

Understanding Your Utility Bills:

Natural Gas

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Alexandra Botts
Thomas Wenning



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Energy Awareness Month

U.S. DEPARTMENT OF
ENERGY

Energy Awareness Month

Webinar Series with DOE's
Better Plants Program

Oct 7th - 28th, 2021

1:00pm US-EST / 11:00am US-EST



- Saving Energy For Small to Medium Manufacturers
- Energy Intensity Baseline and Tracking
- Understanding your Utility Bills: Electric, Water, Natural Gas
- Lessons from Better Plants Goal Achievers

[Yesevents.com/EnergyAwareness](https://www.yesevents.com/EnergyAwareness)

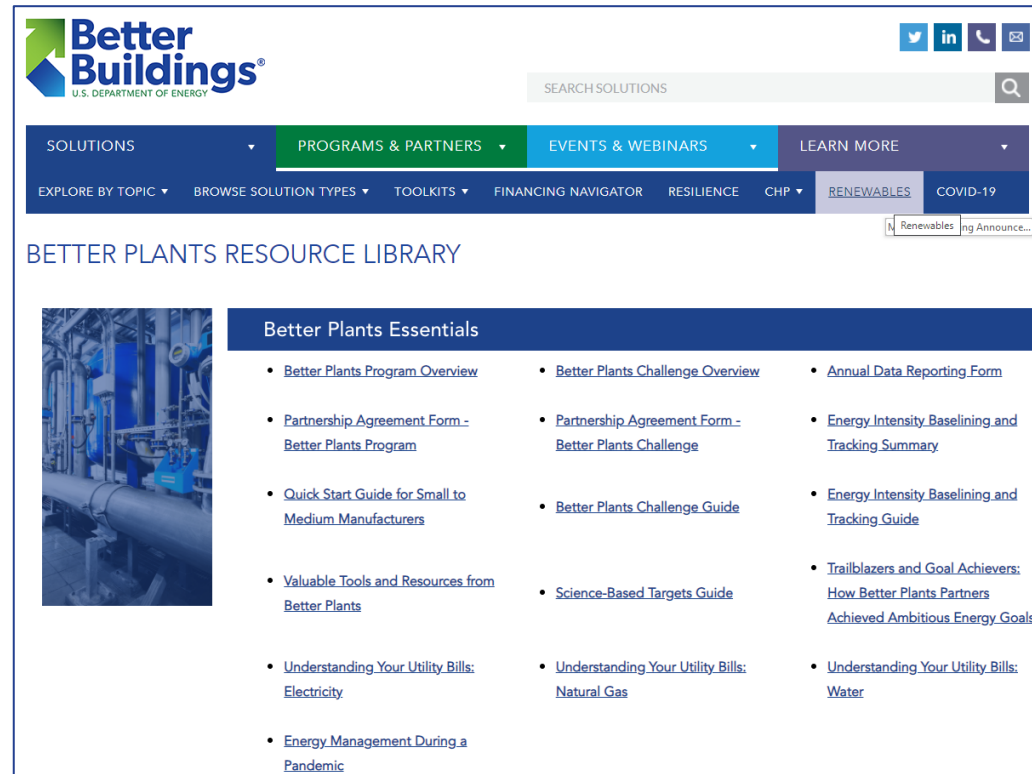
Energy Awareness Month Webinar Schedule

Date	Title
Thursday, Oct 7, 1pm – 2pm ET:	Quick Start Guide to Saving Energy for Small to Medium Manufacturers
Tuesday, Oct 12, 11am – 12pm ET	The Updated Energy Intensity Baseline and Tracking Guide
Thursday, Oct 14, 1pm – 2pm ET	Understanding Your Electricity Bills
Tuesday, Oct 19, 11am – 12pm ET	Understanding Your Natural Gas Bills
Tuesday, Oct 26, 11am – 12pm ET	Understanding Your Water Bills
Thursday, Oct 28, 1pm – 2pm ET	Lessons Learned From Goal Achievers

[Yesevents.com/EnergyAwareness](https://yesevents.com/EnergyAwareness)

Engaging with DOE

- Have questions? Please use the Zoom chat!
- Want to learn more? energy.gov/BBSC



The screenshot displays the 'Better Buildings' website, specifically the 'BETTER PLANTS RESOURCE LIBRARY' section. The header features the 'Better Buildings' logo with 'U.S. DEPARTMENT OF ENERGY' underneath, a search bar labeled 'SEARCH SOLUTIONS', and social media icons for Twitter, LinkedIn, Facebook, and YouTube. A navigation menu includes 'SOLUTIONS', 'PROGRAMS & PARTNERS', 'EVENTS & WEBINARS', and 'LEARN MORE'. Below this, a secondary menu lists 'EXPLORE BY TOPIC', 'BROWSE SOLUTION TYPES', 'TOOLKITS', 'FINANCING NAVIGATOR', 'RESILIENCE', 'CHP', 'RENEWABLES', and 'COVID-19'. The main content area is titled 'BETTER PLANTS RESOURCE LIBRARY' and features a large image of industrial piping on the left. To the right, a section titled 'Better Plants Essentials' lists 12 resources in a three-column grid:

- [Better Plants Program Overview](#)
- [Better Plants Challenge Overview](#)
- [Annual Data Reporting Form](#)
- [Partnership Agreement Form - Better Plants Program](#)
- [Partnership Agreement Form - Better Plants Challenge](#)
- [Energy Intensity Baseline and Tracking Summary](#)
- [Quick Start Guide for Small to Medium Manufacturers](#)
- [Better Plants Challenge Guide](#)
- [Energy Intensity Baseline and Tracking Guide](#)
- [Valuable Tools and Resources from Better Plants](#)
- [Science-Based Targets Guide](#)
- [Trailblazers and Goal Achievers: How Better Plants Partners Achieved Ambitious Energy Goals](#)
- [Understanding Your Utility Bills: Electricity](#)
- [Understanding Your Utility Bills: Natural Gas](#)
- [Understanding Your Utility Bills: Water](#)
- [Energy Management During a Pandemic](#)

New - Better Climate Challenge

- **Portfolio-wide reduction in carbon emissions of at least 50% in 10 years**

- ***Goal Parameters***

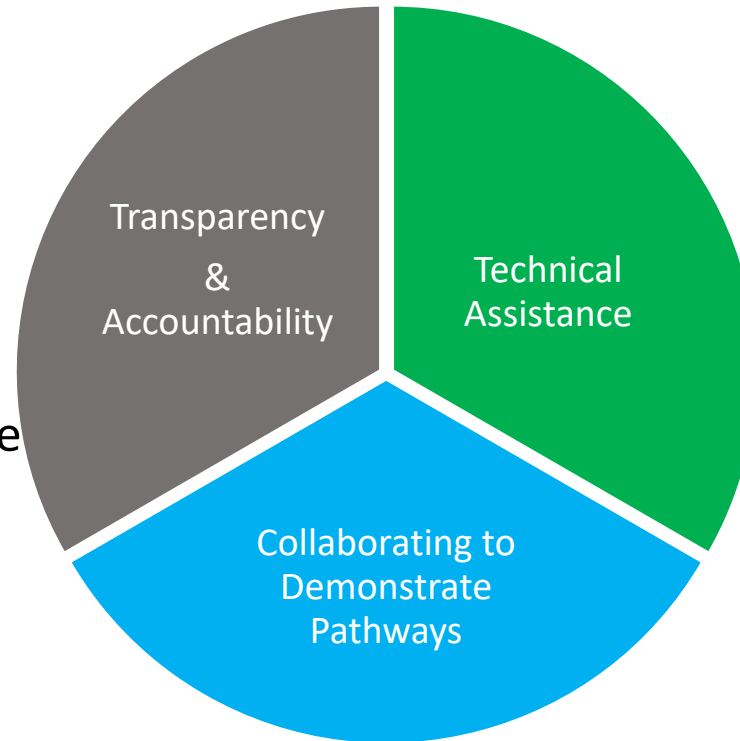
- Reduction includes Scope 1 & 2 emissions – no offsets
- Baseline up to 5-years back from join date
- Encouraged to establish an absolute target, but intensity-based targets will be accepted
- Pursue an energy efficiency target that will contribute towards the 50% emissions reduction. This target is intended to encourage prioritizing energy efficiency when pursuing a decarbonization plan.



