 2 7 and RS 3. 8 9 **Response:** 10 Please see the following table. The response assumes the following Renewable Gas elections by 11 Voluntary Renewable Gas customers: • RS 1 - 15 percent; 12 13 • RS 2 - 25 percent; and 14 • RS 3 - 100 percent. 15



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 202

Table 1: Annual Bill in Dollars and Yearly Percent Change

	2022	2023	2024	2025	2026	2027	2028	2029	2030
Percent of Renewable Gas Delivered via the S&T LC Rider	0%	0%	3.7%	4.3%	4.6%	5.5%	6.3%	7.1%	8.0%
<u>Rate Schedule 1</u>									
RG Blend Annual Bill	1,202	1,263	1,418	1,501	1,577	1,660	1,713	1,785	1,858
RG Blend Annual Bill Change		<i>5%</i>	<i>12%</i>	<i>6%</i>	<i>5%</i>	<i>5%</i>	<i>3%</i>	<i>4%</i>	<i>4%</i>
RG Connections Annual Bill	1,202	1,263	1,418	1,501	1,577	1,660	1,713	1,785	1,858
RG Connections Annual Bill Change		<i>5%</i>	<i>12%</i>	<i>6%</i>	<i>5%</i>	<i>5%</i>	<i>3%</i>	<i>4%</i>	<i>4%</i>
RG Voluntary Annual Bill	1,297	1,357	1,491	1,570	1,645	1,723	1,771	1,838	1,906
RG Voluntary Annual Change		<i>5%</i>	<i>10%</i>	<i>5%</i>	<i>5%</i>	<i>5%</i>	<i>3%</i>	<i>4%</i>	<i>4%</i>
<u>Rate Schedule 2</u>									
RG Blend Annual Bill	4,070	4,305	4,907	5,229	5,526	5,847	6,051	6,332	6,614
RG Blend Annual Bill Change		<i>6%</i>	<i>14%</i>	<i>7%</i>	<i>6%</i>	<i>6%</i>	<i>3%</i>	<i>5%</i>	<i>4%</i>
RG Connections Annual Bill	4,070	4,305	4,907	5,229	5,526	5,847	6,051	6,332	6,614
RG Connections Annual Bill Change		<i>6%</i>	<i>14%</i>	7%	<i>6%</i>	<i>6%</i>	<i>3%</i>	<i>5%</i>	<i>4%</i>
RG Voluntary Annual Bill	4,613	4,848	5,367	5,674	5,964	6,266	6,453	6,715	6,977
RG Voluntary Annual Bill Change		<i>5%</i>	<i>11%</i>	<i>6%</i>	<i>5%</i>	<i>5%</i>	<i>3%</i>	<i>4%</i>	<i>4%</i>
Rate Schedule 3									
RG Blend Annual Bill	40,255	42,851	49,492	53,037	56,310	59,856	62,109	65,205	68,309
RG Blend Annual Bill Change		<i>6%</i>	<i>15%</i>	7%	<i>6%</i>	<i>6%</i>	<i>4%</i>	<i>5%</i>	<i>5%</i>
RG Connections Annual Bill	40,255	42,851	49,492	53,037	56,310	59,856	62,109	65,205	68,309
RG Connections Annual Bill Change		<i>6%</i>	<i>15%</i>	7%	<i>6%</i>	<i>6%</i>	<i>4%</i>	<i>5%</i>	<i>5%</i>
RG Voluntary Annual Bill	65,143	67,739	73,458	76,848	80,050	83,375	85,439	88,326	91,217
RG Voluntary Annual Bill Change		<i>4%</i>	<i>8%</i>	<i>5%</i>	<i>4%</i>	<i>4%</i>	<i>2%</i>	<i>3%</i>	<i>3%</i>

2 3

FEI notes that, in calculating the bill impacts, it was assumed that the Voluntary Renewable Gas customers were already electing their stated percentages in the paragraph above. Because of this, the bill impacts in 2024 are lower for these customers than the bill impacts for Renewable Gas Blend customers. In contrast, Renewable Gas Blend customers are moving from no Renewable Gas to close to 4 percent in 2024. Finally, the annual bill differences between 2022 and 2023 are due exclusively to the change in carbon tax per GJ.

