

Northern Utilities, Inc.  
 Docket No. DG 21-144  
 Department of Energy Data Requests

Date Request Received: 09/23/22  
 Data Request: DOE 2-04

Date of Response: 10/7/2022  
 Witness: Christopher Goulding

**REQUEST:**

Please furnish the Marginal Revenue-Marginal Cost analysis (i.e., Schedule NU-11) using projected gas usage (in therms) for the duration of the proposed seventh amendment. Please provide a narrative description of the methodology used to calculate the parameter values (i.e., the inflation factor, the escalation factor, the marginal cost data etc.) used to perform the analysis.

**RESPONSE:**

Please refer to DOE 2-4 Attachment 1[**CONFIDENTIAL**] for the requested analysis. The following assumptions were used to perform the analysis:

- The March 1, 2022 to February 28, 2023 sales forecast is based on actual usage for the months of March 2022 through August 2022 and forecasted usage for the month of September 2022 through February 2023. The forecasted months were estimated based on the average historical monthly usage. Please refer to the response to DOE 2-01 for the supporting calculation for the forecast period.
- The March 1, 2023 to February 29, 2024 sales forecast is estimated based on the average historical monthly usage. Please refer to the response to DOE 2-1 for the supporting calculation for the forecast period.
- The Marginal cost data is based on the marginal cost study performed by Atrium and submitted in the Company's last rate case in Docket No. DG 21-104 as provided in Revised Schedule RAJT-10, Table 12.
- The February 2023 escalation factor increase includes an estimate of the change in GDP which comes from the EIA Energy Outlook projections (Table 20 Macroeconomics Indicators). Please refer to DOE 2-4 Attachment 2 for the Table 20 supporting workpaper.
- The inflation factor estimate for 2023 was sourced from [www.forecasts.org/cpi.htm](http://www.forecasts.org/cpi.htm). Please refer to the DOE 2-4 Attachment 3 for the supporting workpaper.

Foss Mfg. Special Contract  
Northern Utilities, Inc. Marginal Cost Estimate template

REDACTED

Docket No. DG 21-144  
DOE 2-4  
Attachment 1  
Page 1 of 2

Escalating Marginal Costs using GDPLEV from Bureau of Economic Analysis data:

- 1) Go to -> <http://www.bea.gov/national/index.htm> web page;
- 2) Click on the link for *Current-Dollar and "Real" Gross Domestic Product*;
- 3) Update annual "GDP in billions of current dollars" and "GDP in billions of chained 2012 dollars" data in the table below;
- 4) Forecast years GDP estimates use EIA Energy Outlook projections (Table 20 Macroeconomics Indicators);
- Go to -> <http://www.eia.doe.gov/oiiaf/aeo/index.html> web page;
- 5) Update prior to start of each contract year.

**Adjustment escalators to Marginal Costs**

	GDP in billions of current dollars	GDP in billions of chained 2012 dollars	GDP Chain-type Price Index (2012=1.000)	Marginal Cost Study Escalation Factor Calculation
1998	9,062.8	12,038.3	0.7528	
1999	9,630.7	12,610.5	0.7637	
2000	10,252.3	13,131.0	0.7808	
2001	10,581.8	13,262.1	0.7979	
2002	10,936.4	13,493.1	0.8105	
2003	11,458.2	13,879.1	0.8256	
2004	12,213.7	14,406.4	0.8478	
2005	13,036.6	14,912.5	0.8742	
2006	13,814.6	15,338.3	0.9007	
2007	14,451.9	15,626.0	0.9249	
2008	14,712.8	15,604.7	0.9428	
2009	14,448.9	15,208.8	0.9500	
2010	14,992.1	15,598.8	0.9611	
2011	15,542.6	15,840.7	0.9812	
2012	16,197.0	16,197.0	1.0000	
2013	16,784.9	16,495.4	1.0176	
2014	17,527.3	16,912.0	1.0364	
2015	18,238.3	17,432.2	1.0462	
2016	18,745.1	17,730.5	1.0572	
2017	19,543.0	18,144.1	1.0771	
2018	20,611.9	18,687.8	1.1030	
2019	21,433.2	19,091.7	1.1226	
2020	20,893.7	18,384.7	1.1365	1.1365
2021	22,996.1	19,427.3	1.1837	
2022			1.2090	1.1879
2023			1.2310	1.2127
Calculation of Escalation Factor ->			Feb 2022	1.0453
			Feb 2023	1.0670