Core program components – transparency, accountability, and technical assistance

Transparency & Accountability

- Annual energy and emissions data reporting for 10-year commitment
- Breakdown of emissions reductions by energy efficiency, renewable energy, and renewable energy certificates



Technical Assistance

- Data driven solutions to address barriers and overcome hurdles, that can be deployed at scale to the market
- Identify technology gaps that can inform R&D

Collaborating to Demonstrate Pathways

- Partners commit to work with DOE and showcase their barriers and solutions
- Regularly connect with DOE to provide updates and discuss progress
- Actively participate in a working group with peers and technical experts to discuss barriers, exchange best practices, and identify solutions

Participation

What does an organization commit to?

Organizations commit to:

- ▶ Reduce GHG emissions across their U.S. building or plant portfolio by at least 50% over 10 years without the use of offsets.
- ▶ Pursue an energy efficiency target to demonstrate how their organization is prioritizing building performance as a decarbonization strategy.
- ▶ Participate in at least one working group to discuss barriers, exchange best practices, and identify solutions.
- ▶ Develop an organization-wide plan with GHG emissions reduction milestones.
- ▶ Share portfolio-wide energy performance and scope 1 and 2 emissions data for the duration of the 10-year goal timeframe.

How will DOE work with organizations?

DOE will support partners in the following ways:

- ▶ Provide technical assistance and support partners' commitment to measure, track, and improve portfolio-wide GHG performance.
- ▶ Collect and share best practices and highlight options that have been used to measure and reduce operational GHG emissions.
- ▶ Facilitate peer-to-peer learning among partners and convene working groups to discuss barriers and identify solutions.
- ▶ Provide national recognition for achieving program milestones and GHG emissions reductions.

Why Join?

It's Good for your Organization and for the Future

- ▶ Save energy and money and be ready for the future. Greater energy efficiency and efforts to decarbonize position you well for future resilience and success
- ▶ Continue to be leaders in your local communities – and on the national level

Drive Market Transformation with Other Leaders

- ▶ Join a network of market leaders that are stepping forward to work together as part of this national platform
- ▶ Help inform DOE and other federal R&D, prioritization

Technical Assistance and Peer-to-Peer Exchange and Network

- ▶ Partners can access peer-to-peer exchange opportunities and leverage technical assistance from DOE and the national labs
- ▶ Learn and share real-world challenges and solutions through meetings, webinars, conferences, regional meetups

Recognition

- ▶ National recognition for leadership, innovation, results and shared solutions

Today's Presenter



Senthil Sundaramoorthy
Oak Ridge National Laboratory



About Better Buildings, Better Plants

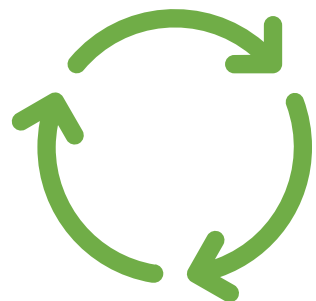
Helping manufacturers and other industrial partners save money and improve their resource efficiency.



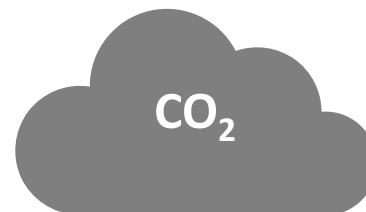
Increased
Energy
Productivity



Greater
Water
Savings



Improved
Waste
Reduction



Lower Carbon
Emissions



Better Plants Resources

NO-COST SOFTWARE & TOOLS

Access to no-cost software and tools to identify and implement energy saving opportunities and manage energy use.



60+
Calculators



**20+ No-Cost
Tools for Loan**



**Financing
Navigator**



**No-Cost Resources
& Guides**

TRAINING & EDUCATION



**In-Plant Trainings
Conducted to Date**

Multi-day trainings for staff to identify, implement, and replicate energy savings projects.



**No-Cost Webinars &
Growing**

RECOGNITION



**49 Better Project &
Better Practice Winners**

For innovative and industry-leading accomplishments in implementing and promoting company-wide practices, principles, and procedures of energy management, as well as improvement projects at individual facilities.



**Goal
Achievers**



**National Recognition in
Media and Online**



**Solutions on
Solution Center**

INNOVATION & LABS



**17 National Labs Across
the Country**

Partnerships with the National Labs spurs innovation.



**Lab Technology
Days**

Sneak peek at early-stage R&D Technologies



**Industrial Technology
Validation**

A new pilot for partners to accelerate the voluntary adoption of cost-effective, high-impact technologies while reducing adoption risks.

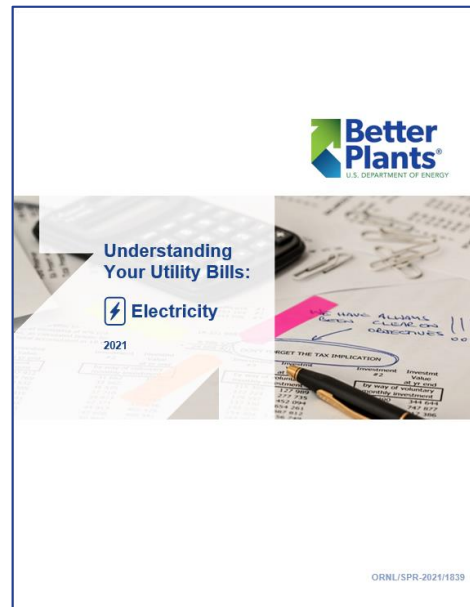
What Leadership Looks Like

250+ partners across the United States and territories

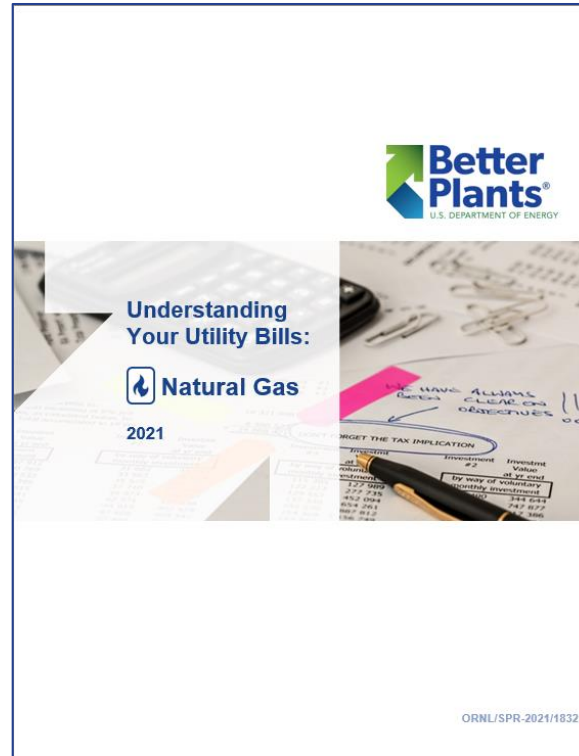


Understanding your Utility Bills

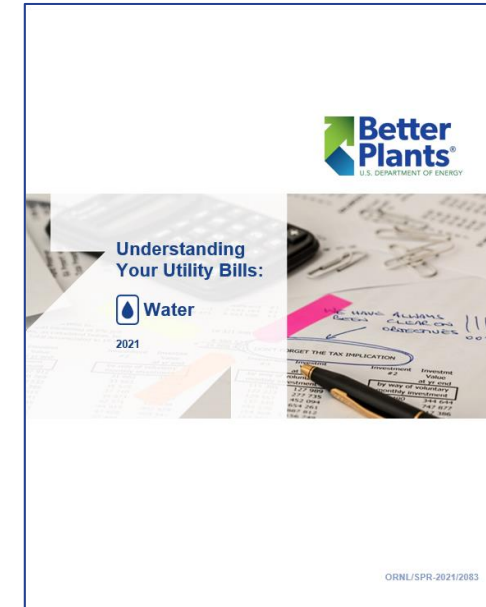
Just one in a series of guidance documents:



Electricity Bills



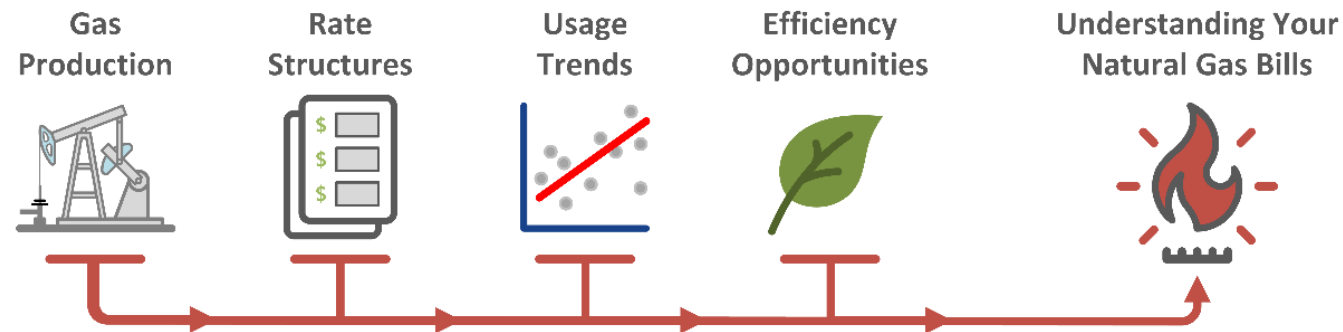
Natural Gas Bills



Water Bills

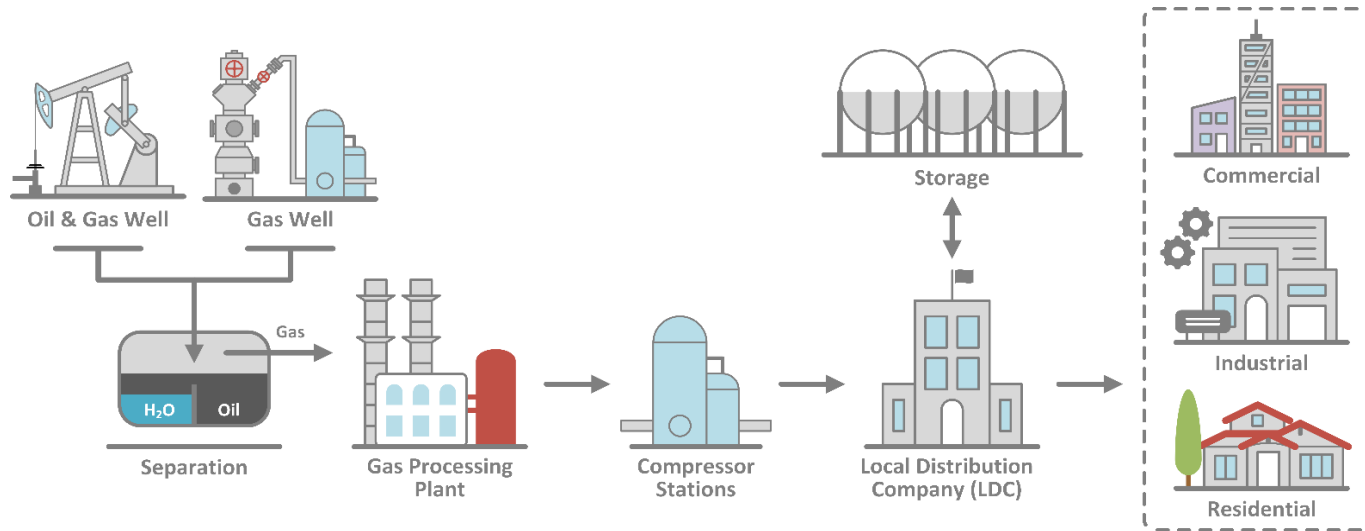
Using the Guide

- Natural gas bills can be complex
- Bills are dependent on pricing and contract structure
- Some charges appear each month, some do not
- Understanding your bills and why your utility charges different fees is important to save energy and cost
- The guide covers the basics of natural gas bills:

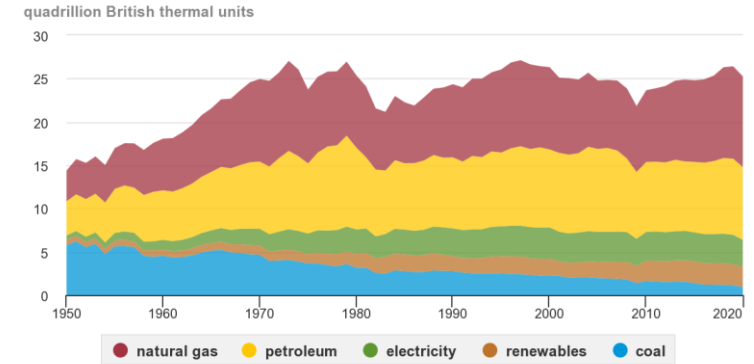


Natural Gas (NG) Production & Delivery

- NG is a popular fossil fuel because of the ease of availability, clean burning properties and increased domestic production.
- Raw NG is extracted by fracking and horizontal drilling and is treated to remove water vapor, NG liquids etc.
- Pipeline grade NG is then transported through network of pipelines to local distribution companies and to consumers

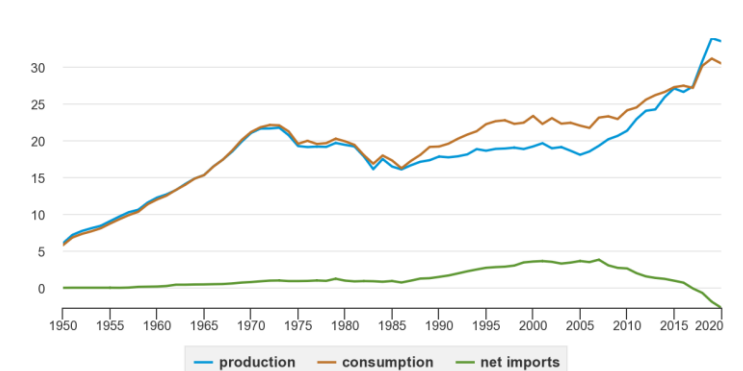


U.S. industrial sector energy use by source, 1950-2020



Note: Includes energy sources used as feedstocks in manufacturing products. Electricity is retail sales of electricity to the sector and excludes electric system energy losses associated with the retail sales.
Source: U.S. Energy Information Administration, *Monthly Energy Review*, Table 2.4, April 2021

U.S. natural gas consumption, dry production, and net imports, 1950-2020



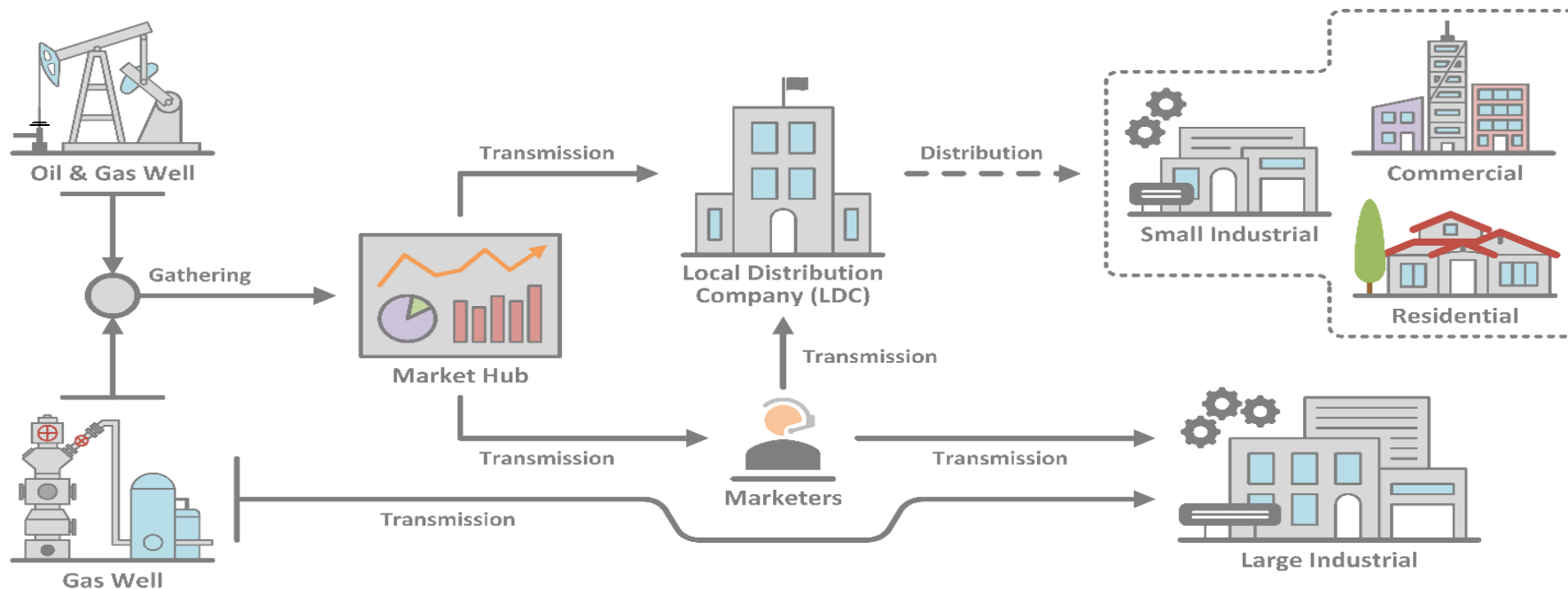
Source: U.S. Energy Information Administration, *Natural Gas Annual*, September 2021