10

11

12
13 41.4.1 Please confirm, or otherwise explain, that these bill increases only relate
14 to the anticipated increase in RG supply to 15% in FEI's system and to
15 the increase in carbon tax.

FORTIS BC^{**}

C™	FortisBC Energy Inc. (FEI or the Company) Revised Renewable Gas Program Application – Stage 2 (Application)	Submission Date: May 16, 2022
	Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 203

1 41.4.2 If confirmed, please explain whether there is a perception of rate shock 2 once other factors are considered such as rate increases as a result of 3 revenue requirement changes and other proceedings such as capital 4 expenditure, CPCNs, other OIC-related capital projects. 5 6 Response: 7 Confirmed, these bill increases only relate to the anticipated increase in Renewable Gas supply 8 to 15 percent and increases to the carbon tax. FEI has provided comprehensive indicative bill 9 impacts in its 2022 LTGRP. 10 When a customer experiences double digit bill increases this is generally thought of as rate shock. 11 Through the development of each application, and cumulatively, FEI considers the impact to 12 customer bills but it is important to note that the increase in customer bills set out in this 13 Application are the direct result of climate policy and enabling regulation, including increases to 14 carbon taxes. FEI does have the ability to request deferral accounts to manage rate increases 15 and the BCUC has the authority to order rate smoothing deferrals; these mechanisms are often 16 explored in FEI's annual rate setting processes where the many factors that impact rates can be 17 considered together. 18 Please refer to the response to BCUC IR1 24.1 for further discussion. 19 20 21 22 Please provide the Excel model supporting the bill impact calculations in Figures 41.5 23 8-4 to 8-6, including all assumptions used to calculate those bill impacts, such as 24 the 10-year price forecast of RNG, hydrogen, syngas, lignin, conventional natural 25 gas, carbon offsets and carbon tax, and the degree of reliance on carbon offsets 26 and carbon capture and storage, if any, over the next 10 years, etc.) 27 28 Response: 29 Please refer to Attachment 41.5 for the Excel model as requested. Embedded in the Excel 30 spreadsheet are all of the assumptions in determining bill impacts for Figures 8-4 to 8-6.60

⁶⁰ FEI provided corrected Figures 8-4 to 8-6 in its response to BCUC IR1 12.3.2.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 204

1	42.0	Reference:	CUSTOMER BILL IMPACTS
2 3			Exhibit B-11, Section 8.6, Figure 8-4, p. 123, Figure 8-5, p. 124, Figure 8-6, p. 125; Section 3.4.1.1, p. 29; Section 7.4.1.1, p. 99
4 5			Customer Bill Impacts Under the CleanBC Roadmap's GHG Emissions Cap
6		On page 123	of the Application, FEI provides the following annual bills for RS 1:



Figure 8-4: Annual Bill for Rate Schedule 1

7 8

On page 29 of the Application, FEI states:

- 9 The provincial government's approach with respect to the emissions of natural gas 10 utilities was recently updated in the CleanBC Roadmap with the introduction of a GHG emissions cap. The cap, if introduced into legislation, will limit the overall 11 12 emissions from the gas used by all customers of gas utilities including residential. 13 commercial and industrial sectors. This is the first policy of this kind in Canada 14 which places an obligation on gas utilities to reduce emissions on behalf of their 15 customers. The cap, as laid out in the CleanBC Roadmap, is set at 6.11 Mt of 16 CO2e per year at 2030. This represents a 47 percent reduction in GHG emissions from 2007 levels, and will require utilities to increase Renewable Gas content, 17 increase investments in energy efficiency and employ other mechanisms to lower 18 19 emissions. FEI expects that Renewable Gas content exceeding 15 percent will be 20 required to meet this lower emission threshold by 2030. Details on the cap are 21 under development; however, FEI sees the potential Renewable Gas supply 22 requirements being between 45 and 65 PJs by 2030. [Emphasis added]
- 23 On page 99 of the Application, FEI states:
- As noted in Section 6.3.2, FEI is already acquiring significant Renewable Gas supply, and FEI will need to acquire even more Renewable Gas to meet its