**ANNUALIZED MARGINAL COST ESTIMATE**

A	B	C	D	E	F
		DG 21-104 Atrium MCS Revised RAJT-10 Page 2	Feb 2022	Feb 2023	Notes
1	Escalation Factor		1.0453	1.0670	
2	Marginal Cost Data				
3	Customer Charge	\$741.49	\$775.06	\$791.20	C3 x D1 & C3 x E1
4	Pressure Support	\$0.00	\$0.00	\$0.00	C4 x D1 & C4 x E1
5	Main Reinforcement (per Dth)	\$150.57	\$157.39	\$160.66	C5 x D1 & C5 x E1
6	Main Extension (per Dth)	\$117.45	\$122.77	\$125.32	C6 x D1 & C6 x E1
7	O&M (per Dth)	\$28.28	\$29.56	\$30.18	C7 x D1 & C7 x E1
8					
9					
10	Customer Data				
11	Annual Usage (Dth)				
12	Design Day Usage (Dth)				
13					
14	Marginal Revenue Requirement				
15	Customer Charge				
16	Pressure Support				
17	Main Reinforcement				
18	Main Extension				
19	O&M				
20	Total				
21					
22	Marginal Cost Floor - All Components				
23	Revenue Requirement				
24	Customer Charge				
25	Remaining Revenue				
26	Volumetric Charge				

**Notes:**

Customer Charge from Schedule Revised RAJT-10, Table - 12, Page 2, Line 53.  
Main Reinforcement Cost from Schedule Revised RAJT-10, Table - 12, Page 2, Line 31.  
Main Extension Cost from Schedule Revised RAJT-10, Table - 12, Page 2, Line 32.  
O&M Cost from Schedule Revised RAJT-10, Table - 12, Page 2, Line 35.  
2019 thru 2022 GDP Chain-type Price Index from EIA Annual Energy Outlook

Northern Utilities, Inc.  
Foss Special Contract - Sixth Amendment Marginal Revenue Estimate template

REDACTED

Docket No. DG 21-144  
DOE 2-4  
Attachment 1  
Page 2 of 2

Go to -> [http://data.bls.gov/PDO/servlet/SurveyOutputServlet?data\\_tool=latest\\_numbers&series\\_id=CUUR0000SA0&output\\_view=pct\\_1mth](http://data.bls.gov/PDO/servlet/SurveyOutputServlet?data_tool=latest_numbers&series_id=CUUR0000SA0&output_view=pct_1mth)

Filter formatting options - 12 month, February to February, html format, comma delimited

CPI Table Paste Area

### Consumer Price Index - All Urban Consumers

12-Month Percent Change

Series Id: CUUR0000SA0

Not Seasonally Adjusted

Area: U.S. city average

Item: All items

Base Period: 1982-84=100

Denotes Confidential Information

Year	Feb
2000	169.800
2001	175.800
2002	177.800
2003	183.100
2004	186.200
2005	191.800
2006	198.700
2007	203.499
2008	211.693
2009	212.193
2010	216.741
2011	221.309
2012	227.663
2013	232.166
2014	234.781
2015	234.722
2016	237.111
2017	243.603
2018	248.991
2019	252.776
2020	258.678
2021	263.014
2022	283.716
2023	

(Forecast) 297.940 [CPI Forecast | Consumer Price Index](#)  
([forecasts.org](#))

