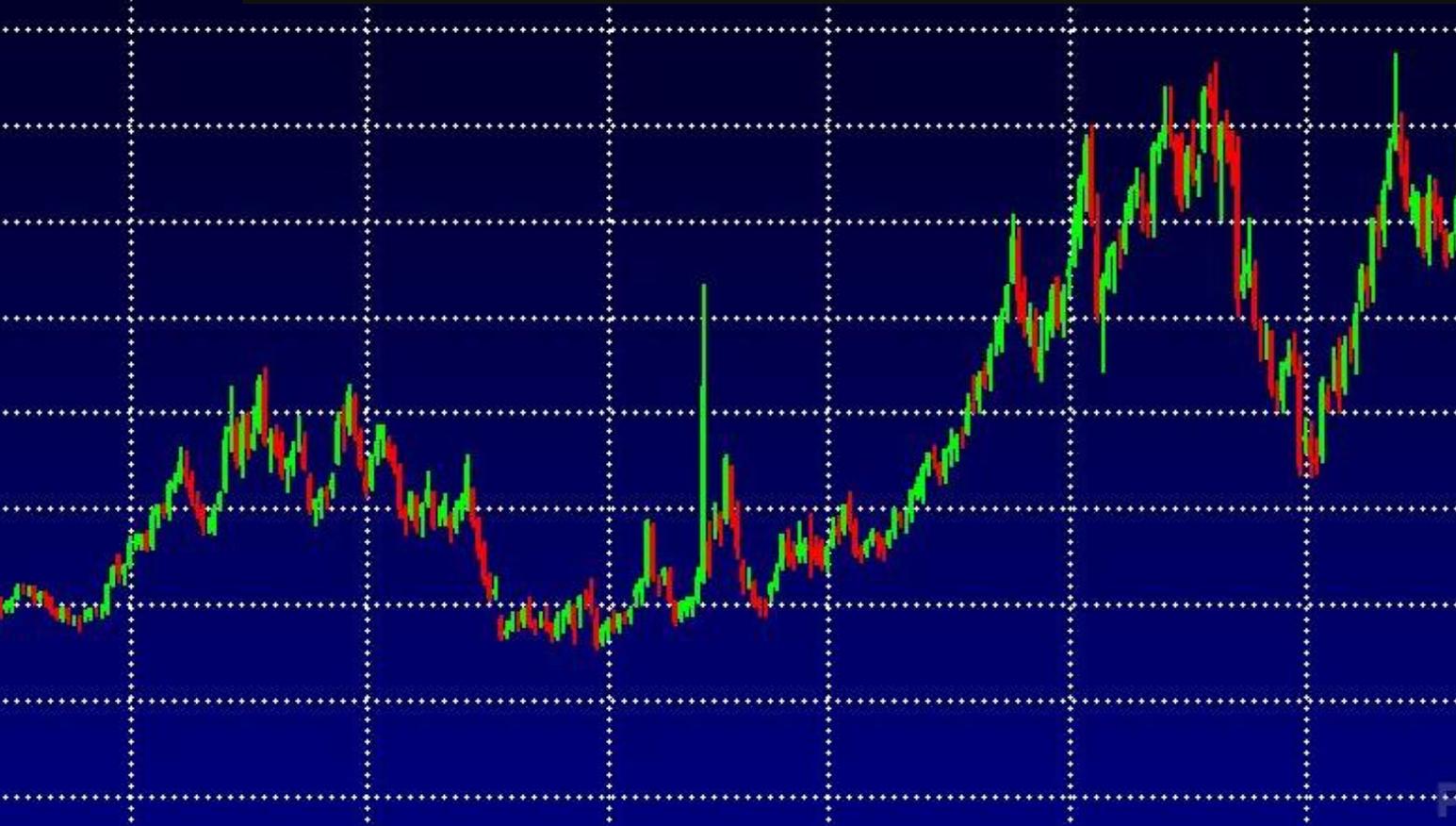


# Managing Electric and Natural Gas Costs in an Increasingly Volatile Market

OTCO Compliance Workshop | OH | October 12, 2022





- Energy Procurement
- Demand Response
- Energy Auditing
- Energy Engineering Projects

## About Us

As nationally certified woman-owned company, SES acts as an owner's advocate in all energy matters for customers in diverse industries, from manufacturing and retail to healthcare and education, as well as cities and public entities.

Russia's Gazprom says gas flows to Europe will stay shut after G7 agreed price cap to choke Putin's war machine

Chancellor Nadhim Zahawi said the price cap would curtail Putin's effort to fund his war while also bringing down spiralling global energy costs.