	Re	FortisBC Energy Inc. (FEI or the Company) evised Renewable Gas Program Application – Stage 2 (Application)	Submission Date: May 16, 2022
	Response to	British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 205
42.1	obligatic <u>legislatic</u> Since 15 please c and indu achieve	ons under the CleanBC Roadmap which <u>it expects will I</u> on in late 2022. [Emphasis added] 5 percent of RG content in FEI's system is equivalent to 3 clarify how much of the 47 percent reduction in its resident ustrial customers' GHG emissions (from 2007 levels) will with an RG supply between 45 and 65 PJs by 2030.	become part of 30 PJs in 2030, tial, commercial FEI be able to
Response:			
In the prelim FEI estimate using 45 to 6	inary comp ed that bet 65 PJ of Re	bliance pathway analysis FEI conducted and discussed in ween 2.3 and 3.3 Mt of GHG emission reductions could enewable Gas.	BCUC IR1 1.1, be achieved by
In FEI's 2022 to achieve th	2 LTGRP, F e target, in	FEI provides more detailed modeling and analysis on compl cluding the role of Renewable Gas and GHG reductions in s	iance pathways specific sectors.
<u>Response:</u>	42.1.1	Please clarify how much of the remaining gap FEI expect achieve by increasing investments in energy efficiency.	ts to be able to
Please refer	to the resp	oonse to BCUC IR1 1.1.	
	42.1.2	Please clarify whether electrification is amongst the "oth to lower emissions" that FEI is referring to in the quote aborare these other mechanisms?	er mechanisms ove. If not, what
Response:			
Because FE specifically of to meet the associated v to district en	I is not aw or definitive cap. How vith end-us ergy heatir	vare of the policy design details of the GHG emissions of ely describe what other compliance mechanisms may be vever, other mechanisms that can potentially reduce C e natural gas consumption include carbon capture and sto ng, offset credits or other nature based solutions, and elect	ap, FEI cannot used by utilities GHG emissions prage, switching trification.



3

4

FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 206

42.2 Please revise Figures 8-4 to 8-6, adding the years 2022 and 2030, to account for RG volumes of 45 to 65 PJs by 2030, all else being equal. Please provide the calculations in real 2022 dollars, state all assumptions used, and provide a fully functioning Excel spreadsheet supporting the calculations.

5 **Response:**

6 FEI provides requested Figures 8-4 to 8-6 below. FEI used its forecast supply curve to proportion 7 supply up to 55 PJ (halfway between 45 PJ and 65 PJ) by 2030. As discussed in the response to 8 BCUC IR1 12.3.2, FEI started with the corrected Figures 8-4 to 8-6, added 2022 and 2030, made 9 the adjustment to reach 55 PJ of Renewable Gas supply in 2030, and calculated the impact in 10 real⁶¹ dollars. Adjusting the carbon tax to real dollars is why Figure 8-4 depicts a difference in the 11 annual bill between the three Renewable Gas Connection types; otherwise, the bills would all be 12 the same. This is because at an approximately 25 percent Renewable Gas Blend, RS 1 Voluntary 13 Renewable Gas customers are now receiving all of their Renewable Gas through Renewable Gas 14 Blend service and none on a voluntary basis.

⁶¹ As discussed in the response to BCUC IR1 12.2.3, only carbon tax was adjusted as all other charges are already real dollars.



FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 207

1 Requested Figure 8-4: Annual Bill for Rate Schedule 1 (Renewable Gas Supply to 55 PJ by 2030)





FortisBC Energy Inc. (FEI or the Company)Submission Date:
May 16, 2022Revised Renewable Gas Program Application – Stage 2 (Application)May 16, 2022Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1Page 208

1 Requested Figure 8-5: Annual Bill for Rate Schedule 2 (Renewable Gas Supply to 55 PJ by 2030)





FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 209

1 Requested Figure 8-6: Annual Bill for Rate Schedule 3 (Renewable Gas Supply to 55 PJ by 2030)



3

Note that the percent Renewable Gas Blend decreases from 2030 to 2032. This is the result of
capping supply at 55 PJ of Renewable Gas in 2030, 2031 and 2032 but continuing to see
increases in Renewable Gas demand from Renewable Gas Connections customers, thereby
reducing the Renewable Gas that flows through the Renewable Gas Blend to all sales customers.
Please refer to Attachment 42.2 for the fully functioning Excel spreadsheet.

