

## Albert (Al) Bremser, Ph.D.

Dr. Bremser is an energy rates, policy and markets expert in electricity and pipelines. He is primarily focused on energy service rates (i.e., prices) in the areas of revenue requirement determination (cost of service), energy policies, market design and rate design subject to oversight by an economic energy regulator such as the Federal Energy Regulatory Commission (FERC) and state public utility commissions. In revenue requirement determination (cost of service) area, he has an expertise in the cost of capital (return on equity; ROE) and cost allocation.

The energy service rates are developed to attempt recovery of investment costs, the cost of capital and operational expenses while considering economic or commercial circumstance, if applicable. In certain situations, a regulator might allow market-based rate authority or a negotiated rate for an energy service.

Dr. Bremser is a financial economist with a Ph.D. in Finance and holds the Chartered Financial Analyst® (CFA®) professional designation. Dr. Bremser was an expert witness at the Federal Energy Regulatory Commission (FERC) in the Office of Administrative Litigation as a member of FERC Trial Staff from 2015 to 2019.

Dr. Bremser has testified as an expert witness on certain energy topics in proceedings at FERC and the Public Service Commission of Wisconsin, which includes written testimony, cross-examination at hearing, and deposition testimony.

Dr. Bremser has more than 20 years of experience providing advisory services in regulatory and litigation proceedings. Dr. Bremser applies finance, economic and accounting principles to those matters, which includes regulatory practices of the Federal Energy Regulatory Commission.

Those proceedings have primarily been in the energy industry (regulated and unregulated) in areas such as pipelines, electric generation, and electric transmission. The topic areas have included return on equity (ROE), cost of service (stated rates and formula rates), cost allocation, rate design, market-based rates, and economic damages.

As member of FERC Trial Staff, Dr. Bremser was involved in many settlement proceedings before FERC Administrative Law Judges involving electric and pipeline proceedings. Dr. Bremser has also been involved in settlement proceedings at FERC before and after being a member of FERC Trial Staff. Dr. Bremser has also received formal negotiation training in a 5-day executive education program from the Program on Negotiation at Harvard Law School.



### PRINCIPAL CONSULTANT

#### Education

Ph.D., Finance, Virginia Tech, 1997.

M.B.A, University of Pittsburgh, 1992.

B.S., Commerce, University of Virginia, 1989.

#### Additional Credentials

Chartered Financial Analyst (CFA)

#### Years of Experience

25

#### Specializations and Skills

Return on Equity (ROE); Cost of Capital; Cost of Service; Electric Utilities; Pipelines (Crude Oil, Refined Products and Natural Gas Liquids/NGLs); Federal Energy Regulatory Commission (FERC) Energy Regulation; Energy Policy; Expert Witness; Dispute Resolution; Litigation; Economic Damages.

Dr. Bremser has experience with FERC hearing proceedings as an expert witness, supporting expert witnesses as well as being a non-testifying member of case teams for FERC Trial Staff.

Dr. Bremser has experience with economic damages analysis for commercial disputes. In energy matters, he has analyzed merchant electricity generation, natural gas storage, spent nuclear fuel, and crude oil contracts in proceedings involving breach of contract allegations. He has experience with MTBE gasoline and underground gasoline storage tanks, and solar panels for proceedings not related to breach of contract allegations.

Dr. Bremser holds a B.S. in Commerce from the University of Virginia, a M.B.A. from the University of Pittsburgh, and a Ph.D. in Finance from Virginia Tech. Dr. Bremser has taught finance courses at Virginia Tech, and has published articles in the *Journal of Legal Economics*.

## **PROFESSIONAL EXPERIENCE**

- Black & Veatch Management Consulting, LLC, Global Advisory, Principal Consultant, Arlington, VA, 2022 – Present
- NERA Economic Consulting, Associate Director, Washington, DC, 2019 – 2022
- Federal Energy Regulatory Commission, Energy Industry Analyst, Office of Administrative Litigation, Washington, D.C., 2015 – 2019
- Bremser Finance and Economics, Principal, Vienna, VA, 2013 – 2015
- Exponent, Manager, Alexandria, VA, 2011 – 2013
- Bremser Finance and Economics, Principal, Vienna, VA, 2009 – 2011
- LECG, Senior Managing Consultant, Washington, DC, 1999 – 2009
- KPMG, Economic Consulting Services, Senior Consultant, Washington, DC, 1997 – 1999
- Virginia Tech, College of Business, Finance Instructor, Blacksburg, VA, Summer 1995, 1996 – 1997
- MCI Telecommunications, Financial Systems Analyst, Arlington, VA, 1990 – 1991
- Freddie Mac (Federal Home Loan Mortgage Corp.), Accountant, Vienna, VA, 1989 – 1990

## **PROJECT EXPERIENCE**

### **PRIMARY AREAS OF GOVERNMENT AND PRIVATE SECTOR EXPERIENCE**

#### **Energy – Regulated and Unregulated (Federal Energy Regulatory Commission (FERC) Trial Staff and private sector)**

- Return on equity determination
  - Discount cash flow model (DCF)
  - Capital asset pricing model (CAPM)
  - Risk premium model
  - Expected earnings model
  - Proxy group selection
- Wholesale electric transmission formula rates and stated rates (annual transmission revenue requirement)

- Revenue requirement/Cost of service elements (electric transmission, reactive power, liquid energy pipelines)
  - Return on equity (ROE), cost of debt and capital structure (return on rate base; cost of capital)
  - Rate base (original cost rate base, depreciation, net rate base, accumulated deferred income taxes (ADIT), deferred earnings, allowance for funds used during construction (AFUDC))
  - Alternative rate base treatments: depreciated original cost (DOC), trended original cost (TOC), levelized original cost
  - Income tax allowance (ITA)
  - Operating expenses (operations and maintenance (O&M), and general and administrative (G&A))
  - Cost allocation of rate base and operating expenses
- Application of cost causation principles to determine cost allocation
  - Corporate overhead
  - Jurisdictional versus non-jurisdictional services
  - Separate and joint jurisdictional systems
  - Affiliate transactions
- Market-based rate authority
- Federal Energy Regulatory Commission rate making and non-rate making practices
- Economic damages in dispute resolution (breach of contract, etc.)

### FERC Settlement and Litigation Experience

- FERC settlement negotiations and hearings
  - 30+ dockets (not counting related dockets) in settlement proceedings
  - 11 hearing proceedings while in the private sector and as a member of FERC Trial Staff

### Industry - Crude Oil, Refined Product, and Natural Gas Liquid (NGL) Pipelines

- Cost of service elements
  - Return on equity (ROE), cost of debt and capital structure (return on rate base)
  - Rate base (net rate base, accumulate deferred income taxes (ADIT), deferred earnings, allowance for funds used during construction (AFUDC))
  - Income tax allowance (ITA)
  - Operating expenses (operations and maintenance (O&M), and general and administrative (G&A))
  - Application of cost causation principles to determine cost allocations

- Cost of service
  - Tariff rate filing advisory and preparation of cost of service statements
  - Cost of service advisory
  - Page 700 advisory
  - Rate design
- Market-based rate authority
  - Seaway Crude Pipeline's application (OR15-6-000 and -002); testimony on behalf of FERC Trial Staff
  - Mobil Pipe Line application (Pegasus system; OR07-21-000); support of Mobil's expert and support in hearing proceeding. First crude oil pipeline application for market-based rate authority
  - Guttman Energy, et al v. Buckeye Pipe Line (OR14-4-000); member of FERC Trial Staff case team for the hearing proceeding. First compliant case challenging market-base rate authority for a refined products pipeline
  - Epsilon Trading, et al v Colonial Pipeline (OR18-7-002, et al); support of Colonial's expert for the market-based rate phase of the hearing proceeding
  - Unnamed pipeline; support for an expert for an application that was not filed.
- Cost of service rates, settlement rates, index ceiling rates/levels, uncommitted and committed rates
- Non-rate issues – pro-rationing policies and allegations of discriminatory conduct
  - BP v Sunoco (OR15-25-000 and -001); member of FERC Trial Staff case team
  - Equinor v Mustang (OR21-5-001); support of Mustang's expert
- Valuation of refined product pipelines

### Industry – Natural Gas Pipelines

Knowledge of natural gas pipelines and natural gas storage involving acquisition of assets and investment interests.

### Industry - Electric

- Return on equity (ROE) determination
  - DATC Path 15 (ER17-998-001 and EL17-61-001) (and other elements of regulatory cost of capital – cost of debt and capital structure) – electric transmission
  - System Energy Resources, Inc. (SERI) (EL17-41-001 and EL18-142-000) (two separate compliant cases for different time periods) – electric generation, nuclear power plant
  - Panda Stonewall (ER17-1821-002), generator based reactive power compensation under Schedule 2 of PJM OATT
  - Consolidated Water Power Company (Wisconsin Public Service Commission, 1330-ER-104) (comparative authorized return on rate base analysis, dividend policy) – electric utility rates to customers

- FERC cost of service and cost of service elements such as income tax allowance, accumulated deferred income taxes (ADIT), and cost of capital (including return on equity (ROE)) for cost of service
- Electric transmission rates
  - Formula rates
  - Stated rates
- Reactive power capability compensation (generation-based; Schedule 2 of OATT)
  - Panda Stonewall (ER17-1821-002; Op. No. 574); testimony on fixed charge rate framework, cost allocation, return on equity, cost of debt, capital structure, plant construction costs for a new natural gas fueled power plant, categorization of plant construction cost, appropriateness of recovering plant construction costs and other topic areas; on behalf of FERC Trial Staff
  - Generation types
    - Wind
    - Solar
    - Natural gas fueled (combined cycle, combustion turbine)
    - Coal fueled
    - Nuclear fueled
    - Co-generation
    - Hydro
    - Other fuel sources
  - Fixed charge rate framework
    - Non-fuel fixed operations and maintenance (O&M) expenses
    - Fixed general and administrative (A&G) expenses
    - Depreciation (sinking-fund depreciation)
    - Income tax allowance
    - Return on rate base (return on equity (ROE), cost of debt and capital structure)
    - Accumulated deferred income taxes (ADIT)
- Knowledge of certain aspects of PJM, MISO, ERCOT and other RTOs/ISOs
- Energy related breach of contract cases involving electricity tolling agreements and spent nuclear fuel
- Valuation of electric power plants

#### Other Energy Experience:

- Energy related breach of contract cases involving natural gas storage and crude oil purchase contacts
- Energy related business tort involving MTBE gasoline and underground gasoline storage tanks
- Energy related dispute involving solar panels

## Other Economic, Financial, and Accounting Analysis

- Economic analysis to determine economic damages in case involving breach of contract or fiduciary duty (non-investment and investment related), business torts, and intellectual property (patent, trademark, copyright, trade secrets)
- Analysis of financial documents, financial statements, and accounting records
- Option pricing techniques (derivative securities)
- Regulatory proceedings such as those before the US Surface Transportation Board and the Public Service Commission of Wisconsin

## TESTIMONY/AFFIDAVITS/VERIFIED STATEMENTS

- Seaway Crude Pipeline Company LLC, FERC Docket No. OR15-6-000
- Panda Stonewall, LLC, FERC Docket No. ER17-1821-002
- DATC Path 15, LLC, Docket No. ER17-998-001 and EL17-61-001
- System Energy Resources, Inc., Docket No. EL17-41-001 and EL18-142-000
- Consolidated Water Power Company, Public Service Commission of Wisconsin Docket No. 1330-ER-104
- American Electric Power Service Corporation (Appalachian Power Company, et al), FERC Docket No. ER11-46-016, ER11-47-013, et al. Joint affidavit with Julie M. Carey
- American Electric Power Service Corporation (Appalachian Power Company, et al), FERC Docket No. ER11-47-014, et al. Joint affidavit with Julie M. Carey
- Railroad Control Application, Canadian Pacific Railway Limited; Canadian Pacific Railway Company; Soo Line Railroad Company; Central Maine & Quebec Railway US Inc; Dakota, Minnesota & Eastern Railroad Corporation; and Delaware & Hudson Railway Company, Inc. – Control – Kansas City Southern; The Kansas City Southern Railway Company; Gateway Eastern Railway Company; and The Texas Mexican Railway Company, U.S. Surface Transportation Board Docket No. FD 36500. Joint Verified Statement with Julie M. Carey

## REPRESENTATIVE PRESENTATIONS & PUBLICATIONS

“Two Essays on Convertible Debt”, Ph.D. dissertation, March 1997.