© Friday 2 September 2022 18:21, UK

Wholesale gas prices fall as Europe's plan to avert winter energy crisis takes shape

Gazprom says it will halt gas supplies to France's Engie, cites lack of payment

Europe's plans to replace Russian gas are deemed 'wildly optimistic' — and could hammer its economy

PUBLISHED WED, JUN 29 2022-1:35 AM EDT | UPDATED WED, JUN 29 2022-4:17 AM EDT

# Energy Prices Gone Wild!

**Owner of Dairy Mart in Avon Shocked by Latest Electric Bill - (12 cents per kWh)**

[Cleveland 19 News – August 17, 2022](#)

Dave Jankowski, a spokesperson for NOPEC said the following

**“We’re subject to the same price volatility and market conditions that impact the price of energy as anybody else,” Jankowski said. “We buy on behalf of more customers so that volume gets some advantages in terms of pricing but we’re still buying in a real time market.”**

**Cleveland Heights, Lakewood officials ask why NOPEC electric rates got so high amid plan to drop customers** [Cleveland.com](#)

Published: Sep. 13, 2022, 6:02 p.m.

Cleve Hts Mayor Seren said NOPEC raised rates unexpectedly, hurting low-income residents in his city. He said there was a “immense failure” by NOPEC, since its rates jumped while other energy aggregators kept them low. He said member communities deserved answers to their questions.

September 08, 2022 01:48 PM

**NOPEC facing existential threat from regulators – Dan Shingler, [Crain’s Cleveland Business](#)**

NOPEC, the state's largest government energy aggregator serving 240 million communities and more than half a million customers, appears to be in a fight for its life.

**State regulators: NOPEC must defend its right to remain an electric aggregator in Ohio -**

[Cleveland.com](#) Updated: Sep. 08, 2022, 12:32 p.m. / Published: Sep. 08, 2022, 11:21 a.m.

The Public Utilities Commission of Ohio directed NOPEC to show cause and explain why its certificate to do business should not be revoked by Sept. 28. The commission also waived rules so NOPEC could transition customers to other providers without a 90-day notice.

# Current Natural Gas Market as of Today

NYMEX (Henry Hub, LA)