- 9
- 10

FORTIS BC^{**}

FortisBC Energy Inc. (FEI or the Company)	Submission Date:
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 210

- 1 2 42.3 Please revise Figures 8-4 to 8-6, adding the years 2022 and 2030, to also account 3 for a loss of throughput as increased energy efficiency and electrification are also 4 relied upon to achieve the 47 percent GHG emissions reduction cap. In estimating 5 these annual bills, please consider the increase in delivery rates and storage and 6 transport rates resulting from a loss of throughput. Please provide the calculations 7 in real 2022 dollars, state all assumptions used, and provide a fully functioning 8 Excel spreadsheet supporting the calculations.
- 9 42.4 Please revise Figures 8-4 to 8-6, adding the years 2022 and 2030, to also account 10 for the cumulative rate impact from now to 2030 due to major CPCN and OIC-11 related capital projects, as well as resulting from demand forecast, taxes, O&M 12 expenses and other capital additions. Please provide the calculations in real 2022 13 dollars, state all assumptions used, and provide a fully functioning Excel 14 spreadsheet supporting the calculations.

16 **Response:**

15

17 FEI is unable to respond to these two requests as posed, and notes that elements of this question, 18 including future demand scenarios, the impact of energy efficiency and electrification, capital 19 additions, CPCNs and OIC related expenditures, future O&M expenses and other elements 20 affecting FEI's revenue requirement, are better explored in FEI's recently filed LTGRP. FEI has provided a graph below from its 2022 LTGRP⁶² that provides directional rate and bill impacts for 21 22 Rate Schedule 1. The graph is based on the Diversified Energy (Planning) Scenario in the LTGRP 23 for which the Renewable Gas supply is closely aligned with the Renewable Gas supply in this 24 Application. The residential bill calculations include the following assumptions:

- The 20-year annual demand for each scenario includes DSM and low-carbon transportation;
- The bill impacts include long-term DSM expenditures;
- Commodity costs are based on a mix of supply of conventional natural gas and Renewable
 Gas, and midstream (i.e., storage and transport) costs are assumed to escalate by
 inflation;
- Carbon tax assumes annual escalation until it reaches \$170 per tonne in 2030;
- The 2022 approved delivery margin is used as the baseline cost of service plus annual escalation by inflation as well as the incremental cost of service for the capital expenditures on FEI's major transmission systems (VITS, CTS, and ITS) related to capacity upgrades, integrity, and resiliency depending on the peak demand forecast for the Diversified Energy (Planning) Scenario;

⁶² FEI 2022 LTGRP, Figure 9-11, page 9-15.


7

8

9

- The bill calculations are based on the average use per customer (UPC) between 2022
 and 2042 under the Diversified Energy (Planning) Scenario. For residential (RS 1)
 customers, the average UPC is 60 GJ per year; and
- The bill impacts include the incremental cost of service (including any offsetting revenue)
 related to FEI's major capital projects recently filed (or expected to be filed), approved by
 the BCUC or enabled by OIC, including:
 - Inland Gas Upgrades (IGU) CPCN;
 - Pattullo Gas Line Replacement (PGR) CPCN;
 - Tilbury LNG Storage Expansion (TLSE) CPCN;
- 10 o Advanced Metering Infrastructure (AMI) CPCN;
- 11 o CTS and ITS Transmission Integrity Management (TIMC) CPCNs;
- 12 o OIC Tilbury Phase 1B; and
- 13 o Woodfibre Gas Pipeline.