“Calculating a Taxable Damages Award: A Comparison of Two Calculation Methods”, *Journal of Legal Economics*, April 2010.

“Valuation of a Trade Subsidy Using Option Pricing Theory”, *Journal of Legal Economics*, April 2011.

Cantor, R and A. Bremser. “Market Share Liability from an Economics Perspective”, *BRG Review*, Winter 2014.

Presentation on issues in discounting cash flows, presentation to the Western States Petroleum Association (WSPA), South Lake Tahoe, CA, August 2007.

“Lost Profits: Principles, Methods and Strategies to Prove and Defend Damages”, presentation for The Knowledge Group, with Richard Eichmann of NERA, October 7, 2019.

“Energy Disputes and Litigation: Effective Strategies and Best Practices for the Year Ahead”, presentation for The Knowledge Group, with Julie Carey of NERA, December 5, 2019.

“The Future of the U.S. Renewable Energy Disputes: Decoding Recent Trends and Updates”, presentation for The Knowledge Group, with Julie Carey of NERA, March 24, 2020.

“Cost-of-Service and Rate Design for Oil Pipelines”, presentation to Bracewell LLP (law firm), with Julia Williams of NERA, August 31, 2021.

July 21, 2023

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty  
Lead-Lag Study Summary

Line	Description	Test Year	Average Daily Amount	Revenue Lag	Expense Lag	Net (Lead)/Lag Days	Dollar-Days
1	Labor & Operations and Maintenance Expenses						
2	Labor (Payroll)	\$ 17,469,153	\$ 47,861	55.54	(56.75)	(1.21)	\$ (21,178,214)
3	Non-Labor O&M	19,167,616	52,514	55.54	(44.90)	10.64	203,940,961
4	Total Labor & Non-Labor Expenses	\$ 36,636,769	\$ 100,375				\$ 182,762,748
5	Income Taxes						
6	Federal Income Taxes	\$ -	\$ -	55.54	(17.20)	38.34	\$ -
7	State Income Taxes	442,000	1,211	55.54	(17.20)	38.34	16,946,805
8	Total Federal Income Taxes	\$ 442,000	\$ 1,211				\$ 16,946,805
9	Taxes Other Than Income Taxes						
10	Payroll Taxes	\$ 1,893,607	\$ 5,188	55.54	(19.66)	35.88	\$ 67,946,871
11	Property Taxes	14,908,973	40,847	55.54	16.36	71.89	1,071,876,107
12	Taxes Other Than Income Taxes	\$ 16,802,580	\$ 46,034				\$1,139,822,978
13	Total	\$ 53,881,349	\$ 147,620				\$1,339,532,531
14	Net (Lead)/Lag Days (Dollar Weighted Average)					24.86	



Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty  
Lead-Lag Study Summary  
Revenue Lag

Line	Description	(Lead)/Lag Days
1	Service Lag	15.21
2	Billing Lag	4.36
3	Collection Lag	35.97
4	<u>Total Revenue Lag</u>	<u>55.54</u>

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty  
Lead-Lag Study Summary  
Billing Lag

<u>Line</u>	<u>Cycle Bill Meter Read Date</u>	<u>Bill Mail Date</u>	<u>(Lead)/Lag Days</u>
1	12/28/21	01/03/22	6.00
2	12/29/21	01/04/22	6.00
3	12/30/21	01/05/22	6.00
4	01/03/22	01/06/22	3.00
5	01/04/22	01/07/22	3.00
6	01/05/22	01/10/22	5.00
7	01/06/22	01/11/22	5.00
8	01/07/22	01/12/22	5.00
9	01/10/22	01/13/22	3.00
10	01/11/22	01/14/22	3.00
11	01/12/22	01/18/22	6.00
12	01/13/22	01/19/22	6.00
13	01/14/22	01/20/22	6.00
14	01/18/22	01/21/22	3.00
15	01/19/22	01/24/22	5.00
16	01/20/22	01/25/22	5.00
17	01/21/22	01/26/22	5.00
18	01/24/22	01/27/22	3.00
19	01/25/22	01/28/22	3.00
20	01/26/22	01/31/22	5.00
21	01/27/22	02/01/22	5.00
22	01/28/22	02/02/22	5.00
23	01/31/22	02/03/22	3.00
24	02/01/22	02/04/22	3.00
25	02/02/22	02/07/22	5.00
26	02/03/22	02/08/22	5.00
27	02/04/22	02/09/22	5.00
28	02/07/22	02/10/22	3.00
29	02/08/22	02/11/22	3.00
30	02/09/22	02/14/22	5.00
31	02/10/22	02/15/22	5.00
32	02/11/22	02/16/22	5.00
33	02/14/22	02/17/22	3.00
34	02/15/22	02/18/22	3.00
35	02/16/22	02/22/22	6.00
36	02/17/22	02/23/22	6.00

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Lead-Lag Study Summary  
Billing Lag

<u>Line</u>	<u>Cycle Bill Meter</u> <u>Read Date</u>	<u>Bill Mail Date</u>	<u>(Lead)/Lag Days</u>
37	02/18/22	02/24/22	6.00
38	02/22/22	02/25/22	3.00
39	02/23/22	02/28/22	5.00
40	02/24/22	03/01/22	5.00
41	02/25/22	03/02/22	5.00
42	02/28/22	03/03/22	3.00
43	03/01/22	03/04/22	3.00
44	03/02/22	03/07/22	5.00
45	03/03/22	03/08/22	5.00
46	03/04/22	03/09/22	5.00
47	03/07/22	03/10/22	3.00
48	03/08/22	03/11/22	3.00
49	03/09/22	03/14/22	5.00
50	03/11/22	03/16/22	5.00
51	03/14/22	03/17/22	3.00
52	03/15/22	03/18/22	3.00
53	03/16/22	03/21/22	5.00
54	03/17/22	03/22/22	5.00
55	03/18/22	03/23/22	5.00
56	03/21/22	03/24/22	3.00
57	03/22/22	03/25/22	3.00
58	03/23/22	03/28/22	5.00
59	03/25/22	03/30/22	5.00
60	03/28/22	03/31/22	3.00
61	03/29/22	04/01/22	3.00
62	03/30/22	04/04/22	5.00
63	03/31/22	04/05/22	5.00
64	04/01/22	04/06/22	5.00
65	04/04/22	04/07/22	3.00
66	04/05/22	04/08/22	3.00
67	04/06/22	04/11/22	5.00
68	04/08/22	04/13/22	5.00
69	04/11/22	04/14/22	3.00
70	04/12/22	04/15/22	3.00
71	04/14/22	04/19/22	5.00
72	04/15/22	04/20/22	5.00

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<u>Line</u>	<u>Cycle Bill Meter</u> <u>Read Date</u>	<u>Bill Mail Date</u>	<u>(Lead)/Lag Days</u>
73	04/18/22	04/21/22	3.00
74	04/19/22	04/22/22	3.00
75	04/20/22	04/25/22	5.00
76	04/21/22	04/26/22	5.00
77	04/22/22	04/27/22	5.00
78	04/25/22	04/28/22	3.00
79	04/26/22	04/29/22	3.00
80	04/27/22	05/02/22	5.00
81	04/28/22	05/03/22	5.00
82	04/29/22	05/04/22	5.00
83	05/02/22	05/05/22	3.00
84	05/03/22	05/06/22	3.00
85	05/04/22	05/09/22	5.00
86	05/05/22	05/10/22	5.00
87	05/06/22	05/11/22	5.00
88	05/09/22	05/12/22	3.00
89	05/10/22	05/13/22	3.00
90	05/11/22	05/16/22	5.00
91	05/13/22	05/18/22	5.00
92	05/16/22	05/19/22	3.00
93	05/17/22	05/20/22	3.00
94	05/18/22	05/23/22	5.00
95	05/19/22	05/24/22	5.00
96	05/20/22	05/25/22	5.00
97	05/23/22	05/26/22	3.00
98	05/24/22	05/27/22	3.00
99	05/25/22	05/31/22	6.00
100	05/26/22	06/01/22	6.00
101	05/27/22	06/02/22	6.00
102	05/31/22	06/03/22	3.00
103	06/01/22	06/06/22	5.00
104	06/02/22	06/07/22	5.00
105	06/03/22	06/08/22	5.00
106	06/06/22	06/09/22	3.00
107	06/07/22	06/10/22	3.00
108	06/08/22	06/13/22	5.00

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty  
Lead-Lag Study Summary  
Billing Lag

<u>Line</u>	<u>Cycle Bill Meter</u> <u>Read Date</u>	<u>Bill Mail Date</u>	<u>(Lead)/Lag Days</u>
109	06/09/22	06/14/22	5.00
110	06/10/22	06/15/22	5.00
111	06/13/22	06/16/22	3.00
112	06/14/22	06/17/22	3.00
113	06/15/22	06/20/22	5.00
114	06/17/22	06/22/22	5.00
115	06/20/22	06/23/22	3.00
116	06/21/22	06/24/22	3.00
117	06/22/22	06/27/22	5.00
118	06/23/22	06/28/22	5.00
119	06/24/22	06/29/22	5.00
120	06/27/22	06/30/22	3.00
121	06/28/22	07/01/22	3.00
122	06/29/22	07/05/22	6.00
123	06/30/22	07/06/22	6.00
124	07/01/22	07/07/22	6.00
125	07/05/22	07/08/22	3.00
126	07/06/22	07/11/22	5.00
127	07/07/22	07/12/22	5.00
128	07/08/22	07/13/22	5.00
129	07/11/22	07/14/22	3.00
130	07/12/22	07/15/22	3.00
131	07/13/22	07/18/22	5.00
132	07/15/22	07/20/22	5.00
133	07/18/22	07/21/22	3.00
134	07/19/22	07/22/22	3.00
135	07/20/22	07/25/22	5.00
136	07/21/22	07/26/22	5.00
137	07/22/22	07/27/22	5.00
138	07/25/22	07/28/22	3.00
139	07/26/22	07/29/22	3.00
140	07/27/22	08/01/22	5.00
141	07/28/22	08/02/22	5.00
142	07/29/22	08/03/22	5.00
143	08/01/22	08/04/22	3.00
144	08/02/22	08/05/22	3.00