# Current Electric Market as of Today

AEP Dayton Hub



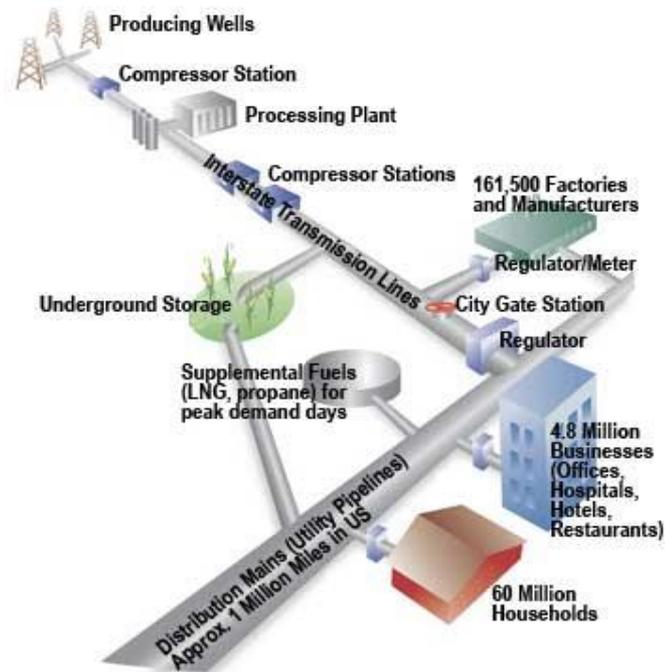
# Natural Gas



# Natural Gas

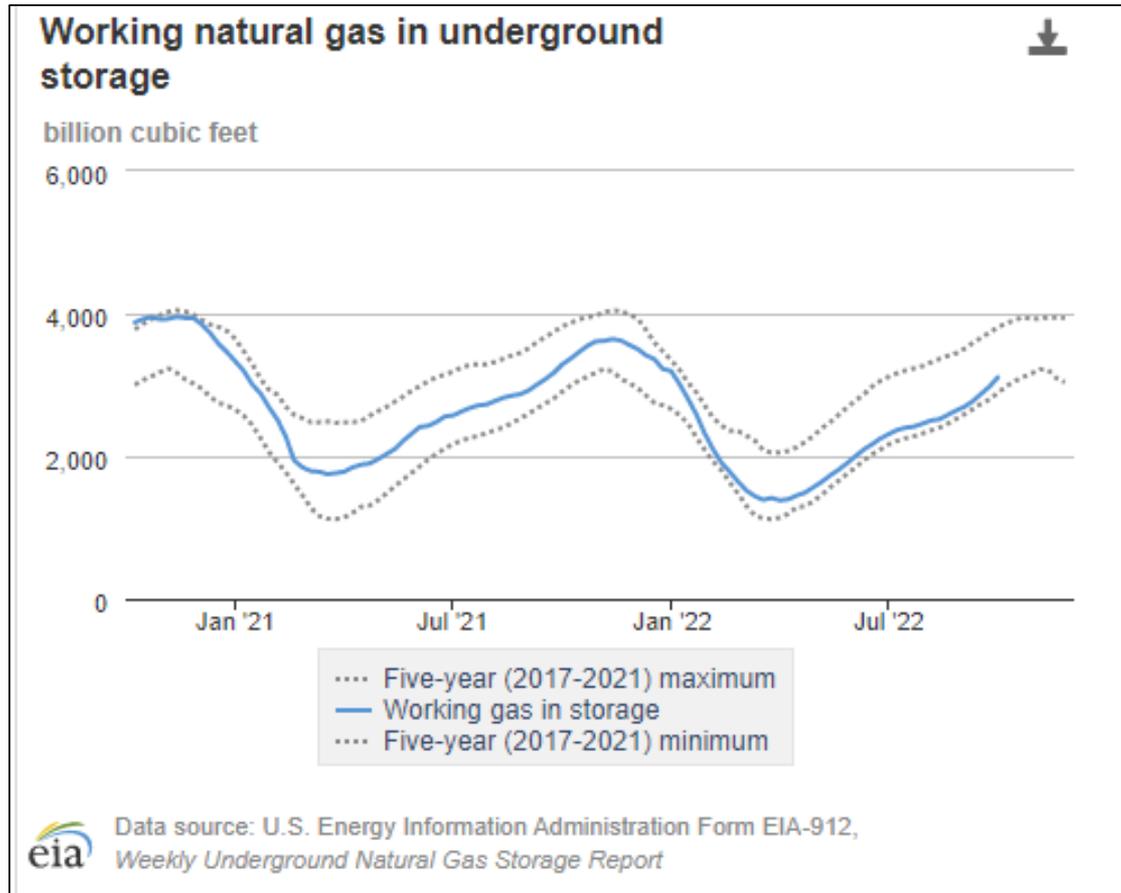
## NYMEX plus Basis

Flow from  
well to your  
facility

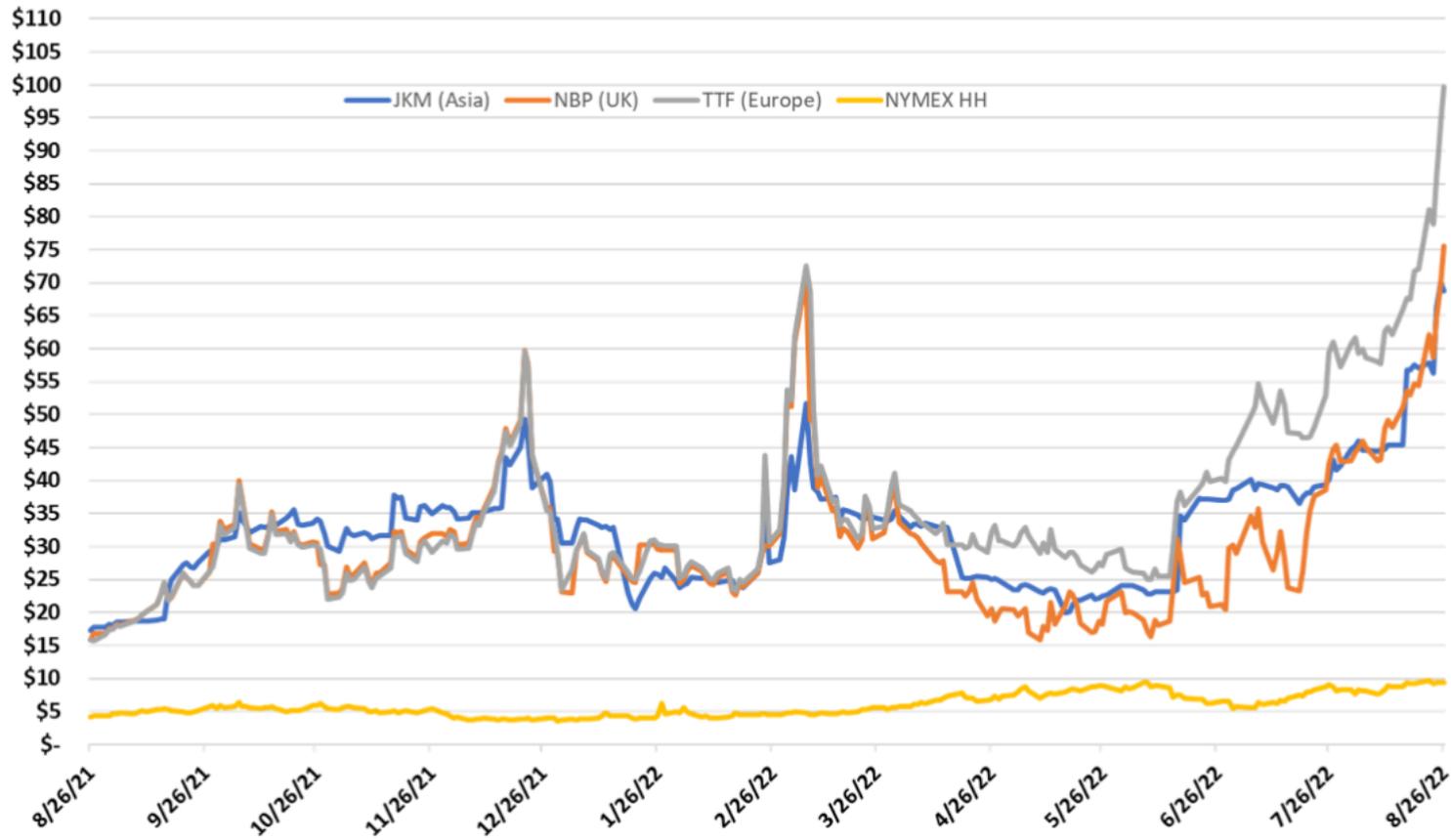