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- A map of the United States where states are colored either dark blue or light gray. The dark blue states include California, Montana, Wyoming, Colorado, New Mexico, North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, Texas, Minnesota, Iowa, Missouri, Arkansas, Louisiana, Mississippi, Alabama, Georgia, Florida, South Carolina, North Carolina, Virginia, West Virginia, Kentucky, Tennessee, Indiana, Ohio, Pennsylvania, New York, Connecticut, Rhode Island, Massachusetts, Vermont, New Hampshire, and Maine. The light gray states include Washington, Oregon, Nevada, Idaho, Utah, Arizona, New Jersey, Delaware, Maryland, and Alaska. Hawaii is also shown in light gray.

Source: electricchoice.com

Natural Gas Deregulated Market

- Deregulation is complex but offers more flexibility for buyers
- **Marketers:** Entities who purchase gas and sell to consumers
- **Market Hub:** A central pricing point where NG is traded daily
- Consumers may receive multiple bills





Natural Gas Pricing and Contracts

- New York Mercantile Exchange (NYMEX)

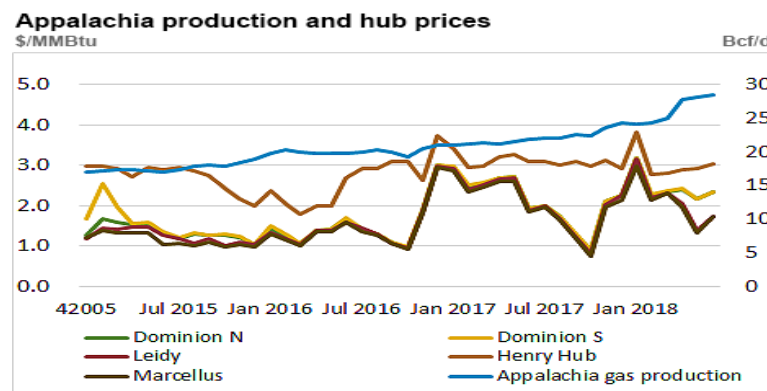
$$\text{Contract Price} = \text{NYMEX Floating Price} \left(\frac{\$}{\text{Mcf}} \right) + \text{Fixed Basis} \left(\frac{\$}{\text{Mcf}} \right)$$

- Index Price

$$\text{Contract Price} = \text{Floating Index Price} \left(\frac{\$}{\text{Mcf}} \right) + \text{Floating Basis} \left(\frac{\$}{\text{Mcf}} \right)$$

- Fixed Price

$$\text{Fixed Contract Price} = \text{Fixed NYMEX or Commodity Price} \left(\frac{\$}{\text{Mcf}} \right) + \text{Fixed Basis} \left(\frac{\$}{\text{Mcf}} \right)$$



eia Sources: U.S. Energy Information Administration, Natural Gas Intelligence

Forecasting Natural Gas Usage

- Allows for prebuying gas from supplier
- Pay a higher rate for gas if usage is underestimated
- Get a lower buy-back rate if usage is overestimated



Key Components to your NG Bills

Account #: X123LG456-789
Invoice #: 98-75-54321
Invoice Date: 03/06/2021
Service Dates: 02/06/2021 to 03/04/2021

**BETTER PLANTS
NATURAL GAS INC**

Here to help you save.

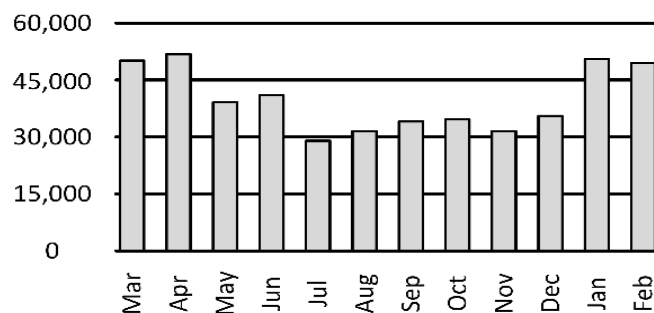


Total Amount Due by 03/20/2021 \$181,088.28

Amount Due after 03/20/2021: \$183,806.60

Service for:
Manufacturing Plant
1234 Fifth Street
Oak Ridge, TN 37830

Meter #: (1) 800181754
Days on Bill: 26
Estimated Usage: 49,532 MCF
Max Daily Demand: (2) 750 MCF
Energy Factor: 1.113
Rate Schedule: LGS-I