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<u>Line</u>	<u>Cycle Bill Meter</u> <u>Read Date</u>	<u>Bill Mail Date</u>	<u>(Lead)/Lag Days</u>
145	08/03/22	08/08/22	5.00
146	08/04/22	08/09/22	5.00
147	08/05/22	08/10/22	5.00
148	08/08/22	08/11/22	3.00
149	08/09/22	08/12/22	3.00
150	08/10/22	08/15/22	5.00
151	08/12/22	08/17/22	5.00
152	08/15/22	08/18/22	3.00
153	08/16/22	08/19/22	3.00
154	08/17/22	08/22/22	5.00
155	08/19/22	08/24/22	5.00
156	08/22/22	08/25/22	3.00
157	08/23/22	08/26/22	3.00
158	08/24/22	08/29/22	5.00
159	08/25/22	08/30/22	5.00
160	08/26/22	08/31/22	5.00
161	08/29/22	09/01/22	3.00
162	08/30/22	09/02/22	3.00
163	08/31/22	09/06/22	6.00
164	09/01/22	09/07/22	6.00
165	09/02/22	09/08/22	6.00
166	09/06/22	09/09/22	3.00
167	09/07/22	09/12/22	5.00
168	09/08/22	09/13/22	5.00
169	09/09/22	09/14/22	5.00
170	09/12/22	09/15/22	3.00
171	09/13/22	09/16/22	3.00
172	09/14/22	09/19/22	5.00
173	09/15/22	09/20/22	5.00
174	09/16/22	09/21/22	5.00
175	09/19/22	09/22/22	3.00
176	09/20/22	09/23/22	3.00
177	09/21/22	09/26/22	5.00
178	09/22/22	09/27/22	5.00
179	09/23/22	09/28/22	5.00
180	09/26/22	09/29/22	3.00

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<u>Line</u>	<u>Cycle Bill Meter</u> <u>Read Date</u>	<u>Bill Mail Date</u>	<u>(Lead)/Lag Days</u>
181	09/27/22	09/30/22	3.00
182	09/28/22	10/03/22	5.00
183	09/29/22	10/04/22	5.00
184	09/30/22	10/05/22	5.00
185	10/03/22	10/06/22	3.00
186	10/04/22	10/07/22	3.00
187	10/05/22	10/11/22	6.00
188	10/06/22	10/12/22	6.00
189	10/07/22	10/13/22	6.00
190	10/11/22	10/14/22	3.00
191	10/12/22	10/17/22	5.00
192	10/13/22	10/18/22	5.00
193	10/14/22	10/19/22	5.00
194	10/17/22	10/20/22	3.00
195	10/18/22	10/21/22	3.00
196	10/19/22	10/24/22	5.00
197	10/20/22	10/25/22	5.00
198	10/21/22	10/26/22	5.00
199	10/24/22	10/27/22	3.00
200	10/25/22	10/28/22	3.00
201	10/25/22	10/28/22	3.00
202	10/26/22	10/31/22	5.00
203	10/27/22	11/01/22	5.00
204	10/28/22	11/02/22	5.00
205	10/31/22	11/03/22	3.00
206	11/01/22	11/04/22	3.00
207	11/02/22	11/07/22	5.00
208	11/03/22	11/08/22	5.00
209	11/04/22	11/09/22	5.00
210	11/07/22	11/10/22	3.00
211	11/08/22	11/14/22	6.00
212	11/09/22	11/15/22	6.00
213	11/10/22	11/16/22	6.00
214	11/14/22	11/17/22	3.00
215	11/15/22	11/18/22	3.00
216	11/16/22	11/21/22	5.00

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty  
Lead-Lag Study Summary  
Billing Lag

Line	Cycle Bill Meter		(Lead)/Lag Days
	Read Date	Bill Mail Date	
217	11/17/22	11/22/22	5.00
218	11/17/22	11/22/22	5.00
219	11/18/22	11/23/22	5.00
220	11/18/22	11/23/22	5.00
221	11/21/22	11/28/22	7.00
222	11/22/22	11/29/22	7.00
223	11/23/22	11/30/22	7.00
224	11/28/22	12/01/22	3.00
225	11/29/22	12/02/22	3.00
226	11/30/22	12/05/22	5.00
227	12/01/22	12/06/22	5.00
228	12/02/22	12/07/22	5.00
229	12/05/22	12/08/22	3.00
230	12/06/22	12/09/22	3.00
231	12/07/22	12/12/22	5.00
232	12/08/22	12/13/22	5.00
233	12/09/22	12/14/22	5.00
234	12/12/22	12/15/22	3.00
235	12/13/22	12/16/22	3.00
236	12/14/22	12/19/22	5.00
237	12/15/22	12/20/22	5.00
238	12/16/22	12/21/22	5.00
239	12/19/22	12/22/22	3.00
240	12/20/22	12/23/22	3.00
241	12/21/22	12/27/22	6.00
242	12/22/22	12/28/22	6.00
243	12/23/22	12/29/22	6.00
244	12/27/22	12/31/22	4.00
245		Average	4.36



Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty  
Lead-Lag Study Summary  
Collection Lag

Line	Month Start	Month End	Revenues		A/R Balance	(Lead)/Lag Days
			Monthly Billed Revenues	Daily Average Revenues	Monthly Balance	
1	01/01/22	01/31/22	\$ 30,570,568	\$ 986,147	\$ 28,126,506	
2	02/01/22	02/28/22	31,130,776	1,111,813	32,184,125	
3	03/01/22	03/31/22	27,291,640	880,375	27,014,520	
4	04/01/22	04/30/22	22,365,746	745,525	26,159,573	
5	05/01/22	05/31/22	15,576,461	502,466	22,002,402	
6	06/01/22	06/30/22	7,847,069	261,569	14,907,520	
7	07/01/22	07/31/22	5,815,241	187,588	11,552,403	
8	08/01/22	08/31/22	5,736,826	185,059	9,018,382	
9	09/01/22	09/30/22	6,661,919	222,064	9,759,409	
10	10/01/22	10/31/22	7,948,572	256,406	11,947,025	
11	11/01/22	11/30/22	14,095,231	469,841	17,513,711	
12	12/01/22	12/31/22	27,071,121	873,262	30,163,677	
13		Average		\$ 556,843	\$ 20,029,104	35.97

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty  
Lead-Lag Study Summary  
O&M Expenses

<u>Line</u>	<u>Description</u>	<u>Expense</u>	<u>(Lead)/Lag Days</u>	<u>Dollar-Days</u>
1	Labor-Related - O&M Expenses	\$ 17,469,153	(56.75)	\$ (991,380,398)
2	Non-Labor - Other O&M Expenses	19,167,616	(44.90)	\$ (860,590,492)
3	<u>Total O&amp;M Expenses</u>	<u>\$ 36,636,769</u>	<u>(50.55)</u>	<u>\$(1,851,970,891)</u>

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty  
Lead-Lag Study Summary  
O&M Expenses - Payroll

Line	Description	Expense	Percent	(Lead)/Lag Days	Dollar-Days
1	Regular Payroll - Weekly	\$ 7,088,036	50.3%	(8.50)	\$ (60,248,302)
2	Regular Payroll - Bi-Weekly	7,013,373	49.7%	(12.00)	(84,160,477)
3	Regular Payroll - Total	14,101,409	100.0%	(10.24)	(144,408,779)
4	Regular Payroll - Regular Pay	14,101,409	91.0%	(10.24)	(144,408,779)
5	Regular Payroll - Vacation Pay	1,390,051	9.0%	(192.74)	(267,919,487)
6	Regular Payroll - Total	15,491,460	100.0%	(26.62)	(412,328,266)
7	Annual Performance Incentive Pay	1,977,693		(292.79)	(579,052,132)
8	Payroll - Total	\$ 17,469,153		(56.75)	\$(991,380,398)

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty  
Lead-Lag Study Summary  
O&M Expenses - Labor-Related - Regular Payroll - Weekly

Line	Pay Period -		Pay Period -	Pay Date: Friday	(Lead)/Lag Days
	Start: Sunday	End: Saturday	Midpoint: Wednesday		
1	12/26/21	01/01/22	12/29/21	01/07/22	(8.50)
2	01/02/22	01/08/22	01/05/22	01/14/22	(8.50)
3	01/09/22	01/15/22	01/12/22	01/21/22	(8.50)
4	01/16/22	01/22/22	01/19/22	01/28/22	(8.50)
5	01/23/22	01/29/22	01/26/22	02/04/22	(8.50)
6	01/30/22	02/05/22	02/02/22	02/11/22	(8.50)
7	02/06/22	02/12/22	02/09/22	02/18/22	(8.50)
8	02/13/22	02/19/22	02/16/22	02/25/22	(8.50)
9	02/20/22	02/26/22	02/23/22	03/04/22	(8.50)
10	02/27/22	03/05/22	03/02/22	03/11/22	(8.50)
11	03/06/22	03/12/22	03/09/22	03/18/22	(8.50)
12	03/13/22	03/19/22	03/16/22	03/25/22	(8.50)
13	03/20/22	03/26/22	03/23/22	04/01/22	(8.50)
14	03/27/22	04/02/22	03/30/22	04/08/22	(8.50)
15	04/03/22	04/09/22	04/06/22	04/15/22	(8.50)
16	04/10/22	04/16/22	04/13/22	04/22/22	(8.50)
17	04/17/22	04/23/22	04/20/22	04/29/22	(8.50)
18	04/24/22	04/30/22	04/27/22	05/06/22	(8.50)
19	05/01/22	05/07/22	05/04/22	05/13/22	(8.50)
20	05/08/22	05/14/22	05/11/22	05/20/22	(8.50)
21	05/15/22	05/21/22	05/18/22	05/27/22	(8.50)
22	05/22/22	05/28/22	05/25/22	06/03/22	(8.50)
23	05/29/22	06/04/22	06/01/22	06/10/22	(8.50)
24	06/05/22	06/11/22	06/08/22	06/17/22	(8.50)
25	06/12/22	06/18/22	06/15/22	06/24/22	(8.50)
26	06/19/22	06/25/22	06/22/22	07/01/22	(8.50)
27	06/26/22	07/02/22	06/29/22	07/08/22	(8.50)
28	07/03/22	07/09/22	07/06/22	07/15/22	(8.50)
29	07/10/22	07/16/22	07/13/22	07/22/22	(8.50)
30	07/17/22	07/23/22	07/20/22	07/29/22	(8.50)
31	07/24/22	07/30/22	07/27/22	08/05/22	(8.50)
32	07/31/22	08/06/22	08/03/22	08/12/22	(8.50)
33	08/07/22	08/13/22	08/10/22	08/19/22	(8.50)
34	08/14/22	08/20/22	08/17/22	08/26/22	(8.50)
35	08/21/22	08/27/22	08/24/22	09/02/22	(8.50)
36	08/28/22	09/03/22	08/31/22	09/09/22	(8.50)

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty  
Lead-Lag Study Summary  
O&M Expenses - Labor-Related - Regular Payroll - Weekly