# EIA Natural Gas Storage Report

Reported Every Thursday at 10:30 AM



# Prompt Month Prices - NYMEX vs. Global LNG



Source: Direct Energy | NRG

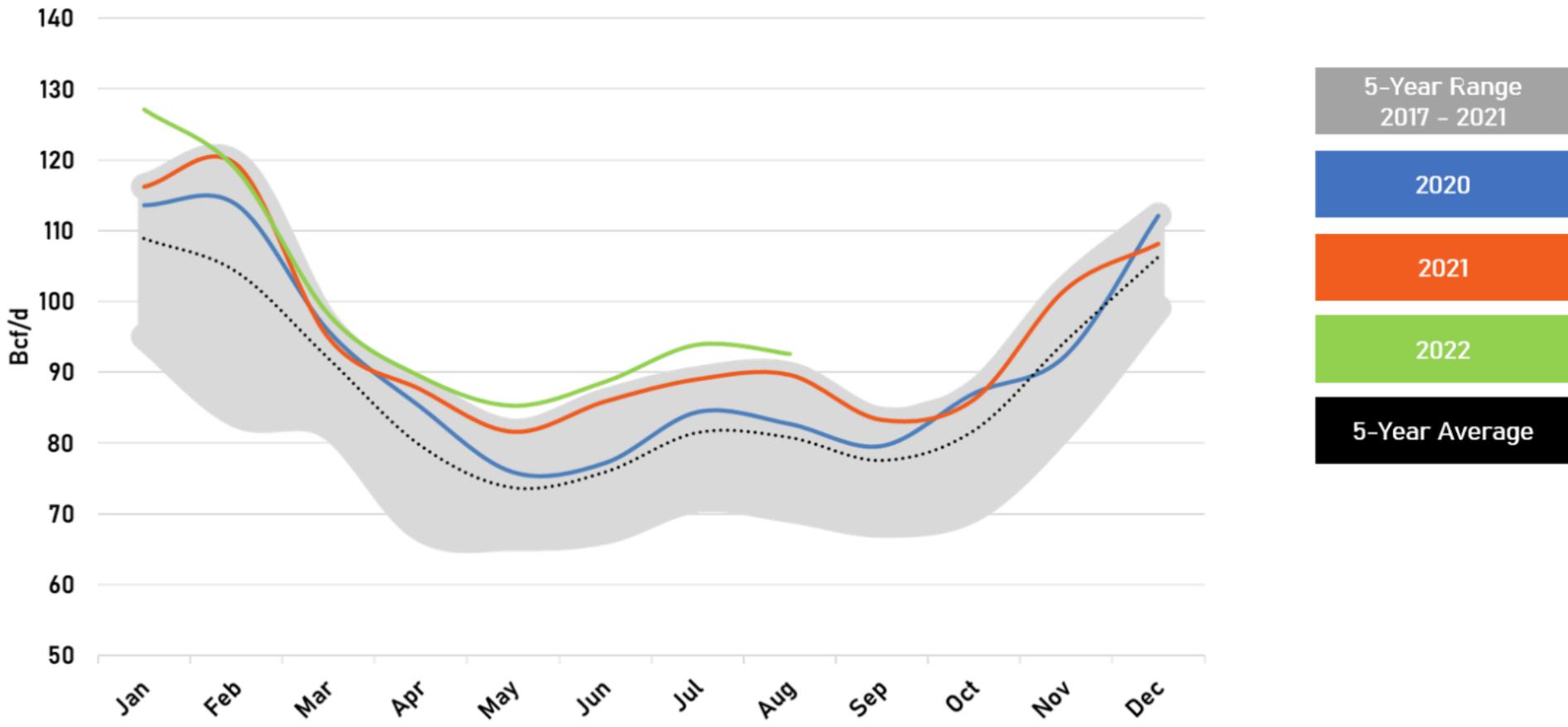
# US Natural Gas Exports

Record US LNG Shipments  
to EU and Asia!

Record LNG Ship Orders!