Inflation Factor Template			Annual Special Contract Rate Adjustment Template						
CPI-U Year	CPI-U, NSA, 12 months, Feb. - Feb.	Inflation Factor	March 1 Contract Rate Year	Monthly Customer Charge	First 200,000 Therms	Delivery Rate 200,001-300,000	Delivery Rate 300,001-400,000	Delivery Rate Over 400,001	Notes
2005	191.800		2005						Actual billed rates
2006	198.700	3.60%	2006						Actual billed rates
2007	203.499	2.42%	2007						Actual billed rates
2008	211.693	4.03%	2008						Actual billed rates
2009	212.193	0.24%	2009						Actual billed rates
2010	216.741	2.14%	2010						Actual billed rates
2011	221.309	2.11%	2011						Actual billed rates
2012	227.663	2.87%	2012						Actual billed rates
2013	232.166	1.98%	2013						Actual billed rates
2014	234.781	1.13%	2014						Actual billed rates
2015	234.722	-0.03%	2015						Actual billed rates
2016	237.111	1.02%	2016						Actual billed rates
2017	243.603	2.74%	2017						Actual billed rates
2018	248.991	2.21%	2018						Actual billed rates
2019	252.776	1.52%	2019						Actual billed rates
2020	258.678	2.33%	2020						Actual billed rates
2021	263.014	1.68%	2021						Actual billed rates
2022	283.716	7.87%	2022						Actual billed rates
2023	297.940	5.01%	2023						Forecasted rates

Pursuant to the contract: In no event shall fluctuations in the CPI-U reduce the Special Transportation Rates or Charges below the then current Special Transportation Rates and Charges.

#### FORECASTED MARGINAL REVENUE ESTIMATE (MARCH 1, 2022 THROUGH FEBRUARY 28, 2023)

Usage	Over 400,000	Customer Charge	1st 200,000	Next 100,000	Next 100,000	Remainder
		Mar-22(A)				
		Apr-22(A)				
		May-22(A)				
		Jun-22(A)				
		Jul-22(A)				
		Aug-22(A)				
		Sep-22(F)				
		Oct-22(F)				
		Nov-22(F)				
		Dec-22(F)				
		Jan-23(F)				
		Feb-23(F)				
	Total					
		TOTAL:				

#### FORECASTED MARGINAL REVENUE ESTIMATE (MARCH 1, 2023 THROUGH FEBRUARY 29, 2024)

Usage	Over 400,000	Customer Charge	1st 200,000	Next 100,000	Next 100,000	Remainder
		Mar-23(F)				
		Apr-23(F)				
		May-23(F)				
		Jun-23(F)				
		Jul-23(F)				
		Aug-23(F)				
		Sep-23(F)				
		Oct-23(F)				
		Nov-23(F)				
		Dec-23(F)				
		Jan-24(F)				
		Feb-24(F)				
	Total					
		TOTAL:				

Northern Utilities, Inc.  
Docket No. DG 21-144  
Department of Energy Data Requests

REDACTED

Date Request Received: 09/15/22  
Data Request: DOE 2-05

Date of Response: 10/7/2022  
Witness: Francis X. Wells & Christopher Goulding

---

**REQUEST:**

Request No: DOE 2-05

Please furnish counterfactual cost estimate(s), if any, that Northern would have to incur should the utility be unable to provide transportation services to Foss (because the proposed seventh amendment was not approved and service under the tariff was not economical for Foss). <sup>1</sup> In a narrative description, please explain the methodology used to calculate such cost estimate(s).

**RESPONSE:**

CONFIDENTIAL DOE 2-05 Attachment 1 is an estimate of the capacity assignment demand revenue associated with Foss for the 2022-2023 Annual Period. This is estimated in the same manner as CONFIDENTIAL Attachment NUI-FXW-6, which was provided as part of Mr. Wells's pre-filed testimony in the 2022 / 2023 Annual Cost of Gas and Associated Charges Filing under Docket No. DG 22-059, with the exception that the Total Contract Quantity of all customers except Foss has been removed from the calculation to show the total demand cost allocated to this customer through capacity assignment.

Page 1 of CONFIDENTIAL DOE 2-05 Attachment 1 provides the Projected Annual Revenue and then breaks out this revenue between that which is projected from November 2022 through February 2023 (prior to the start date of the seventh amendment to the Foss special contract) and that which is projected from March 2023 through October 2023 (after the start date of the seventh amendment to the Foss special contract). Page 2 shows the calculation of pipeline contracts assigned to Foss, along with associated revenue. Page 3 shows the calculation of underground storage contracts assigned to Foss, along with associated revenue. Page 4 shows the calculation of the Peaking Service volumes and charges associated with Foss. Page 5 shows capacity assignment demand revenue offsets associated with allocation of asset management revenue pertaining to company-managed supplies. Page 6 shows the derivation of the Peaking Service demand rate. Page 7 shows the allocation of capacity to Foss, based on the proposed Capacity Allocators in DG 22-059.