Line	Pay Period - Start:	Pay Period - End:	Pay Period -	Pay Date: Friday	(Lead)/Lag Days
	Sunday	Saturday	Midpoint: Wednesday		
37	09/04/22	09/10/22	09/07/22	09/16/22	(8.50)
38	09/11/22	09/17/22	09/14/22	09/23/22	(8.50)
39	09/18/22	09/24/22	09/21/22	09/30/22	(8.50)
40	09/25/22	10/01/22	09/28/22	10/07/22	(8.50)
41	10/02/22	10/08/22	10/05/22	10/14/22	(8.50)
42	10/09/22	10/15/22	10/12/22	10/21/22	(8.50)
43	10/16/22	10/22/22	10/19/22	10/28/22	(8.50)
44	10/23/22	10/29/22	10/26/22	11/04/22	(8.50)
45	10/30/22	11/05/22	11/02/22	11/11/22	(8.50)
46	11/06/22	11/12/22	11/09/22	11/18/22	(8.50)
47	11/13/22	11/19/22	11/16/22	11/25/22	(8.50)
48	11/20/22	11/26/22	11/23/22	12/02/22	(8.50)
49	11/27/22	12/03/22	11/30/22	12/09/22	(8.50)
50	12/04/22	12/10/22	12/07/22	12/16/22	(8.50)
51	12/11/22	12/17/22	12/14/22	12/23/22	(8.50)
52	12/18/22	12/24/22	12/21/22	12/30/22	(8.50)
53	12/25/22	12/31/22	12/28/22	01/06/23	(8.50)
54				Average	(8.50)

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty  
Lead-Lag Study Summary  
O&M Expenses - Labor-Related - Regular Payroll - Bi-Weekly

Line	Pay Period -		Pay Period -		(Lead)/Lag Days
	Start: Sunday	End: Saturday	Midpoint: Wednesday	Pay Date: Friday	
1	12/19/21	01/01/22	12/26/21	01/07/22	(12.00)
2	01/02/22	01/15/22	01/09/22	01/21/22	(12.00)
3	01/16/22	01/29/22	01/23/22	02/04/22	(12.00)
4	01/30/22	02/12/22	02/06/22	02/18/22	(12.00)
5	02/13/22	02/26/22	02/20/22	03/04/22	(12.00)
6	02/27/22	03/12/22	03/06/22	03/18/22	(12.00)
7	03/13/22	03/26/22	03/20/22	04/01/22	(12.00)
8	03/27/22	04/09/22	04/03/22	04/15/22	(12.00)
9	04/10/22	04/23/22	04/17/22	04/29/22	(12.00)
10	04/24/22	05/07/22	05/01/22	05/13/22	(12.00)
11	05/08/22	05/21/22	05/15/22	05/27/22	(12.00)
12	05/22/22	06/04/22	05/29/22	06/10/22	(12.00)
13	06/05/22	06/18/22	06/12/22	06/24/22	(12.00)
14	06/19/22	07/02/22	06/26/22	07/08/22	(12.00)
15	07/03/22	07/16/22	07/10/22	07/22/22	(12.00)
16	07/17/22	07/30/22	07/24/22	08/05/22	(12.00)
17	07/31/22	08/13/22	08/07/22	08/19/22	(12.00)
18	08/14/22	08/27/22	08/21/22	09/02/22	(12.00)
19	08/28/22	09/10/22	09/04/22	09/16/22	(12.00)
20	09/11/22	09/24/22	09/18/22	09/30/22	(12.00)
21	09/25/22	10/08/22	10/02/22	10/14/22	(12.00)
22	10/09/22	10/22/22	10/16/22	10/28/22	(12.00)
23	10/23/22	11/05/22	10/30/22	11/11/22	(12.00)
24	11/06/22	11/19/22	11/13/22	11/25/22	(12.00)
25	11/20/22	12/03/22	11/27/22	12/09/22	(12.00)
26	12/04/22	12/17/22	12/11/22	12/23/22	(12.00)
27	12/18/22	12/31/22	12/25/22	01/06/23	(12.00)
				Average	(12.00)

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty  
Lead-Lag Study Summary  
O&M Expenses - Labor-Related - Annual Performance Bonus

<u>Line</u>	<u>Accrual Date</u>	<u>Midpoint</u>	<u>Payout Date</u>	<u>(Lead)/Lag Days</u>
1	01/01/22	01/16/22	04/20/23	(459.00)
2	02/01/22	02/14/22	04/20/23	(429.50)
3	03/01/22	03/16/22	04/20/23	(400.00)
4	04/01/22	04/15/22	04/20/23	(369.50)
5	05/01/22	05/16/22	04/20/23	(339.00)
6	06/01/22	06/15/22	04/20/23	(308.50)
7	07/01/22	07/16/22	04/20/23	(278.00)
8	08/01/22	08/16/22	04/20/23	(247.00)
9	09/01/22	09/15/22	04/20/23	(216.50)
10	10/01/22	10/16/22	04/20/23	(186.00)
11	11/01/22	11/15/22	04/20/23	(155.50)
12	12/01/22	12/16/22	04/20/23	(125.00)
13			Average	(292.79)

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty  
Lead-Lag Study Summary  
O&M Expenses - Non-Labor O&M Expenses

Line	Service Period Begin	Service Period End	Service Period Midpoint	Days from Service Period		Invoice Date	Payment Date	(Lead)/Lag Days	Amount	Dollar-Days
				Midpoint to Invoice Date	Invoice Date					
1						02/18/22	03/03/22	(13.00)	\$ 197,634	\$ (2,569,245)
2						10/31/22	12/27/22	(57.00)	73,400	(4,183,800)
3	07/01/22	07/27/22	07/14/22	47		08/30/22	09/20/22	(67.50)	59,274	(4,000,978)
4	05/14/22	06/13/22	05/29/22	15		06/13/22	07/07/22	(38.50)	50,639	(1,949,619)
5	08/02/22	08/31/22	08/17/22	43		09/29/22	10/26/22	(70.00)	45,364	(3,175,463)
6	10/14/22	11/13/22	10/29/22	15		11/13/22	12/21/22	(52.50)	42,238	(2,217,499)
7	09/16/22	09/22/22	09/19/22	22		10/11/22	12/07/22	(78.50)	41,031	(3,220,934)
8						04/28/22	05/26/22	(28.00)	38,796	(1,086,288)
9	03/14/22	04/13/22	03/29/22	15		04/13/22	05/04/22	(35.50)	34,203	(1,214,209)
10	07/18/21	07/18/22	01/17/22	(77)		11/01/21	03/09/22	(51.00)	34,000	(1,734,000)
11	06/14/22	07/13/22	06/29/22	14		07/13/22	08/03/22	(35.00)	32,234	(1,128,193)
12	02/14/22	03/13/22	02/28/22	13		03/13/22	03/30/22	(30.00)	30,540	(916,197)
13						04/21/22	07/07/22	(77.00)	28,669	(2,207,511)
14	10/14/21	11/13/21	10/29/21	15		11/13/21	01/06/22	(68.50)	26,794	(1,835,370)
15	10/31/22	11/01/22	11/01/22	3		11/04/22	12/13/22	(42.00)	24,220	(1,017,258)
16	05/02/22	05/20/22	05/11/22	9		05/20/22	07/07/22	(56.50)	23,414	(1,322,898)
17	07/01/22	07/25/22	07/13/22	106		10/27/22	12/01/22	(140.50)	22,084	(3,102,802)
18	09/12/22	09/20/22	09/16/22	32		10/18/22	11/18/22	(62.50)	21,925	(1,370,320)
19	10/31/22	11/01/22	11/01/22	3		11/04/22	12/13/22	(42.00)	19,759	(829,869)
20	05/23/22	07/21/22	06/22/22	33		07/25/22	09/07/22	(77.00)	19,000	(1,463,000)
21	08/11/22	08/18/22	08/15/22	45		09/29/22	10/26/22	(72.00)	18,193	(1,309,896)
22	11/08/21	12/02/21	11/20/21	26		12/16/21	01/12/22	(52.50)	17,886	(939,035)
23						11/29/22	12/27/22	(28.00)	17,103	(478,888)
24	01/24/22	03/11/22	02/16/22	(44)		01/04/22	02/04/22	12.50	16,500	206,250
25	12/01/22	12/31/22	12/16/22	(16)		12/01/22	11/17/22	29.50	15,918	469,569
26	05/01/22	05/31/22	05/16/22	15		05/31/22	06/28/22	(42.50)	15,255	(648,338)
27						02/27/22	07/07/22	(130.00)	14,643	(1,903,564)
28	07/29/22	08/05/22	08/02/22	6		08/08/22	09/07/22	(36.00)	13,797	(496,679)
29	08/15/22	09/14/22	08/30/22	16		09/15/22	10/31/22	(61.50)	12,862	(791,023)
30	11/01/21	11/30/21	11/16/21	27		12/13/21	01/12/22	(57.00)	12,687	(723,131)
31	01/15/22	02/14/22	01/30/22	16		02/15/22	02/24/22	(24.50)	12,325	(301,952)
32	02/04/22	02/28/22	02/16/22	12		02/28/22	03/09/22	(20.50)	9,340	(191,470)
33	12/21/21	02/15/22	01/18/22	28		02/15/22	03/30/22	(70.50)	7,830	(552,015)
34	10/10/22	10/10/22	10/10/22	7		10/17/22	11/17/22	(37.50)	6,897	(258,622)
35	09/21/22	10/20/22	10/06/22	15		10/21/22	11/09/22	(34.00)	6,244	(212,297)
36	10/01/21	10/31/21	10/16/21	15		10/31/21	02/03/22	(109.50)	5,795	(634,553)
37	04/01/22	04/30/22	04/16/22	(46)		03/01/22	03/30/22	17.00	5,591	95,041
38	04/04/22	04/05/22	04/05/22	2		04/07/22	05/04/22	(29.00)	5,294	(153,533)
39	03/21/22	03/23/22	03/22/22	6		03/28/22	04/28/22	(36.50)	4,934	(180,090)
40	12/09/21	12/29/21	12/19/21	15		01/03/22	02/10/22	(52.50)	4,405	(231,263)
41	04/26/22	04/27/22	04/27/22	5		05/02/22	05/26/22	(29.00)	4,145	(120,214)
42						02/23/22	03/23/22	(28.00)	3,782	(105,909)
43						08/03/22	08/31/22	(28.00)	3,623	(101,431)
44						07/14/22	08/09/22	(26.00)	3,500	(91,000)
45	04/18/22	04/22/22	04/20/22	6		04/26/22	05/04/22	(13.50)	3,445	(46,506)
46	10/01/21	10/31/21	10/16/21	15		10/31/21	02/03/22	(109.50)	3,250	(355,875)
47	12/01/21	12/01/21	12/01/21	7		12/08/21	01/06/22	(35.50)	3,030	(107,571)
48	10/28/22	11/30/22	11/14/22	16		11/30/22	12/07/22	(23.00)	2,915	(67,036)
49	04/25/22	04/25/22	04/25/22	9		05/04/22	07/07/22	(72.50)	2,826	(204,894)
50	09/26/22	09/30/22	09/28/22	3		10/01/22	10/26/22	(27.50)	2,697	(74,161)
51	07/25/22	08/24/22	08/09/22	17		08/26/22	09/20/22	(41.50)	2,571	(106,677)
52	11/07/22	11/10/22	11/09/22	9		11/18/22	12/14/22	(35.00)	2,528	(88,467)
53	12/13/21	01/13/22	12/29/21	16		01/14/22	01/28/22	(30.00)	2,446	(73,367)
54	08/01/22	08/12/22	08/07/22	5		08/12/22	09/07/22	(31.00)	2,340	(72,540)
55	05/26/22	05/26/22	05/26/22	15		06/10/22	07/07/22	(41.50)	2,269	(94,170)
56	02/01/22	02/22/22	02/12/22	16		02/28/22	03/16/22	(32.00)	2,229	(71,322)
57	06/01/22	06/30/22	06/16/22	(15)		06/01/22	06/28/22	(12.00)	2,185	(26,225)
58	10/31/22	11/04/22	11/02/22	3		11/05/22	12/01/22	(28.50)	2,112	(60,192)
59	05/20/22	05/27/22	05/24/22	9		06/02/22	06/22/22	(29.00)	2,032	(58,928)



Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty  
Lead-Lag Study Summary  
O&M Expenses - Non-Labor O&M Expenses

Line	Service Period Begin	Service Period End	Service Period Midpoint	Days from Service Period Midpoint to		Payment Date	(Lead)/Lag Days	Amount	Dollar-Days
				Invoice Date	Invoice Date				
60	06/01/22	06/30/22	06/16/22	(15)	06/01/22	05/26/22	21.00	1,999	41,985
61	09/26/22	09/30/22	09/28/22	3	10/01/22	10/26/22	(27.50)	1,937	(53,260)
62	03/07/22	03/11/22	03/09/22	3	03/12/22	04/08/22	(29.50)	1,888	(55,696)
63					12/20/21	01/20/22	(31.00)	1,850	(57,350)
64	02/04/22	02/25/22	02/15/22	13	02/28/22	03/09/22	(22.00)	1,460	(32,120)
65					03/31/22	04/28/22	(28.00)	1,201	(33,629)
66	11/07/22	11/10/22	11/09/22	3	11/12/22	12/07/22	(28.00)	1,023	(28,644)
67	01/10/22	01/14/22	01/12/22	3	01/15/22	02/14/22	(32.50)	864	(28,080)
68					06/30/22	07/27/22	(27.00)	736	(19,872)
69					07/26/22	08/24/22	(29.00)	615	(17,827)
70	08/08/22	08/12/22	08/10/22	21	08/31/22	09/20/22	(40.50)	528	(21,384)
71	11/21/22	11/29/22	11/25/22	1	11/26/22	12/21/22	(25.50)	462	(11,781)
72					01/25/22	01/28/22	(3.00)	400	(1,200)
73					10/07/22	12/01/22	(55.00)	362	(19,913)
74					12/16/21	01/12/22	(27.00)	320	(8,631)
75	11/26/22	12/25/22	12/11/22	(25)	11/16/22	11/23/22	18.00	281	5,055
76	12/18/22	01/17/23	01/02/23	(23)	12/11/22	12/21/22	12.50	254	3,179
77					08/31/22	09/20/22	(20.00)	222	(4,435)
78					09/14/22	09/23/22	(9.00)	199	(1,795)
79					02/17/22	05/26/22	(98.00)	175	(17,189)
80	02/09/22	03/08/22	02/23/22	(14)	02/09/22	03/31/22	(36.00)	155	(5,588)
81					09/20/22	12/01/22	(72.00)	137	(9,835)
82					05/31/22	06/09/22	(9.00)	124	(1,116)
83	06/08/22	07/07/22	06/23/22	(48)	05/06/22	05/19/22	35.00	105	3,680
84					03/15/22	04/13/22	(29.00)	95	(2,743)
85	10/09/22	11/08/22	10/24/22	16	11/09/22	11/23/22	(29.50)	82	(2,411)
86					09/28/22	12/07/22	(70.00)	77	(5,401)
87	05/11/22	05/11/22	05/11/22	(1)	05/11/22	06/22/22	(41.50)	69	(2,850)
88					12/23/21	01/12/22	(20.00)	60	(1,200)
89					08/03/22	11/18/22	(107.00)	50	(5,337)
90	10/10/22	11/07/22	10/24/22	24	11/17/22	11/23/22	(29.50)	41	(1,215)
91	03/08/22	04/06/22	03/23/22	16	04/08/22	04/13/22	(21.00)	40	(834)
92	06/10/22	07/12/22	06/26/22	16	07/12/22	07/15/22	(18.50)	35	(650)
93					03/18/22	04/08/22	(21.00)	29	(617)
94	10/17/22	11/15/22	11/01/22	16	11/17/22	11/30/22	(29.00)	27	(780)
95	04/28/22	05/26/22	05/12/22	15	05/27/22	06/01/22	(19.50)	21	(402)
96					04/13/22	05/13/22	(30.00)	16	(479)
97					05/01/22	07/07/22	(67.00)	0	(17)
98						Total		\$ 1,160,578	\$ (52,107,805)
99						Weighted Average	(44.90)		

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty  
Lead-Lag Study  
Income Tax

Line	Quarter	Service Period Start	Service Period End	Service Period Midpoint	Payment Date	(Lead)/Lag Days: Midpoint to Payment Date	NH State Income Tax Payment	Dollar-Days
1	First Quarter	01/01/22	12/31/22	07/02/22	04/15/22	78.50	\$ 190,000	\$ 14,915,000
2	Second Quarter	01/01/22	12/31/22	07/02/22	06/15/22	17.50	80,000	1,400,000
3	Third Quarter	01/01/22	12/31/22	07/02/22	09/15/22	(74.50)	50,000	(3,725,000)
4	Fourth Quarter	01/01/22	12/31/22	07/02/22	12/15/22	(165.50)	122,000	(20,191,000)
5	Total						<u>\$ 442,000</u>	<u>\$ (7,601,000)</u>
6	Weighted Average					(17.20)		

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty  
Lead-Lag Study Summary  
Taxes Other Than Income Tax

Line	Description	Amount	(Lead)/Lag Days	Dollar-Days	Composite (Lead)/Lag Days
<hr/>					
Payroll Taxes					
1	FICA	\$ 1,819,369	(16.57)	\$ (30,141,295)	
2	Federal Unemployment	10,493	(30.11)	(315,995)	
3	State Unemployment	63,745	(106.09)	(6,763,013)	
4	Total Payroll Taxes	\$ 1,893,607		\$ (37,220,304)	(19.66)
<hr/>					
5	Property Taxes	\$ 14,908,973	16.36	\$ 243,861,249	16.36
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Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty  
Lead-Lag Study Summary  
FICA

Line	Pay-Period End	Payment Date	(Lead)/Lag Days	Amount	Dollar-Days
1	01/01/22	01/07/22	(6.00)	\$ 44,933	(269,598)
2	01/08/22	01/14/22	(6.00)	19,533	(117,199)
3	01/15/22	01/21/22	(6.00)	47,663	(285,978)
4	01/22/22	01/28/22	(6.00)	20,841	(125,046)
5	01/29/22	02/04/22	(6.00)	50,006	(300,036)
6	02/05/22	02/11/22	(6.00)	22,411	(134,468)
7	02/12/22	02/18/22	(6.00)	45,768	(274,607)
8	02/19/22	02/25/22	(6.00)	20,590	(123,543)
9	02/26/22	03/04/22	(6.00)	50,391	(302,346)
10	03/05/22	03/11/22	(6.00)	19,613	(117,676)
11	03/12/22	03/18/22	(6.00)	47,476	(284,856)
12	03/19/22	03/25/22	(6.00)	19,223	(115,336)
13	03/26/22	04/01/22	(6.00)	46,778	(280,669)
14	04/02/22	04/08/22	(6.00)	19,553	(117,318)
15	04/02/22	04/14/22	(12.00)	105,905	(1,270,866)
16	04/09/22	04/15/22	(6.00)	46,831	(280,987)
17	04/16/22	04/22/22	(6.00)	26,511	(159,068)
18	04/23/22	04/29/22	(6.00)	48,370	(290,218)
19	04/30/22	05/06/22	(6.00)	19,291	(115,745)
20	05/07/22	05/13/22	(6.00)	47,981	(287,885)
21	05/14/22	05/20/22	(6.00)	20,715	(124,287)
22	05/21/22	05/27/22	(6.00)	47,343	(284,057)
23	05/28/22	06/03/22	(6.00)	19,302	(115,813)
24	06/04/22	06/10/22	(6.00)	45,730	(274,381)
25	06/11/22	06/17/22	(6.00)	20,226	(121,353)
26	06/18/22	06/24/22	(6.00)	46,074	(276,442)
27	06/25/22	07/01/22	(6.00)	19,379	(116,272)
28	07/02/22	07/08/22	(6.00)	45,109	(270,655)
29	07/09/22	07/15/22	(6.00)	19,392	(116,353)
30	07/16/22	07/22/22	(6.00)	47,113	(282,679)
31	07/23/22	07/29/22	(6.00)	19,850	(119,098)
32	07/30/22	08/05/22	(6.00)	47,752	(286,514)
33	08/06/22	08/12/22	(6.00)	20,145	(120,870)
34	08/13/22	08/19/22	(6.00)	45,497	(272,982)
35	08/20/22	08/26/22	(6.00)	19,856	(119,136)
36	08/27/22	09/02/22	(6.00)	45,110	(270,658)

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty  
Lead-Lag Study Summary  
FICA

Line	Pay-Period End	Payment Date	(Lead)/Lag Days	Amount	Dollar-Days
37	09/03/22	09/09/22	(6.00)	20,121	(120,725)
38	09/10/22	09/16/22	(6.00)	45,437	(272,623)
39	09/17/22	09/23/22	(6.00)	19,511	(117,066)
40	09/24/22	09/30/22	(6.00)	45,831	(274,987)
41	10/01/22	10/07/22	(6.00)	19,404	(116,426)
42	10/08/22	10/14/22	(6.00)	42,575	(255,449)
43	10/15/22	10/21/22	(6.00)	17,758	(106,551)
44	10/22/22	10/28/22	(6.00)	42,964	(257,785)
45	10/29/22	11/04/22	(6.00)	16,848	(101,085)
46	11/05/22	11/10/22	(5.00)	42,019	(210,094)
47	11/12/22	11/18/22	(6.00)	16,977	(101,864)
48	11/19/22	11/25/22	(6.00)	42,360	(254,159)
49	11/26/22	12/02/22	(6.00)	16,227	(97,362)
50	12/03/22	12/09/22	(6.00)	44,470	(266,818)
51	12/10/22	12/16/22	(6.00)	19,621	(117,723)
52	12/17/22	12/23/22	(6.00)	43,806	(262,833)
53	12/24/22	12/30/22	(6.00)	21,606	(129,633)
53	12/24/22	12/30/22	(6.00)	3,575	(21,448)
	Total			<u>\$1,819,369</u>	<u>\$ (11,509,625)</u>
54	Weighted Average		(6.33)		
55	Payroll Lag		(10.24)		
56	Total (Lead)/Lag Days		<u>(16.57)</u>		

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty  
Lead-Lag Study Summary  
Federal Unemployment