Previous Balance: \$177,294.35
Payment (02/19/2020): \$177,294.35

Balance Forward: \$0.00

LGS Meter Charge: (5) (4) (3) \$750.00

LGS Transport: 49,532 x 0.2312 \$11,451.80

Maximum Daily Demand (MDQ): 750 x 8.683 \$6,512.25

Block 1: 5,000 x 3.351 \$16,755.00

Block 2: 15,000 x 3.195 \$47,925.00

Block 3: 29,532 x 2.897 \$85,554.20

Environmental Cost Recovery: (7) 49,532 x 0.0710 \$3,516.77

Usage Subtotal: \$172,465.02

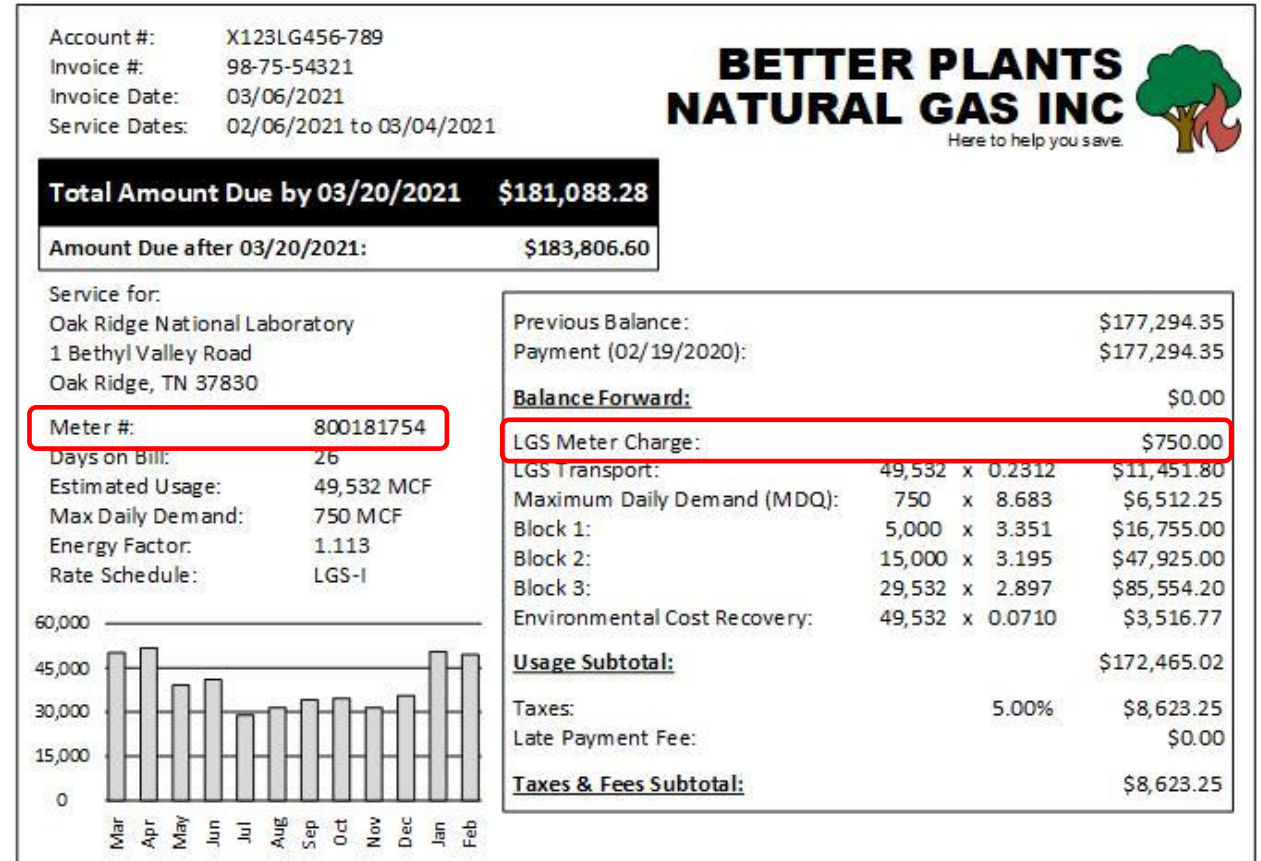
Taxes: (8) 5.00% \$8,623.25

Late Payment Fee: \$0.00

Taxes & Fees Subtotal: \$8,623.25

Customer/Meter Charge

- Customer charge/Service charge/Account fee/Meter charge
- Fees charged for customer service, accounting and number of meters.
- Fixed charge independent of NG consumption
- Customer fee is unavoidable and vary significantly based on type of customers



Consumption Charges


- NG **Consumption** or **usage** is the total amount of natural gas your facility uses to either make products or for comfort
- Measured in thousand cubic feet (Mcf)
- Can appear on your bills as gas charge, gas cost recovery cost, purchased gas cost, etc.
- Billed at a rate (\$/Mcf) determined by your contract (fixed or real-time market prices)

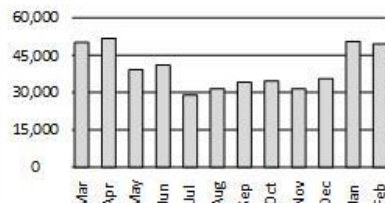


(a) Typical Installation of Diaphragm Natural Gas Meters




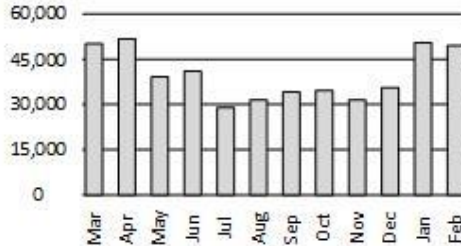
7 , 2 0 5 MCF
(b) Analog Meter Readout

Account #:	X123LG456-789	BETTER PLANTS NATURAL GAS INC 	
Invoice #:	98-75-54321	Here to help you save.	
Invoice Date:	03/06/2021		
Service Dates:	02/06/2021 to 03/04/2021		
Total Amount Due by 03/20/2021		\$181,088.28	
Amount Due after 03/20/2021:		\$183,806.60	
Service for: Oak Ridge National Laboratory 1 Bethyl Valley Road Oak Ridge, TN 37830			
Meter #:	800181754		
Days on Bill:	26		
Estimated Usage:	49,532 MCF		
Max Daily Demand:	750 MCF		
Energy Factor:	1.113		
Rate Schedule:	LGS-I		
Previous Balance:		\$177,294.35	
Payment (02/19/2020):		\$177,294.35	
Balance Forward:		\$0.00	
LGS Meter Charge:		\$750.00	
LGS Transport:		49,532 x 0.2312	\$11,451.80
Maximum Daily Demand (MDQ):		750 x 8.683	\$6,512.25
Block 1:		5,000 x 3.351	\$16,755.00
Block 2:		15,000 x 3.195	\$47,925.00
Block 3:		29,532 x 2.897	\$85,554.20
Environmental Cost Recovery:		49,532 x 0.0710	\$3,516.77
Usage Subtotal:		\$172,465.02	
Taxes:		5.00%	\$8,623.25
Late Payment Fee:		\$0.00	
Taxes & Fees Subtotal:		\$8,623.25	



Maximum Daily Quantity (MDQ)

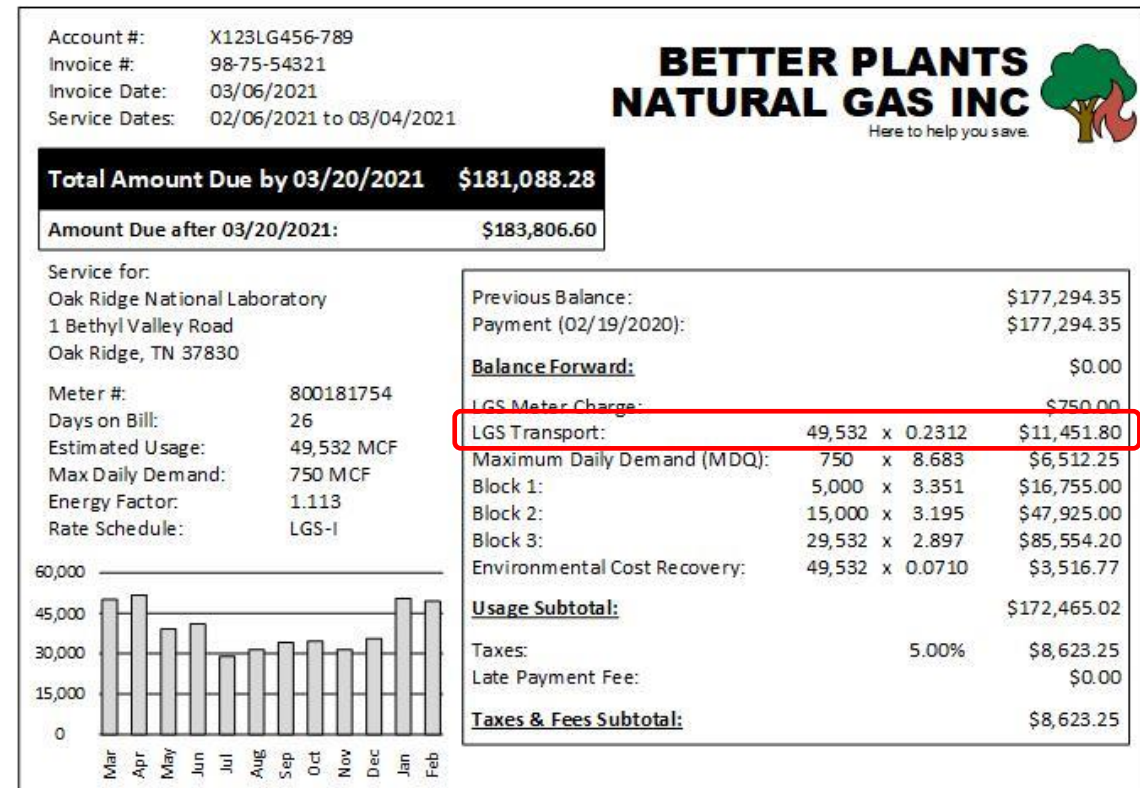
- Large industrials sometimes see MDQ charge
- Historical usage is used to calculate MDQ
- MDQ represents the maximum quantity that the buyer has a right to take, or have delivered, during a given day
- More demand means more grid infrastructure your utility must build and maintain to deliver gas

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Transportation & Distribution Charges

- Transportation and distribution charges are based on the volume of NG delivered to the facility
- Pipeline companies and utilities are responsible for transportation and delivery
- Consumers in deregulated market can have separate bills
- Gas purchased from marketers have the transportation cost included in their bill



Other Charges

- Storage Charge

- Utility company stores gas for consumers to be use in time of need or during a demand event
- Storage charge is based on portion of supplied NG that was kept in storage

- Riders

- Several other charges can be listed on your bills
- These charges are listed as Riders in the rate structure document

Distribution Management Program Surcharge \$

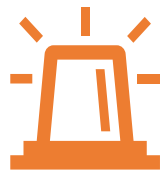
Energy Efficiency Program Surcharge \$



Environmental Cost Recovery

Non-Energy Charges

- Some charges on your bills may not be related to consumption or demand
- Fixed charges are built into your rate structure but ensuring you have the right schedule can save costs
- Some charges can be avoided with a little planning



Late Payment Fees
Insufficient Funds Fees
Etc.