# Total Natural Gas Demand with Exports

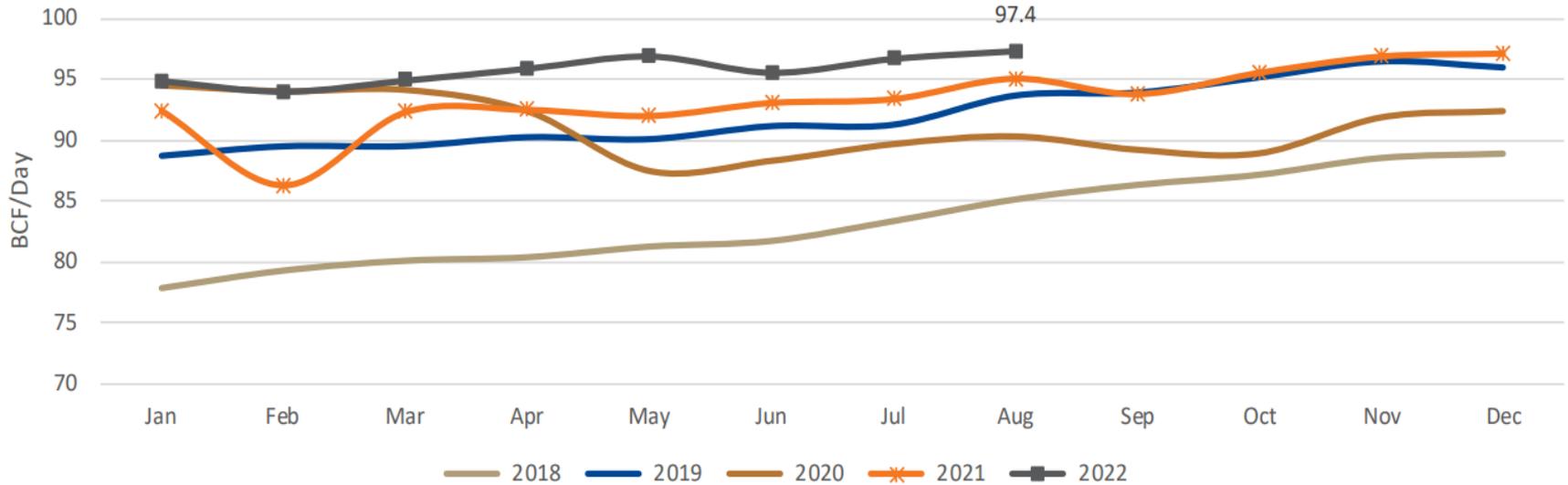


Source: Direct Energy | NRG

# EIA Natural Gas US Production Report

2022 Average of 95.8 BCF/Day is New Record

US Production of Dry Natural Gas: EIA 2022 Forecast Ave: 93.93 BCF/Day  
Current 2022 Ave: 95.81 BCF/Day