Line	Description	Liability Date	Payment Date	(Lead)/Lag Days	Amount	Dollar-Days
1	First Quarter	03/31/22	04/30/22	(30.00)	\$ 9,298	\$ (278,938)
2	Second Quarter	06/30/22	07/31/22	(31.00)	369	(11,451)
3	Third Quarter	09/30/22	10/31/22	(31.00)	296	(9,185)
4	Fourth Quarter	12/31/22	01/31/23	(31.00)	530	(16,422)
5	Total				\$ 10,493	\$ (315,995)
6	Weighted Average			(30.11)		

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty  
Lead-Lag Study Summary  
State Unemployment

Line	Pay-Period End	Payment Date	(Lead)/Lag Days	EN Amount	Dollar-Days
1	01/01/22	04/30/22	(119.00)	\$ 11,616	(1,382,333)
2	01/08/22	04/30/22	(112.00)	\$ 5,036	(564,030)
3	01/15/22	04/30/22	(105.00)	\$ 12,137	(1,274,410)
4	01/22/22	04/30/22	(98.00)	\$ 4,988	(488,850)
5	01/29/22	04/30/22	(91.00)	\$ 10,040	(913,652)
6	02/05/22	04/30/22	(84.00)	\$ 3,342	(280,724)
7	02/12/22	04/30/22	(77.00)	\$ 4,761	(366,589)
8	02/19/22	04/30/22	(70.00)	\$ 1,178	(82,476)
9	02/26/22	04/30/22	(63.00)	\$ 1,951	(122,937)
10	03/05/22	04/30/22	(56.00)	\$ 401	(22,430)
11	03/12/22	04/30/22	(49.00)	\$ 1,259	(61,670)
12	03/19/22	04/30/22	(42.00)	\$ 376	(15,807)
13	03/26/22	04/30/22	(35.00)	\$ 810	(28,350)
14	04/02/22	07/31/22	(120.00)	\$ 250	(29,963)
15	04/02/22	07/31/22	(120.00)	\$ 398	(47,817)
16	04/09/22	07/31/22	(113.00)	\$ 341	(38,522)
17	04/16/22	07/31/22	(106.00)	\$ 80	(8,483)
18	04/23/22	07/31/22	(99.00)	\$ 182	(18,005)
19	04/30/22	07/31/22	(92.00)	\$ 79	(7,311)
20	05/07/22	07/31/22	(85.00)	\$ 269	(22,887)
21	05/14/22	07/31/22	(78.00)	\$ 142	(11,046)
22	05/21/22	07/31/22	(71.00)	\$ 167	(11,857)
23	05/28/22	07/31/22	(64.00)	\$ 97	(6,200)
24	06/04/22	07/31/22	(57.00)	\$ 145	(8,289)
25	06/11/22	07/31/22	(50.00)	\$ 98	(4,882)
26	06/18/22	07/31/22	(43.00)	\$ 131	(5,624)
27	06/25/22	07/31/22	(36.00)	\$ 98	(3,524)
28	07/02/22	10/31/22	(121.00)	\$ 144	(17,417)
29	07/09/22	10/31/22	(114.00)	\$ 20	(2,329)
30	07/16/22	10/31/22	(107.00)	\$ 140	(14,982)
31	07/23/22	10/31/22	(100.00)	\$ 32	(3,181)
32	07/30/22	10/31/22	(93.00)	\$ 166	(15,418)
33	08/06/22	10/31/22	(86.00)	\$ 40	(3,397)
34	08/13/22	10/31/22	(79.00)	\$ 200	(15,782)
35	08/20/22	10/31/22	(72.00)	\$ 65	(4,689)

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty  
Lead-Lag Study Summary  
State Unemployment

Line	Pay-Period End	Payment Date	(Lead)/Lag Days	EN Amount	Dollar-Days
36	08/27/22	10/31/22	(65.00)	\$ 172	(11,209)
37	09/03/22	10/31/22	(58.00)	\$ 75	(4,351)
38	09/10/22	10/31/22	(51.00)	\$ 67	(3,401)
39	09/17/22	10/31/22	(44.00)	\$ 49	(2,162)
40	09/24/22	10/31/22	(37.00)	\$ 154	(5,710)
41	10/01/22	01/31/23	(122.00)	\$ 41	(5,029)
42	10/08/22	01/31/23	(115.00)	\$ 177	(20,411)
43	10/15/22	01/31/23	(108.00)	\$ 85	(9,192)
44	10/22/22	01/31/23	(101.00)	\$ 376	(38,018)
45	10/29/22	01/31/23	(94.00)	\$ 66	(6,221)
46	11/05/22	01/31/23	(87.00)	\$ 414	(36,007)
47	11/12/22	01/31/23	(80.00)	\$ 84	(6,708)
48	11/19/22	01/31/23	(73.00)	\$ 470	(34,286)
49	11/26/22	01/31/23	(66.00)	\$ 59	(3,890)
50	12/03/22	01/31/23	(59.00)	\$ 407	(24,038)
51	12/10/22	01/31/23	(52.00)	\$ (2)	83
52	12/17/22	01/31/23	(45.00)	\$ (177)	7,976
53	12/24/22	01/31/23	(38.00)	\$ 47	(1,783)
54	Total			\$ 63,745	\$ (6,110,218)
55	Weighted Average		(95.85)		
56	Payroll Lag		(10.24)		
57	Total (Lead)/Lag Days		(106.09)		



Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty  
Lead-Lag Study Summary  
Property Taxes

Line	Description	Tax Period Start	Tax Period End	Tax Period Midpoint	Payment Date	(Lead)/Lag Days		Payment	Total	Tax Amount	Dollar-Days
						Tax Period Midpoint to Tax Period End	Payment				
1	TOWN OF ALLENSTOWN	04/01/22	09/30/22	07/01/22	06/08/22	(90.50)		114.00	23.50	28,173	\$ 662,066
2	TOWN OF ALLENSTOWN	10/01/22	03/31/23	12/31/22	01/03/23	(90.00)		87.00	(3.00)	15,891	(47,673)
3	TOWN OF AMHERST - TAX COLLEC	04/01/22	09/30/22	07/01/22	06/20/22	(90.50)		102.00	11.50	55,921	643,092
4	TOWN OF AMHERST - TAX COLLEC	04/01/22	09/30/22	07/01/22	06/20/22	(90.50)		102.00	11.50	2,711	31,177
5	TOWN OF AMHERST - TAX COLLEC	10/01/22	03/31/23	12/31/22	11/30/22	(90.00)		121.00	31.00	53,326	1,653,106
6	TOWN OF AMHERST - TAX COLLEC	10/01/22	03/31/23	12/31/22	11/30/22	(90.00)		121.00	31.00	2,660	82,460
7	TOWN OF AUBURN	04/01/22	09/30/22	07/01/22	06/08/22	(90.50)		114.00	23.50	803	18,871
8	TOWN OF AUBURN	10/01/22	03/31/23	12/31/22	12/19/22	(90.00)		102.00	12.00	738	8,856
9	TOWN OF BEDFORD NH	04/01/22	09/30/22	07/01/22	06/08/22	(90.50)		114.00	23.50	78,192	1,837,507
10	TOWN OF BEDFORD NH	10/01/22	03/31/23	12/31/22	11/30/22	(90.00)		121.00	31.00	89,187	2,764,812
11	TOWN OF BELMONT NH	04/01/22	09/30/22	07/01/22	06/08/22	(90.50)		114.00	23.50	21,032	494,244
12	TOWN OF BELMONT NH	10/01/22	03/31/23	12/31/22	11/30/22	(90.00)		121.00	31.00	16,015	496,458
13	CITY OF BERLIN	04/01/22	09/30/22	07/01/22	06/20/22	(90.50)		102.00	11.50	9,619	110,619
14	CITY OF BERLIN	10/01/22	03/31/23	12/31/22	01/15/23	(90.00)		75.00	(15.00)	6,563	(98,445)
15	TOWN OF BOSCAWEN	04/01/22	09/30/22	07/01/22	06/08/22	(90.50)		114.00	23.50	14,078	330,833
16	TOWN OF BOSCAWEN	10/01/22	03/31/23	12/31/22	12/16/22	(90.00)		105.00	15.00	14,619	219,285
17	TOWN OF BOW, NH	04/01/22	09/30/22	07/01/22	06/08/22	(90.50)		114.00	23.50	70,188	1,649,418
18	TOWN OF BOW, NH	10/01/22	03/31/23	12/31/22	12/16/22	(90.00)		105.00	15.00	60,426	906,390
19	TOWN OF CANTERBURY NH	04/01/22	09/30/22	07/01/22	06/08/22	(90.50)		114.00	23.50	2,683	63,051
20	TOWN OF CANTERBURY NH	10/01/22	03/31/23	12/31/22	12/19/22	(90.00)		102.00	12.00	2,939	35,268
21	CITY OF CONCORD, NH	04/01/22	06/30/22	05/16/22	06/16/22	(44.50)		14.00	(30.50)	422,896	(12,898,323)
22	CITY OF CONCORD, NH	04/01/22	06/30/22	05/16/22	06/16/22	(44.50)		14.00	(30.50)	28,652	(873,892)
23	CITY OF CONCORD, NH	04/01/22	06/30/22	05/16/22	06/16/22	(44.50)		14.00	(30.50)	12,687	(386,941)
24	CITY OF CONCORD, NH	04/01/22	06/30/22	05/16/22	06/16/22	(44.50)		14.00	(30.50)	7,640	(233,030)
25	CITY OF CONCORD, NH	04/01/22	06/30/22	05/16/22	06/16/22	(44.50)		14.00	(30.50)	6,263	(191,011)
26	CITY OF CONCORD, NH	04/01/22	06/30/22	05/16/22	06/16/22	(44.50)		14.00	(30.50)	1,729	(52,735)
27	CITY OF CONCORD, NH	04/01/22	06/30/22	05/16/22	06/16/22	(44.50)		14.00	(30.50)	881	(26,868)
28	CITY OF CONCORD, NH	04/01/22	06/30/22	05/16/22	06/16/22	(44.50)		14.00	(30.50)	860	(26,219)
29	CITY OF CONCORD, NH	04/01/22	06/30/22	05/16/22	06/16/22	(44.50)		14.00	(30.50)	558	(17,012)
30	CITY OF CONCORD, NH	04/01/22	06/30/22	05/16/22	06/16/22	(44.50)		14.00	(30.50)	503	(15,339)
31	CITY OF CONCORD, NH	04/01/22	06/30/22	05/16/22	06/16/22	(44.50)		14.00	(30.50)	344	(10,483)
32	CITY OF CONCORD, NH	04/01/22	06/30/22	05/16/22	06/16/22	(44.50)		14.00	(30.50)	304	(9,284)
33	CITY OF CONCORD, NH	04/01/22	06/30/22	05/16/22	06/16/22	(44.50)		14.00	(30.50)	283	(8,640)
34	CITY OF CONCORD, NH	04/01/22	06/30/22	05/16/22	06/16/22	(44.50)		14.00	(30.50)	249	(7,585)
35	CITY OF CONCORD, NH	04/01/22	06/30/22	05/16/22	06/16/22	(44.50)		14.00	(30.50)	5	(152)
36	CITY OF CONCORD, NH	07/01/22	09/30/22	08/16/22	09/09/22	(45.00)		21.00	(24.00)	422,896	(10,149,499)
37	CITY OF CONCORD, NH	07/01/22	09/30/22	08/16/22	09/09/22	(45.00)		21.00	(24.00)	28,652	(687,653)
38	CITY OF CONCORD, NH	07/01/22	09/30/22	08/16/22	09/09/22	(45.00)		21.00	(24.00)	12,687	(304,478)
39	CITY OF CONCORD, NH	07/01/22	09/30/22	08/16/22	09/09/22	(45.00)		21.00	(24.00)	7,640	(183,368)
40	CITY OF CONCORD, NH	07/01/22	09/30/22	08/16/22	09/09/22	(45.00)		21.00	(24.00)	6,263	(150,303)
41	CITY OF CONCORD, NH	07/01/22	09/30/22	08/16/22	09/09/22	(45.00)		21.00	(24.00)	1,729	(41,496)
42	CITY OF CONCORD, NH	07/01/22	09/30/22	08/16/22	09/09/22	(45.00)		21.00	(24.00)	881	(21,142)
43	CITY OF CONCORD, NH	07/01/22	09/30/22	08/16/22	09/09/22	(45.00)		21.00	(24.00)	860	(20,631)
44	CITY OF CONCORD, NH	07/01/22	09/30/22	08/16/22	09/09/22	(45.00)		21.00	(24.00)	558	(13,386)
45	CITY OF CONCORD, NH	07/01/22	09/30/22	08/16/22	09/09/22	(45.00)		21.00	(24.00)	503	(12,070)
46	CITY OF CONCORD, NH	07/01/22	09/30/22	08/16/22	09/09/22	(45.00)		21.00	(24.00)	344	(8,249)
47	CITY OF CONCORD, NH	07/01/22	09/30/22	08/16/22	09/09/22	(45.00)		21.00	(24.00)	304	(7,296)
48	CITY OF CONCORD, NH	07/01/22	09/30/22	08/16/22	09/09/22	(45.00)		21.00	(24.00)	283	(6,799)
49	CITY OF CONCORD, NH	07/01/22	09/30/22	08/16/22	09/09/22	(45.00)		21.00	(24.00)	249	(5,968)
50	CITY OF CONCORD, NH	07/01/22	09/30/22	08/16/22	09/09/22	(45.00)		21.00	(24.00)	5	(120)
51	CITY OF CONCORD, NH	10/01/22	12/31/22	11/16/22	12/16/22	(45.00)		15.00	(30.00)	22,737	(682,112)
52	CITY OF CONCORD, NH	10/01/22	12/31/22	11/16/22	12/16/22	(45.00)		15.00	(30.00)	14,817	(444,505)
53	CITY OF CONCORD, NH	10/01/22	12/31/22	11/16/22	12/16/22	(45.00)		15.00	(30.00)	8,435	(253,050)
54	CITY OF CONCORD, NH	10/01/22	12/31/22	11/16/22	12/16/22	(45.00)		15.00	(30.00)	6,914	(207,420)
55	CITY OF CONCORD, NH	10/01/22	12/31/22	11/16/22	12/16/22	(45.00)		15.00	(30.00)	1,909	(57,265)
56	CITY OF CONCORD, NH	10/01/22	12/31/22	11/16/22	12/16/22	(45.00)		15.00	(30.00)	973	(29,176)
57	CITY OF CONCORD, NH	10/01/22	12/31/22	11/16/22	12/16/22	(45.00)		15.00	(30.00)	682	(20,445)
58	CITY OF CONCORD, NH	10/01/22	12/31/22	11/16/22	12/16/22	(45.00)		15.00	(30.00)	616	(18,473)
59	CITY OF CONCORD, NH	10/01/22	12/31/22	11/16/22	12/16/22	(45.00)		15.00	(30.00)	553	(16,583)
60	CITY OF CONCORD, NH	10/01/22	12/31/22	11/16/22	12/16/22	(45.00)		15.00	(30.00)	379	(11,383)
61	CITY OF CONCORD, NH	10/01/22	12/31/22	11/16/22	12/16/22	(45.00)		15.00	(30.00)	336	(10,082)
62	CITY OF CONCORD, NH	10/01/22	12/31/22	11/16/22	12/16/22	(45.00)		15.00	(30.00)	313	(9,383)
63	CITY OF CONCORD, NH	10/01/22	12/31/22	11/16/22	12/16/22	(45.00)		15.00	(30.00)	275	(8,237)
64	CITY OF CONCORD, NH	10/01/22	12/31/22	11/16/22	12/16/22	(45.00)		15.00	(30.00)	5	(139)
65	CITY OF CONCORD, NH	10/01/22	12/31/22	11/16/22	12/17/22	(45.00)		14.00	(31.00)	493,879	(15,310,236)
66	CITY OF CONCORD, NH	01/01/23	03/31/23	02/15/23	05/05/23	(44.00)		(35.00)	(79.00)	22,737	(1,796,229)
67	CITY OF CONCORD, NH	01/01/23	03/31/23	02/15/23	05/05/23	(44.00)		(35.00)	(79.00)	14,817	(1,170,528)
68	CITY OF CONCORD, NH	01/01/23	03/31/23	02/15/23	05/05/23	(44.00)		(35.00)	(79.00)	8,435	(666,363)