Customer Fees
Metering Fees
Etc.



Local Taxes
State Sales Tax
Etc.



Some states allow sales tax exemptions for manufacturers under certain conditions!

Units of Natural Gas Consumption

- Volume Units
 - CCF (hundred cubic feet)
 - MCF (thousand cubic feet)
- Conversion of volume to energy unit depends on the heating value of the gas delivered to you which may vary from month to month.
- Look for **BTU factor** in your bills
- Energy Units
 - Therm (th)
 - Dekatherm (Dth)
 - MMBtu

Volume to Energy Conversions

1 CCF = 0.1 MCF = 0.1 MMBtu = 0.1 Dth = 1 Th

1 MCF = 1 MMBtu = 1 Dth = 10 Th

Calculating the Price of Gas

Natural Gas Invoice				
Rate Schedule	LGS-I			
Previous meter	510498	Invoice Date	12/5/2018	
Current meter	556170	Meter Read Date	11/30/2018	
Difference	45672	Days on Bill	30	
Usage Nov 2018	45672	Payment Due Date	12/19/2018	
BTU Factor	1.112			
Category	Description	Units	Rate/MCF	Cost
Customer charge	Meter charge	1	\$ 767.390	\$ 767.39
Demand charge	MDFQ	445	\$ 8.683	\$ 3,863.94
Commodity charge	Block 1 (≤10,000)	10,000	\$ 5.351	\$ 53,510.00
	Block 2 (>10k, ≤30k)	20,000	\$ 4.895	\$ 97,900.00
	Block 3 (>30,000)	15,672	\$ 4.179	\$ 65,493.29
Environmental		45,672	\$ 0.021	\$ 959.11
			Total	\$ 222,493.73
			Taxes (4.39%)	\$ 9,767.47
			Grand total	\$ 232,261.20

Average Gas Cost

$$Average\ Gas\ Cost = \frac{Total\ Billed\ Cost\ (\$)}{Total\ Gas\ Energy\ Consumed\ (MMBtu)} = \frac{Total\ Billed\ Cost\ (\$)}{Gas\ Volume \times BTU\ Factor}$$

$$Average\ Gas\ Cost = \frac{\$232,261.20}{45,672\ Mcf \times 1.112} = \frac{\$4.57}{MMBtu}$$

Calculating the Price of Gas

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Marginal Gas Cost

$$\text{Marginal Gas Cost} = \frac{\text{Total Billed Cost (\$)}}{\text{Total Gas Energy Consumed (MMBtu)}} = \frac{\Delta \text{ Gas Cost (\$)}}{\Delta \text{ Gas Volume} \times \text{BTU Factor}}$$

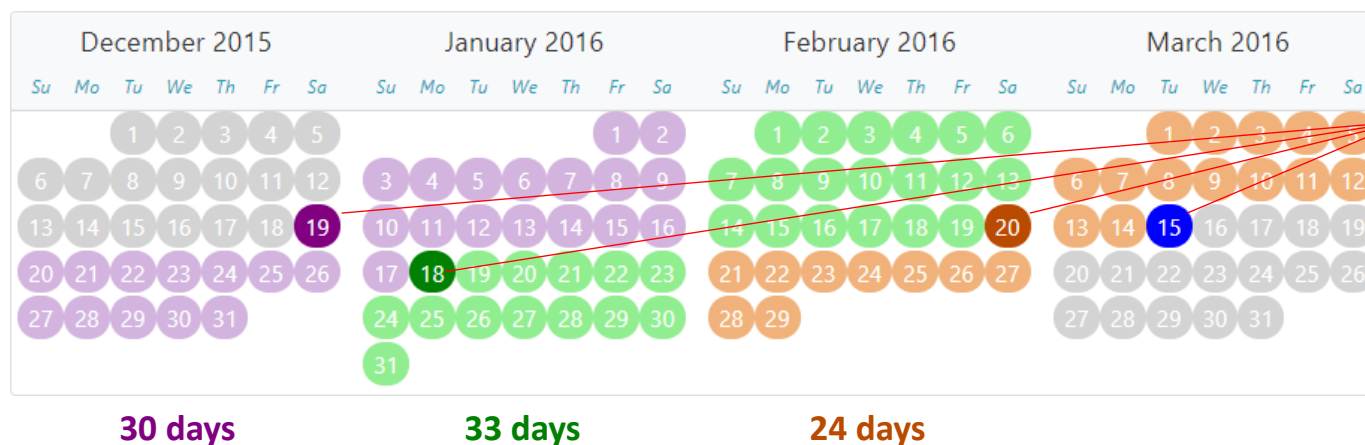
For 15,672 Mcf + Environmental For 15,671 Mcf + Environmental

$$\text{Marginal Gas Cost} = \frac{[(65,493.29 + 959.11) - (65,489.109 + 959.091)] \times [1 + 0.0439]}{(45,672 - 45,671) \times 1.112} = \frac{\$3.94}{\text{MMBtu}}$$



Calendarization

- Billing periods depend on when the utility reads your meters
- Normalizing gas consumption data for billing periods is known as ***Calendarization***
- Divide consumption by days on bill and allocate energy to calendar month





Rate Structures

- Rate structures – set of pricing structures for customers based on different characteristics
- Gas commodity rate structures
- Transportation rate structures

LGS-industrial rate schedule component	Rate
Customer charge	\$350.00/month
Daily demand metering	\$19.32/month
Delivery charge	
– First 5,000 CCF*	\$0.0155/CCF
– Over 5,000 CCF	\$0.0057/CCF
CAM** charge	\$0.046/CCF
Demand charge/MDQ*** (min MDQ = 82 CCF)	\$1.1217/CCF MDQ
DIMP**** charge/MDQ	\$0.0064/CCF MDQ
Decoupling credit	–\$0.0035/CCF
Supply service	
– Sales services charge/MDQ	\$0.4571/CCF MDQ

Source: Connecticut Natural Gas

* CCF = 100 cubic feet

** CAM = Conservation Adjustment and Management Charge for financing of conservation projects

*** MDQ = Maximum Daily Quantity in CCF – calculated as maximum demand in 5 winter months, ≥ average of last 12 months calculated monthly

**** DIMP = Distribution Integrity Management Program charge

RATE SCHEDULE C-2 Medium Commercial and Industrial General Service

AVAILABILITY

Available to any commercial or industrial Customer for all purposes that consumes greater than 4,000 Therms annually. Gas service under this rate schedule in excess of 1,000 Therms per day shall be, at the option of Chattanooga Gas Company (Company), by written contract providing for monthly payment of gas Service and is subject to the Company's determination of available gas supply. Gas service under this schedule shall be through a single point of delivery and such gas shall not be resold, directly or indirectly.