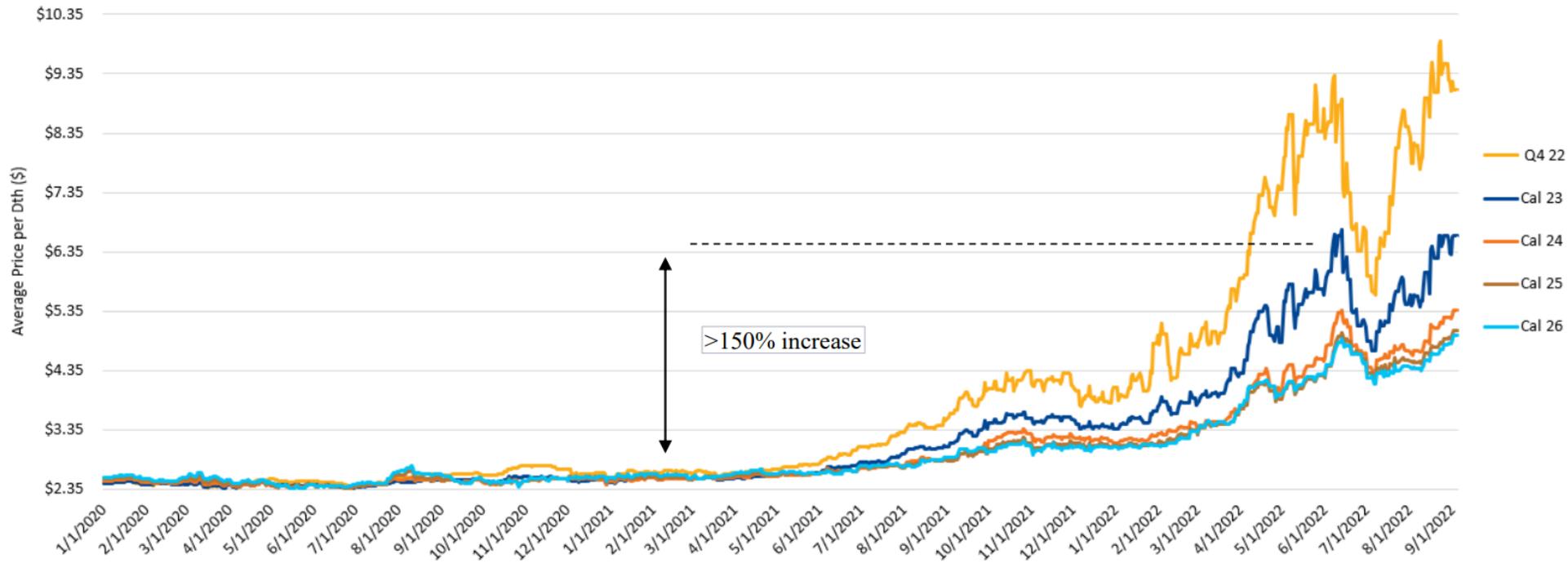


Source: EIA

# NYMEX Natural Gas Futures

## NYMEX Average Wholesale Prices

NYMEX Average Wholesale Prices