15



1	Н.	PROGRAM EXPENDITURES, IMPLEMENTATION, AND REPORTING					
2	43.0	Refere	ence: I	PROGRAM EXPENDITURES, IMPLEMENTATION, AND REPORTING			
3			I	Exhibit B-11, Section 9.2, p. 129–130			
4			I	Program Expenditures			
5		On pa	On page 129 to 130 of the Application, FEI states:				
6 7 8 9 10 11			In the fir resident will req coordina effective months	est phase, FEI plans to implement Renewable Gas Connections service for tial dwellings and updates to the Voluntary Renewable Gas offerings. FEI uire up to five months to implement these service, and will need to ate their implementation with its quarterly gas cost filings. Therefore, to be a on the beginning of the first quarter[footnote omitted] that is at least 5 after the BCUC's final Order in this proceeding			
12 13 14			FEI esti in the se system	mates total costs of \$208 thousand in the first phase and \$185 thousand econd phase for the implementation work described above. This includes updates (capital IT costs) of \$119 thousand in the first phase			
15 16 17 18	<u>Respo</u>	43.1 onse:	Please Volunta	identify and quantify the incremental costs to implementing the revised ry Renewable Gas offering.			
19 20	There service	will be r e.	ninimal to	o no incremental costs to implement the revised Voluntary Renewable Gas			
21 22							
23 24 25 26 27 28 29	Resp	onse.	43.1.1	Please confirm, or explain otherwise, if the incremental costs to implementing the revised Voluntary Renewable Gas offering will be eliminated if the BCUC determines that the Voluntary Renewable Gas offering is to be discontinued.			

As noted in the response to BCUC IR1 43.1, there will be minimal to no incremental costs to implement the changes for the revised Voluntary Renewable Gas service. As such, there are no incremental savings that would occur from the elimination of the Voluntary Renewable Gas service.

However, if the BCUC determines that the Voluntary Renewable Gas service is to be discontinued, there would be costs to remove the offering from FEI's internal and external information systems, which would increase the estimate of \$119 thousand and the \$96 thousand



 FortisBC Energy Inc. (FEI or the Company) Revised Renewable Gas Program Application – Stage 2 (Application)	Submission Date: May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 213

for system updates (capital IT costs) in the first and second phase of implementation noted in
 Section 9.2 of the Application.

3 4 5 6 43.1.2 Please indicate whether there will be any incremental savings for 7 implementation costs if the BCUC determines that only the Voluntary RG 8 offering for residential customers is to be discontinued (i.e. the Voluntary 9 RG offering remains for non-residential sales customers, NGV 10 customers, and T-Service customers). 11 12 Response: 13 If the BCUC determines that only the Voluntary Renewable Gas service for residential customers 14 is to be discontinued, there will be no incremental savings. However, as noted in the response to 15 BCUC IR1 43.1.1, there will be incremental costs to remove this offering for residential customers 16 from FEI's internal and external systems. 17 18 19 20 43.1.2.1 Please provide an estimate of any cost savings of not having to 21 evaluate a portion of FEI's RG program if the Voluntary RG 22 offering is to be discontinued for (i) the residential sales

25 **Response:**

If the Voluntary Renewable Gas offering is to be discontinued for (i) residential sales customers only; and/or (ii) all customers, there would be no evaluation cost savings. Please also refer to the response to BCUC IR1 43.1.1 which explains that there will be costs associated with removing this offering in whole, or in part, from FEI's internal and external systems.

customers only and (ii) all customers.

30

23

24

- 31
- 32
- 3343.2Please identify and quantify the total annual program expenditures related to34administering, managing, marketing and reporting the Voluntary Renewable Gas35offering for both under the old program design as approved in 2016 and under the36proposed new program design.
- 37



1 Response:

2 The costs related to administering, managing, and reporting on the existing Renewable Gas

3 Program are captured within O&M and pertain to a portion of employee time. FEI estimates that

4 these costs vary from between \$65 thousand and \$100 thousand per year.

5 The marketing costs for the existing Renewable Gas Program, which is opt-in only, have also 6 varied from year-to-year. As explained on page 131 of the Application, during the 2015 BERC 7 Rate Application, the BCUC supported expenditures for the purpose of customer awareness and 8 education in the range of \$300 thousand per year. Due to the temporary pause on new customer 9 enrollments that occurred between August 2019 and October 2021, FEI has not spent the 10 approved amount in all years. As such, marketing-related costs for the Renewable Gas Program 11 have ranged from \$22 thousand in 2020 to about \$340 thousand in 2021.