---

<sup>1</sup> Such *counterfactual cost estimates* could include, among others, a) impacts on remaining customers (or customer classes); and b) impacts due to potential changes to Northern's business and/or operational planning (during the Pre-Hearing Conference on September 13, 2022, Northern indicated that the subject contract is included in its planning).

Northern Utilities, Inc.  
Docket No. DG 21-144  
Department of Energy Data Requests

REDACTED

Date Request Received: 09/15/22  
Data Request: DOE 2-05

Date of Response: 10/7/2022  
Witness: Francis X. Wells & Christopher Goulding

---

If Foss were no longer a Northern customer, Northern would be required to recall capacity from Foss's retail marketer, leaving New Hampshire sales service customers to absorb this loss of projected revenue. Assuming this was effective March 1, 2023 (when the proposed seventh amendment would begin), the Total Division Capacity Assignment Demand Revenue under the heading "Mar-23 through Oct-23" would not be received and this cost of the capacity that would no longer be assigned to Foss would be allocated to New Hampshire's sales service customers through the cost of gas reconciliation. Northern does not expect that there would be significant commodity cost savings during the March through October period to offset the additional cost associated with the loss of this Capacity Assignment Demand Revenue.

For Distribution rates, the special contract revenues are included as a revenue credit against the total cost to serve Northern's customers in New Hampshire. This reduces the revenue necessary to be collected from all other customers resulting in lower rates than otherwise would be if Foss was not a Northern customer. In the last rate case, Docket No. DG 21-104, the total approved revenue requirement was \$49,291,726 (Settlement Attachment 1, Page 6). The total revenue credit associated with the Foss special contract in DG 21-104 was 516,748 (Settlement Attachment 1, Page 69). If Foss was no longer a Northern customer, overall rates for all other customers would have been roughly higher<sup>2</sup>.

---

<sup>2</sup> [REDACTED]

**DG 21-144**  
**NORTHERN UTILITIES, INC.**  
**PETITION FOR APPROVAL OF SPECIAL CONTRACT**  
**FOSS MANUFACTURING COMPANY, LLC**  
**DATA RESPONSE**

**Data Request Issued: 9/23/22**  
**Request No. DOE 1-8**

**Date of Response: 10/7/22**  
**Sponsor: Dean Landry**

---

**DOE 1-8:** Please provide estimates of any direct and/or indirect benefits that Foss would bring to the economy of the State of New Hampshire if the proposed seventh amendment to the transportation service contract were approved. Please provide a narrative description of the methodology used to calculate such direct and/or indirect benefit(s) and cite source(s) of information used to arrive at the estimate(s).

**Response:**

In 2021, Foss brought benefits in the amount of \$36,973,132 in direct spending to the New Hampshire economy in the form of operating costs for labor, purchases of materials and services, and expenditures on maintenance and repairs, taxes, utilities and other items, as set forth in the table below. According to the National Association of Manufacturers' website, for every \$1.00 spent in manufacturing there is a total impact of \$2.68 to the overall U.S. economy, which represents one of the largest sectoral multipliers in the economy. <https://www.nam.org/facts-about-manufacturing/> See also, "Manufacturing's Economic Impact: So Much Bigger Than We Think" by Stephen Gold, February 17, 2016. <https://www.industryweek.com/the-economy/article/21970594/manufacturings-economic-impact-so-much-bigger-than-we-think>

Using a 3.0 X multiplier factor of economic impact and applying a marginal propensity to spend of 80% and a marginal propensity to save of 20% as a sanity check, the expected overall economic impact on the New Hampshire economy of Foss' direct spending would amount to \$88,735,516. This impact is roughly equivalent to the \$83,968,898 Gross Domestic Product ("GDP") value of Foss operations identified in Table 1 of the analysis performed by the New Hampshire Department of Employment Security ("DES"), Economic and Labor Market Information Bureau ("ELMI"), discussed below.