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty  
Lead-Lag Study Summary  
Property Taxes

Line	Description	Tax Period Start	Tax Period End	Tax Period Midpoint	Payment Date	(Lead)/Lag Days		Total	Tax Amount	Dollar-Days
						Tax Period Midpoint to Tax Period End	Payment			
69	CITY OF CONCORD, NH	01/01/23	03/31/23	02/15/23	05/05/23	(44.00)	(35.00)	(79.00)	6,914	(546,207)
70	CITY OF CONCORD, NH	01/01/23	03/31/23	02/15/23	05/05/23	(44.00)	(35.00)	(79.00)	1,909	(150,798)
71	CITY OF CONCORD, NH	01/01/23	03/31/23	02/15/23	05/05/23	(44.00)	(35.00)	(79.00)	973	(76,831)
72	CITY OF CONCORD, NH	01/01/23	03/31/23	02/15/23	05/05/23	(44.00)	(35.00)	(79.00)	682	(53,839)
73	CITY OF CONCORD, NH	01/01/23	03/31/23	02/15/23	05/05/23	(44.00)	(35.00)	(79.00)	616	(48,646)
74	CITY OF CONCORD, NH	01/01/23	03/31/23	02/15/23	05/05/23	(44.00)	(35.00)	(79.00)	553	(43,669)
75	CITY OF CONCORD, NH	01/01/23	03/31/23	02/15/23	05/05/23	(44.00)	(35.00)	(79.00)	379	(29,976)
76	CITY OF CONCORD, NH	01/01/23	03/31/23	02/15/23	05/05/23	(44.00)	(35.00)	(79.00)	336	(26,548)
77	CITY OF CONCORD, NH	01/01/23	03/31/23	02/15/23	05/05/23	(44.00)	(35.00)	(79.00)	313	(24,706)
78	CITY OF CONCORD, NH	01/01/23	03/31/23	02/15/23	05/05/23	(44.00)	(35.00)	(79.00)	275	(21,688)
79	CITY OF CONCORD, NH	01/01/23	03/31/23	02/15/23	05/05/23	(44.00)	(35.00)	(79.00)	5	(365)
80	CITY OF CONCORD, NH	01/01/23	03/31/23	02/15/23	05/07/23	(44.00)	(37.00)	(81.00)	493,879	(40,004,163)
80	TOWN OF DERRY	04/01/22	09/30/22	07/01/22	06/20/22	(90.50)	102.00	11.50	54,263	624,029
81	TOWN OF DERRY	10/01/22	03/31/23	12/31/22	12/16/22	(90.00)	105.00	15.00	41,956	629,335
82	CITY OF FRANKLIN NH	04/01/22	09/30/22	07/01/22	06/20/22	(90.50)	102.00	11.50	50,242	577,788
83	CITY OF FRANKLIN NH	10/01/22	03/31/23	12/31/22	12/19/22	(90.00)	102.00	12.00	50,867	610,403
84	TOWN OF GILFORD NH	04/01/22	09/30/22	07/01/22	06/16/22	(90.50)	106.00	15.50	3,158	48,949
85	TOWN OF GILFORD NH	04/01/22	09/30/22	07/01/22	06/16/22	(90.50)	106.00	15.50	51	791
86	TOWN OF GILFORD NH	04/01/22	09/30/22	07/01/22	06/16/22	(90.50)	106.00	15.50	48	744
87	TOWN OF GILFORD NH	04/01/22	09/30/22	07/01/22	06/16/22	(90.50)	106.00	15.50	48	744
88	TOWN OF GILFORD NH	04/01/22	09/30/22	07/01/22	06/16/22	(90.50)	106.00	15.50	46	713
89	TOWN OF GILFORD NH	10/01/22	03/31/23	12/31/22	12/16/22	(90.00)	105.00	15.00	2,595	38,925
90	TOWN OF GILFORD NH	10/01/22	03/31/23	12/31/22	12/16/22	(90.00)	105.00	15.00	50	750
91	TOWN OF GILFORD NH	10/01/22	03/31/23	12/31/22	12/16/22	(90.00)	105.00	15.00	48	720
92	TOWN OF GILFORD NH	10/01/22	03/31/23	12/31/22	12/16/22	(90.00)	105.00	15.00	47	705
93	TOWN OF GILFORD NH	10/01/22	03/31/23	12/31/22	12/16/22	(90.00)	105.00	15.00	46	690
94	TOWN OF GOFFSTOWN	04/01/22	09/30/22	07/01/22	06/08/22	(90.50)	114.00	23.50	46,619	1,095,552
95	TOWN OF GOFFSTOWN	04/01/22	09/30/22	07/01/22	06/08/22	(90.50)	114.00	23.50	1,379	32,402
96	TOWN OF GOFFSTOWN	10/01/22	03/31/23	12/31/22	12/05/22	(90.00)	116.00	26.00	41,589	1,081,315
97	TOWN OF GOFFSTOWN	10/01/22	03/31/23	12/31/22	11/17/22	(90.00)	134.00	44.00	1,232	54,186
98	TOWN OF HOLLIS	04/01/22	09/30/22	07/01/22	06/20/22	(90.50)	102.00	11.50	2,069	23,794
99	TOWN OF HOLLIS	10/01/22	03/31/23	12/31/22	11/30/22	(90.00)	121.00	31.00	1,354	41,974
100	TOWN OF HOOKSETT NH	04/01/22	09/30/22	07/01/22	06/20/22	(90.50)	102.00	11.50	148,889	1,712,224
101	TOWN OF HOOKSETT NH	10/01/22	03/31/23	12/31/22	06/20/22	(90.00)	284.00	194.00	3,024	586,656
102	TOWN OF HOOKSETT NH	04/01/22	09/30/22	07/01/22	12/16/22	(90.50)	(77.00)	(167.50)	187,820	(31,459,850)
103	TOWN OF HOOKSETT NH	10/01/22	03/31/23	12/31/22	12/16/22	(90.00)	105.00	15.00	3,815	57,225
104	TOWN OF HUDSON NH	04/01/22	09/30/22	07/01/22	06/08/22	(90.50)	114.00	23.50	192,634	4,526,900
105	TOWN OF HUDSON NH	10/01/22	03/31/23	12/31/22	06/08/22	(90.00)	296.00	206.00	1,057	217,668
106	TOWN OF HUDSON NH	04/01/22	09/30/22	07/01/22	06/08/22	(90.50)	114.00	23.50	861	20,239
107	TOWN OF HUDSON NH	10/01/22	03/31/23	12/31/22	01/04/23	(90.00)	86.00	(4.00)	133,065	(532,259)
108	TOWN OF HUDSON NH	04/01/22	09/30/22	07/01/22	01/03/23	(90.50)	(95.00)	(185.50)	908	(168,375)
109	TOWN OF HUDSON NH	10/01/22	03/31/23	12/31/22	01/03/23	(90.00)	87.00	(3.00)	794	(2,383)
110	CITY OF KEENE	04/01/22	09/30/22	07/01/22	06/14/22	(90.50)	108.00	17.50	5,102	89,281
111	CITY OF KEENE	04/01/22	09/30/22	07/01/22	06/27/22	(90.50)	95.00	4.50	119,006	535,525
112	CITY OF KEENE	04/01/22	09/30/22	07/01/22	06/27/22	(90.50)	95.00	4.50	9,407	42,332
113	CITY OF KEENE	04/01/22	09/30/22	07/01/22	07/11/22	(90.50)	81.00	(9.50)	3,791	(36,016)
114	CITY OF KEENE	10/01/22	03/31/23	12/31/22	12/09/22	(90.00)	112.00	22.00	5,020	110,445
115	CITY OF KEENE	10/01/22	03/31/23	12/31/22	12/09/22	(90.00)	112.00	22.00	3,731	82,072
116	CITY OF KEENE	10/01/22	03/31/23	12/31/22	12/20/22	(90.00)	101.00	11.00	138,132	1,519,455
117	CITY OF KEENE	10/01/22	03/31/23	12/31/22	12/20/22	(90.00)	101.00	11.00	9,541	104,946
118	CITY OF LACONIA	04/01/22	09/30/22	07/01/22	06/20/22	(90.50)	102.00	11.50	159,000	1,828,500
119	CITY OF LACONIA	10/01/22	03/31/23	12/31/22	12/19/22	(90.00)	102.00	12.00	116,063	1,392,756
120	LITCHFIELD TAX COLLECTOR	04/01/22	09/30/22	07/01/22	06/08/22	(90.50)	114.00	23.50	14,788	347,518
121	LITCHFIELD TAX COLLECTOR	10/01/22	03/31/23	12/31/22	12/14/22	(90.00)	107.00	17.00	15,876	269,892
122	TOWN OF LONDONDERRY	04/01/22	09/30/22	07/01/22	06/20/22	(90.50)	102.00	11.50	241,469	2,776,894
123	TOWN OF LONDONDERRY	04/01/22	09/30/22	07/01/22	06/20/22	(90.50)	102.00	11.50	46,634	536,291
124	TOWN OF LONDONDERRY	04/01/22	09/30/22	07/01/22	06/20/22	(90.50)	102.00	11.50	12,918	148,562
125	TOWN OF LONDONDERRY	04/01/22	09/30/22	07/01/22	06/20/22	(90.50)	102.00	11.50	16,638	191,332
126	TOWN OF LONDONDERRY	04/01/22	09/30/22	07/01/22	06/20/22	(90.50)	102.00	11.50	11,549	132,809
127	TOWN OF LONDONDERRY	10/01/22	03/31/23	12/31/22	12/16/22	(90.00)	105.00	15.00	239,644	3,594,660
128	TOWN OF LONDONDERRY	10/01/22	03/31/23	12/31/22	12/16/22	(90.00)	105.00	15.00	24,320	364,800
129	TOWN OF LONDONDERRY	10/01/22	03/31/23	12/31/22	12/19/22	(90.00)	102.00	12.00	12,517	150,201
130	TOWN OF LONDONDERRY	10/01/22	03/31/23	12/31/22	12/16/22	(90.00)	105.00	15.00	12,048	180,716
131	TOWN OF LONDONDERRY	10/01/22	03/31/23	12/31/22	12/16/22	(90.00)	105.00	15.00	10,454	156,807
132	TOWN OF LOUDON NH	04/01/22	09/30/22	07/01/22	06/08/22	(90.50)	114.00	23.50	81,479	1,914,757
133	TOWN OF LOUDON NH	10/01/22	03/31/23	12/31/22	01/02/23	(90.00)	88.00	(2.00)	124,701	(249,402)
134	CITY OF MANCHESTER	04/01/22	09/30/22	07/01/22	06/17/22	(90.50)	105.00	14.50	1,174,871	17,035,624
135	CITY OF MANCHESTER	04/01/22	09/30/22	07/01/22	06/17/22	(90.50)	105.00	14.50	20,310	294,493
136	CITY OF MANCHESTER	04/01/22	09/30/22	07/01/22	06/17/22	(90.50)	105.00	14.50	461	6,687