12 FEI is not yet well-positioned to describe the annual expenditures related to the administration, 13 management, and marketing of either the revised Renewable Gas Program, or more specifically 14 the Voluntary Renewable Gas service. A brief overview of some of the functions required to 15 administer the new program is provided in Section 9.3 of the Application. Many of the functions 16 of administrating the revised program would be similar in nature, but greater in scope and 17 complexity, than those of the current program. Many of the costs of managing the Voluntary 18 Renewable Gas service, as one component of the revised program, will necessarily be integrated 19 within the overall costs of the revised program as a whole. A detailed estimate of these costs 20 requires an in-depth review and redevelopment of FEI's Renewable Gas program administration 21 processes, pursuant to an approval of the Application. As further noted in Section 9.3, FEI 22 estimates that in the near term some additional labour resources will be required, and FEI will 23 provide forecasts of any incremental labour amounts that may be required during the remaining 24 two years of the 2020-2024 Multi-year Rate Plan (MRP), as flow-through outside the MRP O&M 25 formula, for review by the BCUC in the annual review proceedings. FEI is similarly not yet in a 26 position to describe with confidence its marketing, education and awareness spending for the 27 revised Renewable Gas Program, but will seek approval for those amounts as they are 28 developed.

- 29
- 30
- 31

32

33 34

35

36

37

43.2.1 Please confirm, or explain otherwise, that the total annual program expenditures related to administering, managing, marketing and reporting the Voluntary Renewable Gas offering will be eliminated if the Voluntary Renewable Gas offering was discontinued from the RG program for (i) the residential sales customers only and (ii) all customers.

38 **Response:**

The costs of administering, managing, marketing and reporting related to the Voluntary Renewable Gas service are intermeshed with the same types of costs related to other offerings



FortisBC Energy Inc. (FEI or the Company)	Submission Date:	
Revised Renewable Gas Program Application – Stage 2 (A	Application)	May 16, 2022
Response to British Columbia Utilities Commission (BCUC) Information	on Request (IR) No. 1	Page 215

- 1 in the revised Renewable Gas Program. FEI has not performed any detailed estimating of the
- 2 cost of administering, managing, marketing and reporting on the revised Renewable Gas3 Program.
- Eliminating the Voluntary Renewable Gas service may produce some savings in labour time
 associated with tracking, managing and reporting on demand, supply and customer enrollments,
 and marketing costs. However, these savings could be offset by additional efforts related to the
 remaining Renewable Gas Program and, as such, would not reduce the need for staff to perform
 this work.
- 9 Further, given the potentially significant demand and revenue associated with the Voluntary 10 Renewable Gas offerings, FEI does not believe that there would be any "net" savings to the 11 revenue requirement. Any reduced costs would be more than offset by reduced revenues as 12 voluntary customers shift to alternative sources of energy due to a lack of Renewable Gas-based
- 13 energy solutions.
- 14



2

3

1 44.0 Reference: PROGRAM EXPENDITURES, IMPLEMENTATION, AND REPORTING

Exhibit B-11, pp. 29, 81, 122 and 134

Renewable Gas Program Review after Five Years

- 4 On page 134 of the Application, FEI states:
- 5 In order to assess the success of the proposed changes to the Renewable Gas 6 Program sought in this Application, FEI proposes to file a Program review five 7 years from the date of the BCUC final decision in this proceeding, given that it will 8 be January 1, 2024 before all of FEI's proposals are fully implemented, and there 9 will need to be adequate time to review and collect information on the Program 10 success. The review will provide an assessment of the revised Renewable Gas 11 Program and whether any further changes or adjustments are needed. This review will include the following components: 12
- A review of customer feedback on the various components of the Program;
 - Annual actual supply versus annual projected supply;
- Annual actual Renewable Gas demand versus annual projected demand;
- Forecast future Renewable Gas supply;
 - An assessment of how the Renewable Gas Program has performed against the objectives of the Program; and
- 19

17

18

14

- Potential recommended changes to the Renewable Gas Program.
- 2044.1Please discuss whether a review of hydrogen, lignin, and syngas rates should be
completed in advance of the 5-year review timeframe. Explain why or why not.
- 22

23 Response:

The costs of hydrogen, lignin and syngas supply will be subject to BCUC review at the time supply projects are brought forward to the BCUC for approval. The supply costs for Renewable Gas are separate from the approvals sought in this Application and the proposal to review the customer demand program in five years. FEI intends for the scope of the five-year review to look at the customer programs and their continued appropriateness at that time.