ELMI performed an analysis of the impact of Foss employment on the New Hampshire economy. See Attachment A. Among other things, that analysis estimates the impact on the New Hampshire economy of the addition (or loss) of 10 jobs at Foss. Table 2 of the analysis shows, for instance, that an addition (or loss) of 10 jobs in Year 1 would have an impact of \$2,789,690 on GDP and increase (or decrease) total employment by 28 jobs. Accordingly, if Foss were to increase employment by 50 jobs over the next two calendar years, GDP would increase by roughly \$14 million.

<b>Expense Category</b>	<b>2021 Annual Spend</b>
Labor	\$22,969,861
Insurance	\$496,995
NH State unemployment	\$99,347
Maintenance & Repairs	\$2,536,777
Packaging	\$1,590,191
Property taxes	\$316,322
Natural Gas	\$3,048,180
Electric	\$835,113
Freight	\$2,598,958
Other	\$2,481,388
<b>Total</b>	<b>\$36,973,132</b>

ATTACHMENT A



## **Analysis of the Impact of Foss Performance Materials, LLC's Employment on the New Hampshire Economy**

**October 3, 2022**

### **Introduction**

The Economic and Labor Market Information Bureau (ELMI) of the New Hampshire Department of Employment Security (NHES), in cooperation with the U.S. Bureau of Labor Statistics, is the state agency responsible for collecting and disseminating labor force, employment, and economic data for the State of New Hampshire and its geographic and political subdivisions. In addition, ELMI produces specialized economic analyses for the legislative and executive branches of state government, as well as private, for-profit, and not-for-profit organizations.

ELMI was asked to estimate the economic value to the State of New Hampshire of retaining or attracting manufacturing jobs related to a regulatory matter before the New Hampshire Public Utilities Commission. ELMI was provided general information about the regulatory issue and the manufacturing industry involved, but was not given any specific information about the impact on the business involved or its finances. The analysis in this brief does not directly address any detailed aspects of the regulatory issue before the Public Utilities Commission, rather, it presents an empirical, econometric analysis of the impact that addition or subtraction of employment in the affected industry would have on the economy of the State of New Hampshire. ELMI takes no position on the merits of the issue before the Commission.

### **Analytical Methods**

ELMI performs complex economic analysis of events and issues affecting the state's economy such as changes in public policies, changes in costs for households and businesses in the state, as well as anything that affects industry employment levels, using a computable general equilibrium (CGE) model of the State of New Hampshire economy. Specifically, ELMI performs economic analyses using the Regional Economic Models Inc. (REMI) model of the state of New Hampshire with 160 industry sectors and the ability to model impacts in each of the state's 10 counties.<sup>1</sup>

REMI allows for the estimation of economic impacts of changes in fuel costs (including electricity) on specific industries, households, or the state and its counties. Without specifics on the issue before the Commission, ELMI has instead, opted to model impacts of changes in employment levels to illustrate potential economic gains or losses that may result from regulatory actions.

---

<sup>1</sup> The REMI PI+ model is a software solution for conducting dynamic macroeconomic impact analysis of public policies. <https://www.remi.com/model/pi/>



## ATTACHMENT A

First, we modeled the impact on the New Hampshire economy of the loss of 301 employees of Foss Performance Materials, LLC (Foss). This was done to establish a baseline value for the impact of Foss's current operations on the state's economy. ELMI was not provided any estimated or projected employment impacts resulting from the regulatory decision at issue. Rather, we modeled the impacts that an increase (or decrease) of 10 employees at Foss Precision Manufacturing could have on the state's economy. The impact of a decrease in employment of 10 workers would be the inverse of that estimate. The results from this analysis can be scaled to reflect any size gains or losses in employment at Foss.

Foss's products are a sophisticated, advanced subset of the textile manufacturing industry that produces products for the automobile manufacturing industry. The 160 industry REMI model used for this analysis includes the textile manufacturing industry but does not include the more technology intensive process involved in producing Foss's specialty products. Modeling employment changes in the textile mill industry, as a lower-value added industry, would thus underestimate the impact of changes in Foss's employment. Alternatively, we could model employment changes in the automotive parts industry which may overstate economic impacts. For this analysis we modeled impacts on both industries separately and are presenting the average of the two results.

