

**Foss Mfg. Special Contract**  
Northern Utilities, Inc. Marginal Cost

**Confidential**  
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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 2009 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/oi/af/aep/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 2009 dollars	GDP Chain-type Price Index (2009=1.000)	Marginal Cost Study Escalation Factor Calculation
1998	9,089.2	11,525.9	0.7886	
1999	9,660.6	12,065.9	0.8007	
2000	10,284.8	12,559.7	0.8189	
2001	10,621.8	12,682.2	0.8375	
2002	10,977.5	12,908.8	0.8504	
2003	11,510.7	13,271.1	0.8674	
2004	12,274.9	13,773.5	0.8912	
2005	13,093.7	14,234.2	0.9199	
2006	13,855.9	14,613.8	0.9481	
2007	14,477.6	14,873.7	0.9734	
2008	14,718.6	14,830.4	0.9925	
2009	14,418.7	14,418.7	1.0000	
2010	14,964.4	14,783.8	1.0122	
2011	15,517.9	15,020.6	1.0331	
2012	16,155.3	15,354.6	1.0521	
2013	16,691.5	15,612.2	1.0691	
2014	17,427.6	16,013.3	1.0883	
2015	18,120.7	16,471.5	1.1001	
2016	18,624.5	16,716.2	1.1142	1.1142
2017	19,386.2	17,092.5	1.1342	
2018			1.1590	
2019			1.1861	1.1635
2020			1.2171	
2021			1.2472	
2022			1.2773	
Calculation of Escalation Factor ->				1.0443

Contract ends 2/28/2022

**ANNUALIZED MARGINAL COST ESTIMATE**

A	B	C	D	E	F	G	H
			2016 Compliance Filing MCS	2016 Compliance Filing MCS Adj. (Table 14)	Feb 2022 Est		Notes
1	Escalation Factor				1.0443		
2	Marginal Cost Data						
3	Customer Charge						E3 x F1
4	Pressure Support						E4 x F1
5	Main Reinforcement						E5 x F1
6	Main Extension						E6 x F1
7	Adjusted MCS (Table 14)						
8							
9	Customer Data						
10	Annual Usage					Dth	2016 Annual Usage
11	Design Day Usage					Dth	Customer MDTQ
12							
13	Marginal Revenue Requirement						
14	Customer Charge						F3 x 12
15	Pressure Support						F4 x F11
16	Main Reinforcement						F5 x F11
17	Main Extension						F6 x F11
18	Total						Sum(F14..F17)
19							
20	Marginal Cost Floor - All Components						
21	Revenue Requirement						F18
22	Customer Charge						F3 x 12
23	Remainig Revenue						F21 - F22
24	Volumetric Charge						F23 / F10

**Note:**

All marginal costs adjusted for revenue constraints from Table 14 in Compliance Filing MCS @12/31/2016  
 Customer Charge from Table - 12, line 3 in Compliance Filing MCS @12/31/2016  
 Main Reinforcement Cost from Table - 9 in Compliance Filing MCS @12/31/2016  
 Main Extension Cost from Table - 9 in Compliance Filing MCS @12/31/2016  
 2018 thru 2022 GDP Chain-type Price Index from EIA Annual Energy Outlook 2018

**Northern Utilities, Inc.**

Foss Special Contract - Sixth Amendment Marginal Revenue

Go to -> [http://data.bls.gov/PDQ/servlet/SurveyOutputServlet?data\\_tool=latest\\_numbers&series\\_id=CUUR0000SA0&output\\_view=pct\\_1mth](http://data.bls.gov/PDQ/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

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
2017	248.991

**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

Inflation Factor Template					Notes
CPI-U Year	CPI-U, NSA, 12 months, Feb. - Feb.	Inflation Factor	March 1 Contract Rate Year	Monthly Customer Charge	
[REDACTED]					

Note: Updated 2019 contract rates will be determined when February 2019 CPI-U data is available, approximately the end of March 2019.