29
30
31
32
33
34
35
36

Please confirm on what timeframe FEI expects hydrogen, lignin, and syngas rates to be available to customers and confirm whether each will fall under the RG rates proposed in the application or require a separate rate application.



1 Response:

2 To clarify, customers will not have separate rates for hydrogen, lignin and syngas; therefore, no

separate rate application is required. FEI will, however, seek acceptance from the BCUC for its
 acquisitions of hydrogen, lignin or syngas in future applications.

5 While FEI has not yet determined the business model or availability timeline for these low-carbon 6 fuels, as described in the response to BCUC IR1 3.6, FEI intends to acquire supplies of lignin, 7 hydrogen and syngas as part of its Renewable Gas portfolio and the supply of these low-carbon 8 fuels may be by displacement of conventional natural gas. Once FEI has acquired the lignin, 9 syngas or hydrogen, and the displaced supply is in the natural gas system, it will form part of the 10 volumes of Renewable Gas available to be acquired through the proposed Renewable Gas 11 Program offerings.

- 12
- 13
- 14
- 44.2 Please confirm whether 100% RG service connections and their rates will be
 "grandfathered in" for a set period of time, at the time of FEI's proposed program
 review.
- 18

19 **Response:**

20 FEI understands this question to be assuming that the program review results in changes to 100 21 percent Renewable Gas Connections service. While FEI does not anticipate such changes, in this 22 hypothetical situation, customers receiving 100 percent Renewable Gas supply would need to be 23 "grandfathered in" for the life of the home (not just a set period of time). At present, policies set 24 by some local governments necessitate 100 percent Renewable Gas for New Residential 25 Connections so that GHG intensity requirements can be met. If these customers are relying on 26 100 percent Renewable Gas to meet GHG intensity requirements, then FEI has a duty to continue 27 to provide them 100 percent Renewable Gas for the life of the home.

Please refer to Section 1.4 (Diversity of Step Code Requirements and GHGi Targets at The Local
Government Level) of Appendix A to the Application for further details.

- 30
- 31

32 33

34 35

36 37

38

44.2.1 If confirmed, please discuss what potential risks any long-term commitment to customers with 100% RG service connections would have on the availability of RG for sales customers, NGV customers, and T-service customers, should RG supply fail to materialize in the quantities forecast.



7 8

1 Response:

FEI believes that it will have sufficient Renewable Gas supply for Renewable Gas Connections
customers. As such, FEI does not expect a supply risk to materialize for other customers.
However, should demand exceed supply or where the demand/supply balance is constrained,
FEI has a number of tools it can use to manage or mitigate this risk. Please refer to the response
to BCUC IR1 10.2 for more information regarding these mitigation tools.

- 9
 44.3 Recognizing the expected changes to RG supply and demand levels as shown in
 Figure 8-3, potential changes to emissions regulation in BC on p. 29, and other
 unknown risks related to hydrogen/lignin/syngas production and use on p. 81,
 please discuss the merits of a shorter timeframe for a full program review.
 44.3.1 Please discuss under what conditions an application for changes to the
- 1444.3.1Please discuss under what conditions an application for changes to the
program would be warranted in advance of the proposed 5-year review
timeframe.16timeframe.
- 44.3.2 Please discuss what trigger mechanisms in the renewable gas
 connection rate or voluntary RG sales rates could be used to help FEI
 identify and potentially mitigate the risks of a supply-demand imbalance.
- 2044.3.3Please propose an alternate review timeframe, should the BCUC21determine that a timeframe sooner than 5-years is in the public's interest.
- 22

23 Response:

FEI considers that the merits of a longer timeframe outweigh those of a shorter one for the next program review.