### Results

Table 1 presents estimated economic losses to the State of New Hampshire if Foss Precision Manufacturing operations ceased in the state at a loss of 300 jobs at the facility. Results show that if the facility ceased operating in 2023, employment in New Hampshire would have 852 fewer jobs than if the company continued operating in the state. In addition, results show that the population of the state would be lower by 300, the labor force by 192, and gross domestic product in real, 2012 dollars, lower by almost \$84 million. In total, after 5 years, the state would have 902 fewer jobs and a labor force smaller by 584 if Foss ceased operations in the state.

<b>Table 1</b> <b>Impact of Loss of Foss Precision Manufacturing Employment</b>						
Category	Year 1	Year 2	Year 3	Year 4	Year 5	Totals
Total Employment	-852	-53	-26	6	23	-902
Private Non-Farm Employment	-815	-33	-15	12	25	-828
Population	-301	-228	-179	-133	-94	-934
Labor Force	-192	-140	-112	-82	-57	-584
Gross Domestic Product (Fixed 2012 Dollars)	-\$83,968,898	-\$3,057,038	-\$1,751,712	\$593,371	\$1,784,206	-\$86,400,071
Output (Fixed 2012 Dollars)	-\$235,345,689	-\$5,357,266	-\$2,816,990	\$1,148,936	\$3,152,396	-\$239,218,613
Value-Added (Fixed 2012 Dollars)	-\$83,968,898	-\$3,057,038	-\$1,751,712	\$593,371	\$1,784,206	-\$86,400,071
Personal Income (Current Dollars)	-\$65,056,987	-\$9,272,464	-\$6,497,224	-\$2,779,889	-\$419,592	-\$84,026,156
Disposable Personal Income (Current Dollars)	-\$56,387,674	-\$8,260,644	-\$5,817,764	-\$2,554,443	-\$506,004	-\$73,526,530

ATTACHMENT A

**Impacts of Additional Employment at Foss**

Results in Table 1 present the baseline impacts of Foss's New Hampshire operations at a level of 300 employees. This section (Table 2) considers the impacts on the New Hampshire economy if Foss added 10 employees in any year, and the impact of adding just 10 employees after five years.

Table 2 shows that for every 10 workers added at Foss's manufacturing facility in New Hampshire, total employment increases by 28 in the state in the first full year, and by 30 after five years, and the population and labor force are 31 and 19 higher after five years than without the addition of 10 job at Foss.

<b>Table 2</b>						
<b>Impact of Increase of 10 Workers at Foss Precision Manufacturing</b>						
<b>Category</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Totals</b>
Total Employment	28	2	1	0	-1	30
Private Non-Farm Employment	27	1	1	0	-1	28
Population	10	8	6	4	3	31
Labor Force	6	5	4	3	2	19
Gross Domestic Product (Fixed 2012 Dollars)	\$2,789,690	\$101,621	\$58,172	-\$19,762	-\$59,248	\$2,870,473
Output (Fixed 2012 Dollars)	\$7,818,824	\$178,075	\$93,545	-\$38,258	-\$104,694	\$7,947,493
Value-Added (Fixed 2012 Dollars)	\$2,789,690	\$101,621	\$58,172	-\$19,762	-\$59,248	\$2,870,473
Personal Income (Current Dollars)	\$2,161,528	\$308,069	\$215,800	\$92,277	\$13,942	\$2,791,616
Disposable Personal Income (Current Dollars)	\$1,873,484	\$274,446	\$193,229	\$84,793	\$16,808	\$2,442,760

Again, ELMI was provided with no information about the potential for additional or decreased employment at Foss that may result from any regulatory decision. The estimates presented here are provided to show potential impacts that would occur if Foss made decisions to increases or decrease staffing at its New Hampshire facility. The inverse of the results presented in Table 2 would occur if Foss decreased employment by 10 workers at its New Hampshire facility. These same results (scaled to the actual change in employment) would occur every year in which Foss added or subtracted employment, and total impacts over any time period would be the sum of each year's impacts.

Prepared by:

Brian J. Gottlob  
Dir. Economic and Labor Market Information Bureau  
NH Dept. of Employment Security  
45 South Fruit St.  
Concord, NH 03301  
(603) 228-4126

ClerksOffice@puc.nh.gov

BBergeron@town.rye.nh.us

elizabeth.r.nixon@energy.nh.gov

Energy-Litigation@energy.nh.gov

ocalitigation@oca.nh.gov