MONTHLY BASE RATE

	Winter Net Rate November-April	Summer Net Rate May-October
Customer Base Use Charge	\$100.20	\$100.20
Commodity Charge		
First 3,000 Therms Per Month	25.114¢ Per Therm	19.719¢ Per Therm
Next 2,000 Therms Per Month	22.924¢ Per Therm	15.654¢ Per Therm
Over 10,000 Therms Per Month	22.330¢ Per Therm	14.594¢ Per Therm
Over 15,000 Therms Per Month	11.553¢ Per Therm	11.551¢ Per Therm
Demand Charge		
Rate Unit of Billing Demand	\$8.40 per Dth	\$8.40 per Dth

Source: Chattanooga Gas

Consumption	20,000 Therms			
	Block Usage (Therm)	\$/Therm	Consumption in the block	Commodity Charge
First	3,000	\$ 0.2511	3,000	\$ 753.42
Next	2,000	\$ 0.2292	2,000	\$ 458.48
Next	10,000	\$ 0.2233	10,000	\$2,233.00
Over	15,000	\$ 0.1155	5,000	\$577.65
Total			20,000	\$4,022.55



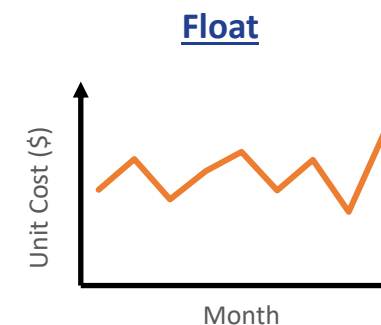
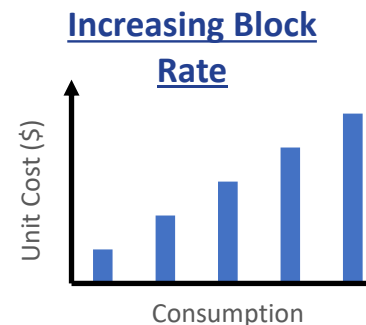
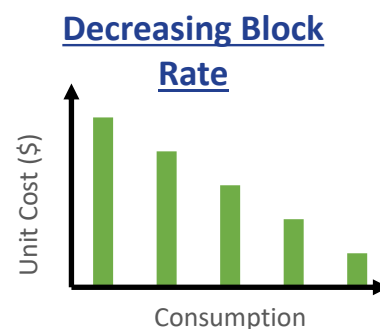
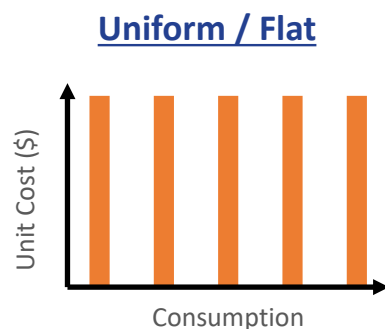
Rate Structures

- Flat pricing
- Decreasing block rates
- Increasing block rates
- Firm / Interruptible schedules
- Seasonal
- Float – Market pricing

Rate type	Block	Cost
Flat rate	Customer charge	\$475
	All usage, per CCF	\$0.4851
Block rate (decreasing)*	Meter fee	\$330
	≤ 2,000 MCF	\$4.79
	> 2,000 MCF; ≤ 12,000 MCF	\$4.55
	> 12,000 MCF	\$4.09
Block rate (increasing)**	Meter fee	\$330
	≤ 7,000 MCF	\$4.35
	> 7,000 MCF; ≤ 10,000 MCF	\$4.79
	> 10,000 MCF	\$5.99

* Passes on the volume discount to consumers

** Discourages from higher consumption because of steep increases in rate



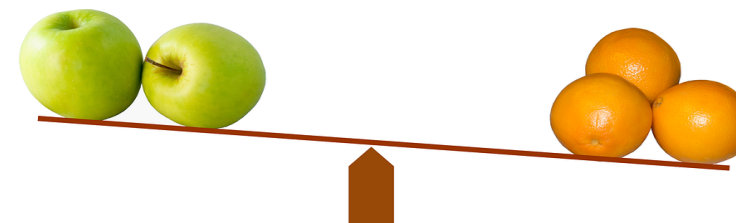
Cost Saving Opportunities

-  Purchasing contract negotiation in deregulated market
-  Optimum rate structure selection
-  Billing and accounting errors
-  Tax Exemptions
-  Avoiding Late Fees
-  Tracking Energy Consumption
-  Consolidating meters where feasible
-  Credit assurance
-  Demand response program enrollment



Find Affordable Supplier in Deregulated Market

- De-regulation in some states has opened markets to suppliers who can offer competitive pricing
- Purchasing alternatives can create large cost saving opportunities
- Understanding of rate structure is critical to make effective decision
 - Understand current pricing
 - Compare quotes by recreating billing with new rate structures
- Right pricing contract and forecasting usage



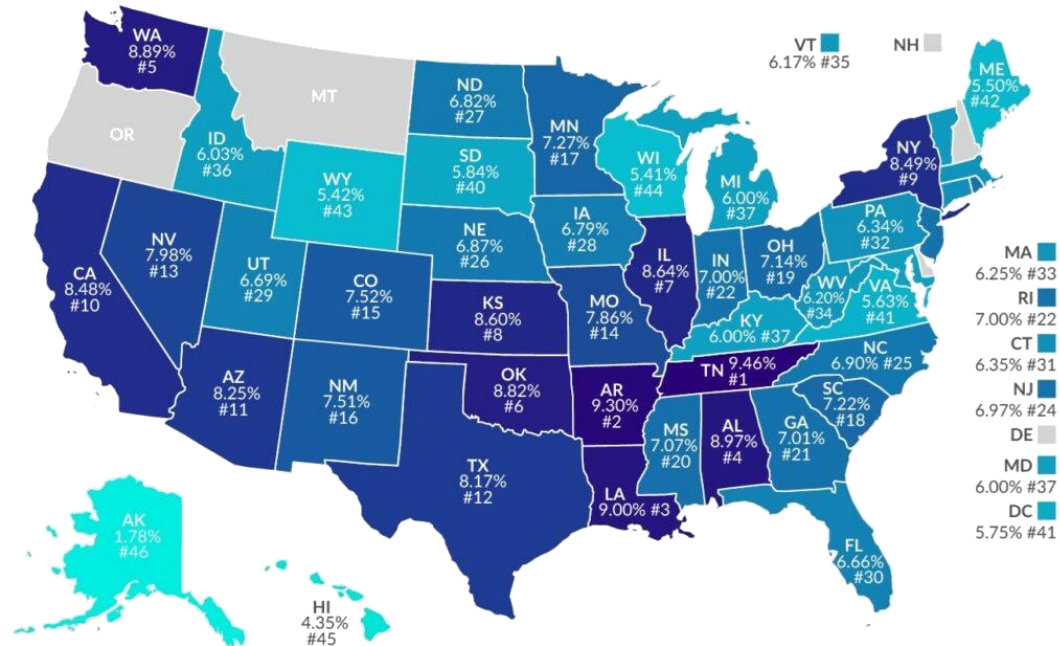
Optimum Rate Selection

- Energy characteristics can shift
 - Operations change
 - Product mix shift
 - Operating hours alterations
- It is wise to check if your operation qualifies for a better rate
- Again, understanding of rate structure and billing is critical to evaluate

Rate Schedule	Requirements	Rates
Small General Service	Less than 2,000 therms	Service Charge: \$145/month Fixed distribution charge: \$0.091202/therm Gas cost: \$0.54936/therm
Medium General Service	2,000 therms to 50,000 therms	Service Charge: \$300/month Fixed distribution charge: \$0.044966/therm Gas cost: \$0.54706/therm
Large General Service	Greater than 50,000 therms	Service Charge: \$450/month Fixed distribution charge: \$0.041131/therm Gas cost: \$0.55016/therm