FEI has proposed a five-year timeframe for review as it expects that sufficient time will have elapsed since the revised Renewable Gas Program's implementation for the utility to have gathered pertinent information to assess the progress and success of the program's design as a whole, and to consider whether any revisions may be warranted.

30 For example, if the BCUC issues their decision approving the revised Renewable Gas Program 31 in October 2022, FEI anticipates the Renewable Gas Connections service will be launched and 32 available to customers in Q2 2023, and that the Renewable Gas Blend for all sales customers will 33 commence in Q1 2024. Taking into consideration the required time to review and collect 34 information on the Renewable Gas Program's progress and to prepare the review materials for 35 filing by October 2027, the proposed review period will provide an assessment of the Renewable 36 Gas Connections service for less than four years and Renewable Gas Blend service for only three 37 and a half years. FEI believes that this timing is the minimum period required to assess progress 38 and that FEI will not be able to provide a meaningful review within a shorter timeline, including 39 the trending of Renewable Gas demand versus annual projected demand, customer uptake of



FortisBC Energy Inc. (FEI or the Company)	Submission Date:	
Revised Renewable Gas Program Application – Stage 2 (Application)	May 16, 2022	
Response to British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1	Page 219	

- 1 the Voluntary Renewable Gas service and a comprehensive assessment of how the Renewable
- 2 Gas Program has performed against the associated program objectives.

In order to supplement the five-year comprehensive review process and ensure the BCUC continues to receive incremental updates regarding the Renewable Gas Program, FEI has also proposed to provide information in its fourth quarter gas cost report about the Renewable Gas Program on an annual basis. This reporting would include a calculation of the S&T LC rider for the following year on a forecast basis and to determine the volume of Renewable Gas deemed to be delivered via the Renewable Gas Blend service for sales customers, as well as any other information directed by the BCUC.

In the event there are any significant changes to public policy at the local or provincial level that
 directly impacts one or more of the Renewable Gas offerings, FEI would bring forward a request
 for amendment(s) in advance of the proposed five-year review timeframe.

At this time, FEI has not proposed any additional trigger mechanisms as various mechanisms already exist to mitigate risks of supply-demand imbalances, as described further in Section 8.7 of the Application and in the responses to BCUC IR1 10.2 and 22.1. In the event that supply shortages manifest, the following language in Section 13.2 of FEI's Tariff General Terms and Conditions allows FEI to restrict Renewable Gas supply in the event of a supply-demand imbalance:

- 19 13.2 Right to Restrict
- FortisBC Energy may or may require any of its Customers to, at all times or between specified Hours, discontinue, interrupt or reduce to a specified degree or quantity, the delivery of Gas for any of the following purposes or reasons:
- (a) in the event of a temporary or permanent shortage of Gas, whether actual or
 perceived by FortisBC Energy;
- (b) in the event of a breakdown or failure of the supply of Gas to FortisBC Energy
 or of FortisBC Energy's Gas storage, distribution, or transmission systems;
- 27 (c) in order to comply with any legal requirements;
- (d) in order to make repairs or improvements to any part of FortisBC Energy's
 Gas distribution, storage or transmission systems;
- in the event of fire, flood, explosion or other emergency in order to safeguard
 Persons or property against the possibility of injury or damage.

As such, rate or trigger mechanisms in the Renewable Gas Connections or Voluntary Renewable
 Gas sales rate are not required to mitigate the potential of a supply-demand imbalance.

34

Attachment 12.3.2

REFER TO LIVE SPREADSHEET MODEL

Provided in electronic format only

Attachment 37.1

REFER TO LIVE SPREADSHEET MODEL

Provided in electronic format only

Attachment 39.3

REFER TO LIVE SPREADSHEET MODEL

Provided in electronic format only

Attachment 41.5

REFER TO LIVE SPREADSHEET MODEL

Provided in electronic format only

Attachment 42.2

REFER TO LIVE SPREADSHEET MODEL

Provided in electronic format only