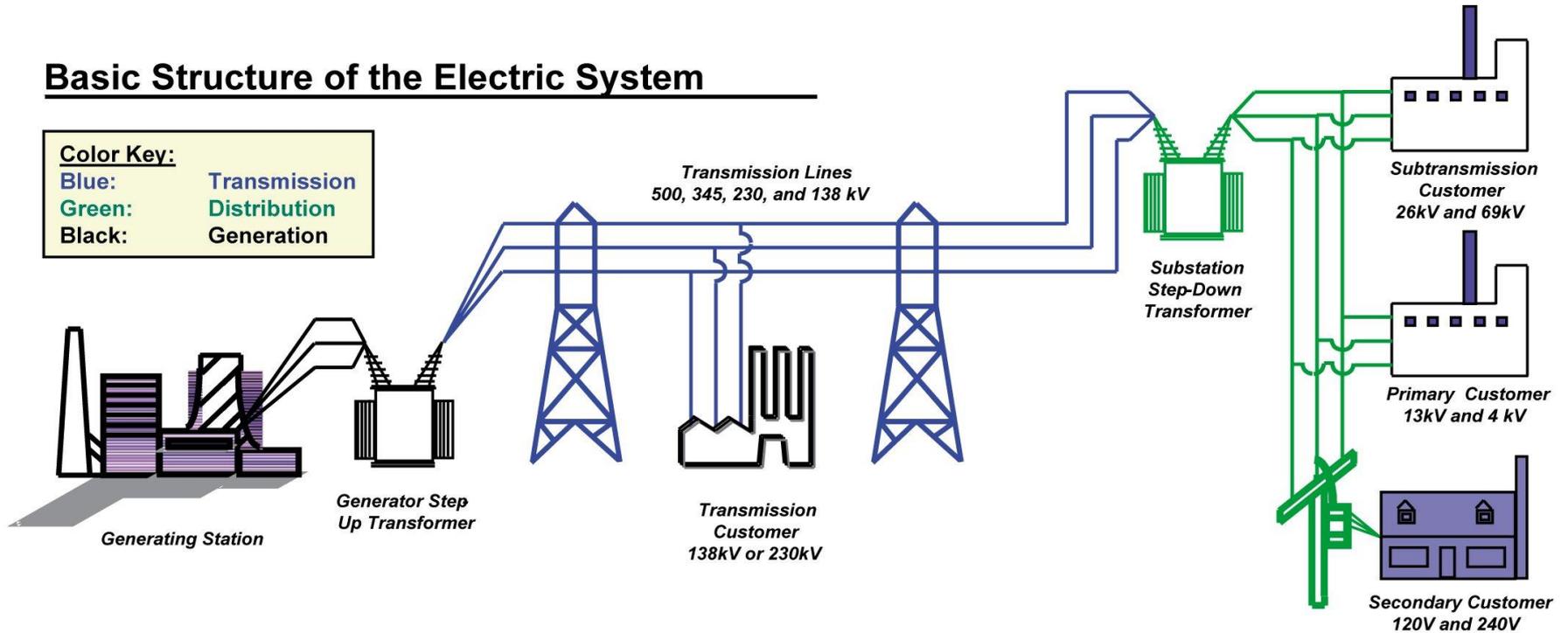
Source: EIA

# Electric Power

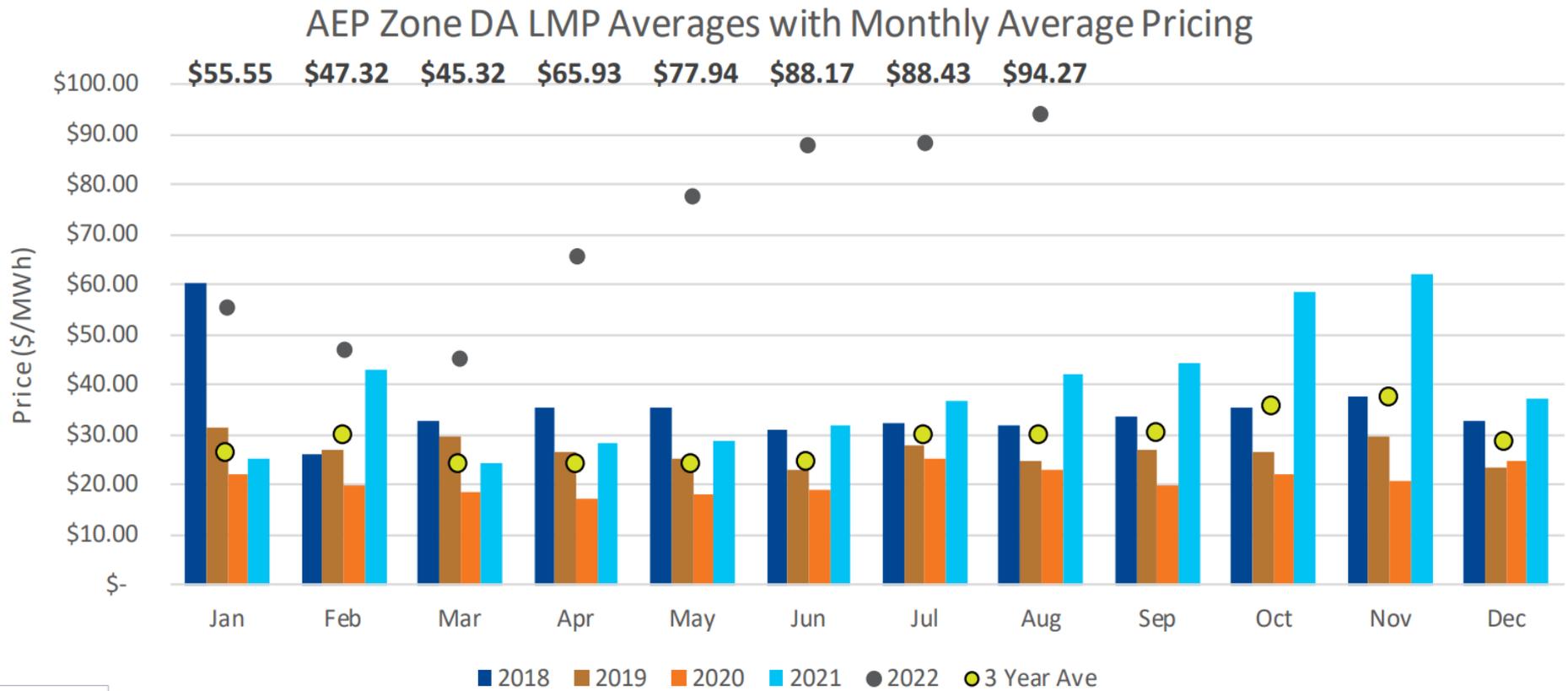
# Electric System from Generators to Your Facility