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty  
Lead-Lag Study Summary  
Property Taxes

Line	Description	Tax Period Start	Tax Period End	Tax Period Midpoint	Payment Date	(Lead)/Lag Days		Payment	Total	Tax Amount	Dollar-Days
						Tax Period Midpoint to Tax Period End	Payment				
137	CITY OF MANCHESTER	04/01/22	09/30/22	07/01/22	06/17/22	(90.50)	105.00	14.50	266	3,861	
138	CITY OF MANCHESTER	04/01/22	09/30/22	07/01/22	06/17/22	(90.50)	105.00	14.50	63	907	
139	CITY OF MANCHESTER	10/01/22	03/31/23	12/31/22	12/21/22	(90.00)	100.00	10.00	1,493,525	14,935,246	
140	CITY OF MANCHESTER	10/01/22	03/31/23	12/31/22	12/16/22	(90.00)	105.00	15.00	22,842	342,634	
141	CITY OF MANCHESTER	10/01/22	03/31/23	12/31/22	12/16/22	(90.00)	105.00	15.00	772	11,587	
142	CITY OF MANCHESTER	10/01/22	03/31/23	12/31/22	12/16/22	(90.00)	105.00	15.00	519	7,780	
143	CITY OF MANCHESTER	10/01/22	03/31/23	12/31/22	12/16/22	(90.00)	105.00	15.00	299	4,492	
144	CITY OF MANCHESTER	10/01/22	03/31/23	12/31/22	12/16/22	(90.00)	105.00	15.00	70	1,055	
145	TOWN OF MERRIMACK NH	04/01/22	09/30/22	07/01/22	06/08/22	(90.50)	114.00	23.50	135,089	3,174,592	
146	TOWN OF MERRIMACK NH	10/01/22	03/31/23	12/31/22	12/17/22	(90.00)	104.00	14.00	215,420	3,015,880	
147	TOWN OF MILFORD	04/01/22	09/30/22	07/01/22	06/20/22	(90.50)	102.00	11.50	63,457	729,753	
148	TOWN OF MILFORD	04/01/22	09/30/22	07/01/22	06/20/22	(90.50)	102.00	11.50	868	9,984	
149	TOWN OF MILFORD	10/01/22	03/31/23	12/31/22	11/22/22	(90.00)	129.00	39.00	64,796	2,527,027	
150	TOWN OF MILFORD	10/01/22	03/31/23	12/31/22	11/22/22	(90.00)	129.00	39.00	973	37,946	
151	CITY OF NASHUA NH	04/01/22	09/30/22	07/01/22	06/17/22	(90.50)	105.00	14.50	1,313,323	19,043,185	
152	CITY OF NASHUA NH	04/01/22	09/30/22	07/01/22	06/17/22	(90.50)	105.00	14.50	40,712	590,331	
153	CITY OF NASHUA NH	04/01/22	09/30/22	07/01/22	06/17/22	(90.50)	105.00	14.50	1,618	23,466	
154	CITY OF NASHUA NH	04/01/22	09/30/22	07/01/22	06/17/22	(90.50)	105.00	14.50	153	2,218	
155	CITY OF NASHUA NH	04/01/22	09/30/22	07/01/22	06/17/22	(90.50)	105.00	14.50	97	1,407	
156	CITY OF NASHUA NH	10/01/22	03/31/23	12/31/22	12/21/22	(90.00)	100.00	10.00	1,413,359	14,133,590	
157	CITY OF NASHUA NH	10/01/22	03/31/23	12/31/22	12/16/22	(90.00)	105.00	15.00	15,428	231,415	
158	CITY OF NASHUA NH	10/01/22	03/31/23	12/31/22	12/16/22	(90.00)	105.00	15.00	1,580	23,702	
159	CITY OF NASHUA NH	10/01/22	03/31/23	12/31/22	12/16/22	(90.00)	105.00	15.00	217	3,248	
160	CITY OF NASHUA NH	10/01/22	03/31/23	12/31/22	12/16/22	(90.00)	105.00	15.00	137	2,053	
161	STATE OF NH - DEPT OF REVENUE	04/01/22	06/30/22	05/16/22	03/14/22	(44.50)	108.00	63.50	800,579	50,836,788	
162	STATE OF NH - DEPT OF REVENUE	07/01/22	09/30/22	08/16/22	06/01/22	(45.00)	121.00	76.00	800,579	60,844,030	
163	STATE OF NH - DEPT OF REVENUE	10/01/22	12/31/22	11/16/22	08/18/22	(45.00)	135.00	90.00	800,579	72,052,141	
164	STATE OF NH - DEPT OF REVENUE	01/01/23	03/31/23	02/15/23	11/07/22	(44.00)	144.00	100.00	800,579	80,057,934	
165	STATE OF NH - DEPT OF REVENUE	04/01/22	03/31/23	09/30/22	01/04/23	(181.50)	86.00	(95.50)	238,744	(22,800,052)	
166	TOWN OF NORTHFIELD - TAX	04/01/22	09/30/22	07/01/22	06/16/22	(90.50)	106.00	15.50	25,815	400,133	
167	TOWN OF NORTHFIELD - TAX	10/01/22	03/31/23	12/31/22	12/17/22	(90.00)	104.00	14.00	16,172	226,408	
168	TOWN OF PEMBROKE	04/01/22	09/30/22	07/01/22	06/16/22	(90.50)	106.00	15.50	77,306	1,198,243	
169	TOWN OF PEMBROKE	10/01/22	03/31/23	12/31/22	12/16/22	(90.00)	105.00	15.00	57,172	857,580	
170	TOWN OF SANBORNTON	04/01/22	09/30/22	07/01/22	06/16/22	(90.50)	106.00	15.50	2,168	33,604	
171	TOWN OF SANBORNTON	10/01/22	03/31/23	12/31/22	12/16/22	(90.00)	105.00	15.00	2,003	30,045	
172	TOWN OF TILTON, NH	04/01/22	09/30/22	07/01/22	06/16/22	(90.50)	106.00	15.50	125,307	1,942,259	
173	TOWN OF TILTON, NH	04/01/22	09/30/22	07/01/22	06/16/22	(90.50)	106.00	15.50	10,315	159,883	
174	TOWN OF TILTON, NH	10/01/22	03/31/23	12/31/22	12/17/22	(90.00)	104.00	14.00	135,767	1,900,738	
175	TOWN OF TILTON, NH	10/01/22	03/31/23	12/31/22	12/16/22	(90.00)	105.00	15.00	11,153	167,295	
176	Total									\$ 14,908,973	\$ 243,861,249
177	Weighted Average							16.36			

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