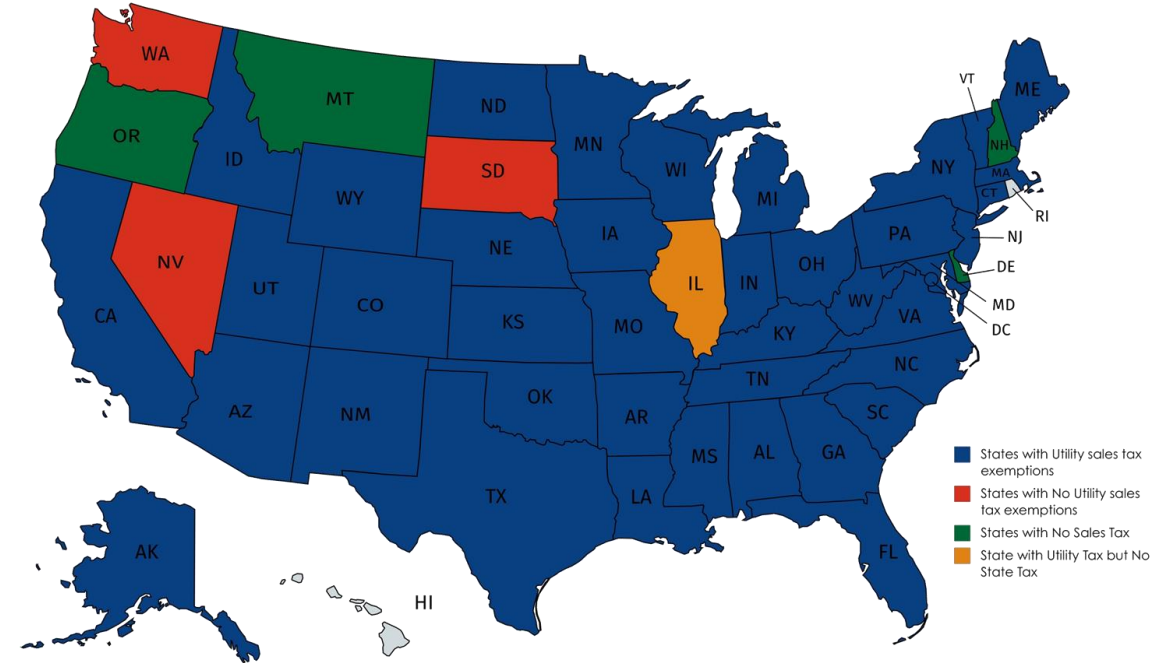
Sales Tax Exemption

Combined State & Average Local Sales Tax Rates, 2016



Note: City, county, and municipal rates vary. These rates are weighted by population to compute an average local tax rate. Three states levy mandatory, statewide local add-on sales taxes at the state level: California (1%), Utah (1.25%), and Virginia (1%). We include these in their state sales tax rates. The sales taxes in Hawaii, New Mexico, and South Dakota have broad bases that include many business-to-business services. Due to data limitations, the table does not include sales taxes in local resort areas in Montana. Some counties in New Jersey are not subject to statewide sales tax rates and collect a local rate of 3.5%. Their average local score is represented as a negative.

Source: Sales Tax Clearinghouse; Tax Foundation calculations.



- Blue states allow utility sales tax exemption for manufacturing activity
- **Predominant use study** requirements
- Tax refunds for past 24 months or more

Tracking Your Natural Gas Usage

- DOE offers software tools to track energy usage
- Identify trends, anomalies, and opportunities

DOE Advanced Manufacturing Office
QUESTIONS, COMMENTS, or ISSUES
email: EGUIDefeedback@ee.doe.gov

Energy Footprint [v1.1]

Developed for the DOE Advanced Manufacturing Office

Description
The Energy Footprint tracks energy consumption by source, factors affecting to energy consumption, and specific energy uses on a monthly basis for 1 or multiple years.

Plant Name:
Additional Details:

Worksheets (click to goto)
[Energy Consumption](#) [Tables](#) [Charts](#) [EC vs RV](#)
[Relevant Variables](#) [Tables](#) [Charts](#) [Charts](#)
[Energy Uses](#) [Tables](#) [Charts](#)
[EnPI Table](#) [Table](#)

First Month:
Current Year: *of first month
Number of Years:

Select Energy Sources

Select	Type	Units	# Used
<input checked="" type="checkbox"/>	Electricity	kWh site	1
<input checked="" type="checkbox"/>	Electricity Demand	kW	
<input checked="" type="checkbox"/>	Electricity Fees	none	
<input checked="" type="checkbox"/>	Natural Gas	Dtherm	1
<input checked="" type="checkbox"/>	LPG	MMBtu	
<input type="checkbox"/>	#1 Fuel Oil	MMBtu	
<input type="checkbox"/>	#2 Fuel Oil	MMBtu	
<input type="checkbox"/>	#4 Fuel Oil	MMBtu	
<input type="checkbox"/>	#6 Fuel Oil	MMBtu	
<input type="checkbox"/>	Coal	MMBtu	
<input type="checkbox"/>	Wood	MMBtu	
<input type="checkbox"/>	Paper	MMBtu	
<input type="checkbox"/>	Other Gas	MMBtu	
<input type="checkbox"/>	Other Energy	MMBtu	
<input type="checkbox"/>	custom 1 (edit)	none	
<input type="checkbox"/>	custom 2 (edit)	MMBtu	
<input type="checkbox"/>	custom 3 (edit)	none	

* active Energy Sources cannot be unselected

version: 1.1
build date: 2016.04.24

Select Relevant Variables Tracked

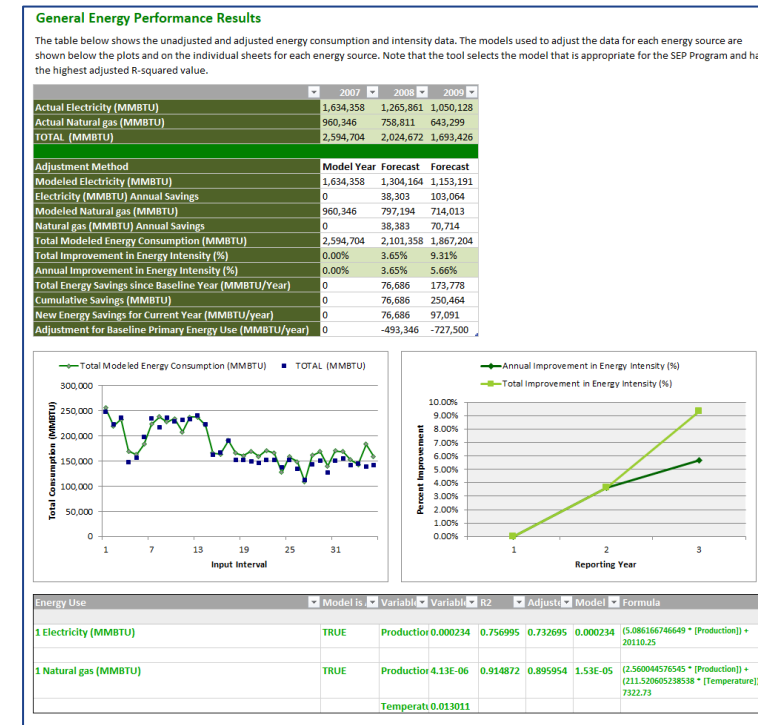
Select	Type	Units	# Used
<input checked="" type="checkbox"/>	Production	count	
<input checked="" type="checkbox"/>	Heating Degree Days	HDD	1
<input type="checkbox"/>	Cooling Degree Days	CDD	
<input type="checkbox"/>	Customers Served	count	
<input type="checkbox"/>	Production Hours	hours	
<input type="checkbox"/>	Facility Operating Hours	hours	
<input type="checkbox"/>	Water Usage	Tgal	
<input type="checkbox"/>	Occupancy	count	
<input type="checkbox"/>	Occupancy	misc	
<input type="checkbox"/>	custom 2 (edit)	misc	
<input type="checkbox"/>	custom 3 (edit)	misc	
<input type="checkbox"/>	custom 4 (edit)	misc	
<input type="checkbox"/>	custom 5 (edit)	misc	

* used Related Factors cannot be unselected

MMBtu (primary)
0.010228
FOR REFERENCE: These energy conversion factors are used only to calculate the total primary energy consumption and are not otherwise used.

1 kWh site = 0.010228
1 Therm = 0.1
1 Dtherm = 1
1 MMBtu = 1
1 GJ = 0.9478

Energy Footprint Tool



Energy Performance Indicator Tool

Late fee payments

- 0.1% - 5% late fees

Credit assurance refunds

Demand response program enrollment

- Curtail manageable / agreed upon usage during peak demand events
- Limited availability – California and New York
- Rapidly expanding

Conclusion

Natural gas is most popular fuel in manufacturing sector – usage is 3x electricity and 10x coal

Understanding of billing and pricing structure is key to discovering savings opportunities

Bill analysis can help in determining natural gas cost

Accurate estimate of gas cost reduces uncertainty in project savings and paybacks

Significant cost savings



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Next Steps



Collect Data On Natural Gas
Invoices, Weather, Production



Understand Rate Structure
Analyze Bills
Determine Cost



Understand Usage Patterns



Explore And Analyze Savings
Strategies

Report titled “Understanding Your Utility Bills: Natural Gas” is published in Better Plants Resource Library

The report is available to download [here](#)



Questions?

Additional Questions:

- Pete.Langlois@ee.doe.gov
- sundaramoors@ornl.gov
- Eli.Levine@ee.doe.gov

Reminder:

- Next webinar is Tuesday, Oct. 26th from 11-12pm ET
- Understanding Your Water Bills
- Register at Yesevents.com/EnergyAwareness