Your **Tariff Rate** Depends on Where You Take Your Power

## Basic Structure of the Electric System



# AEP Zone DA LMP Averages with Monthly Average Pricing

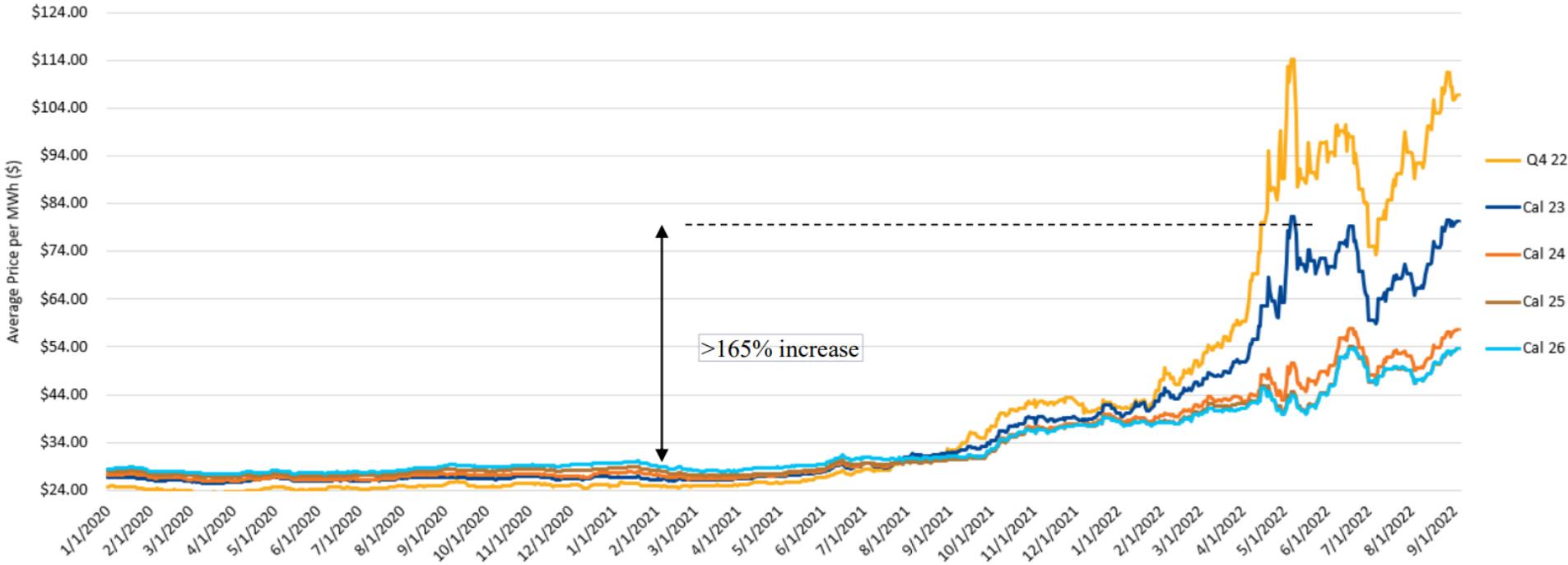


Source: AEP Dayton Hub

# PJM AEP Dayton Hub Electric Futures

## NYMEX Average Wholesale Prices

### AEP Dayton Hub Annual Average Wholesale Prices



Source: EIA

# So What Can You Do About It?

## Shop while markets are favorable

- Competitive RFP with multiple suppliers

## Manage kW Peaks

- Capacity - Control this key price component

## Participate in Demand Response / SRM

- No-cost revenue generator

## Explore Renewables

- Low cost, sustainable energy

## Implement Energy Efficiency

- Reducing usage offsets rising prices

## Utilize On-Bill and Other Funding Options

- No money up front and positive cash flow from Day 1



# Explore Options

6 Key Areas to Manage  
Energy Costs



# Product Risk & Opportunity Spectrum

**No product structure fully removes market exposure & risk**



## Product Risk and Opportunity

- Complete exposure to market volatility
- No limit to upside risk
- Pricing uncertainty can increase Op Ex
- Risk is spread over multiple layers
- Can layer in defensive buys based on market movements
- Access to Energy Advisor to help navigate the market
- Price certainty, but only have one chance to "time" the market
- No optionality to buy if market drops
- Fully exposed to market upside while waiting



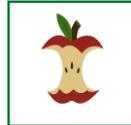
# Apples-to-Apples

Ask the Right Questions to Reduce Risk



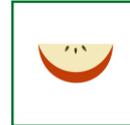
## Products

- Fixed all-inclusive, Load Following Index, Capacity pass-thru, Block & Index, NYMEX plus, Winter Hedge, Summer Hedge, On-peak, Off-peak



## Components

- Capacity, Ancillaries, RMR, Black-Ops Start, Renewable Portfolio Std., Synchronized reserves, Zonal basis, Losses, Transportation



## Bandwidth Restrictions

- Full-swing, 10-30% swing, Full requirements, consecutive months over or under contracted volumes

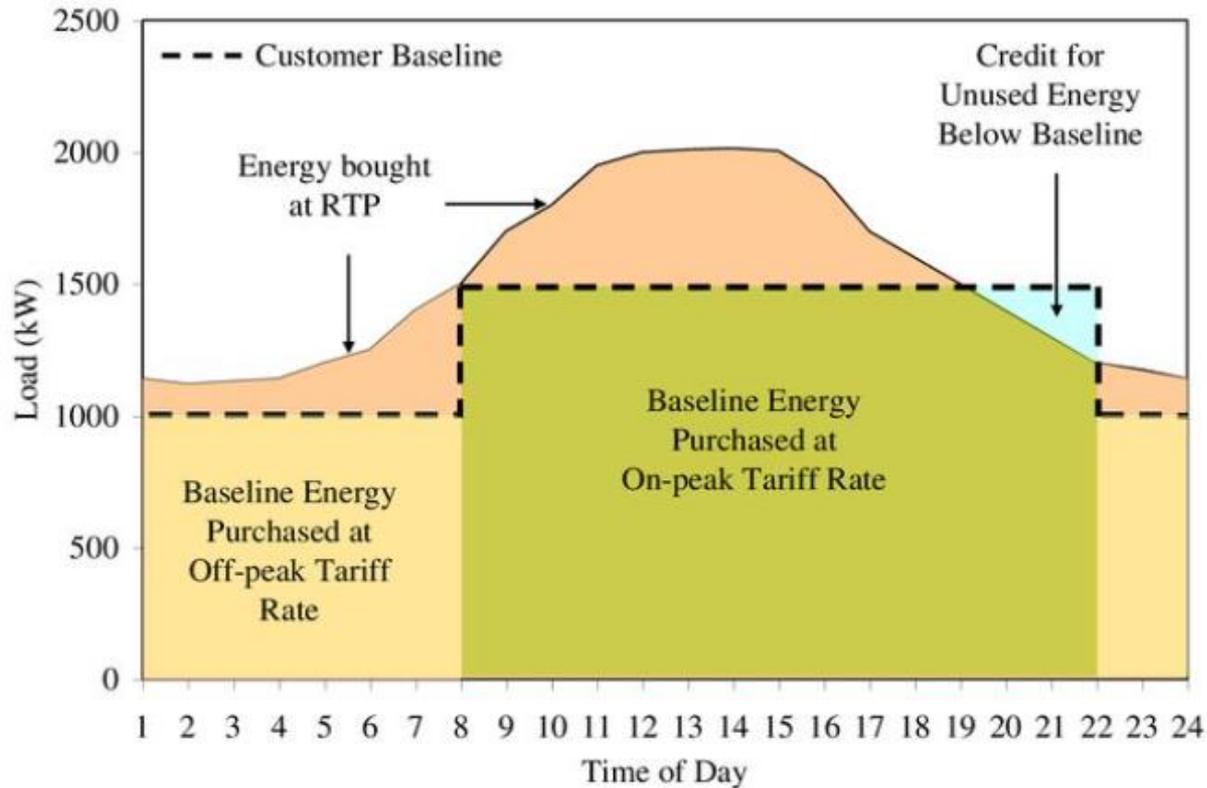


## Language

- Material deviation, pass thru charges, change-in-law, Material consumption changes, Future change in Capacity, Early Termination Fees, True-ups



## Current Product has Risk



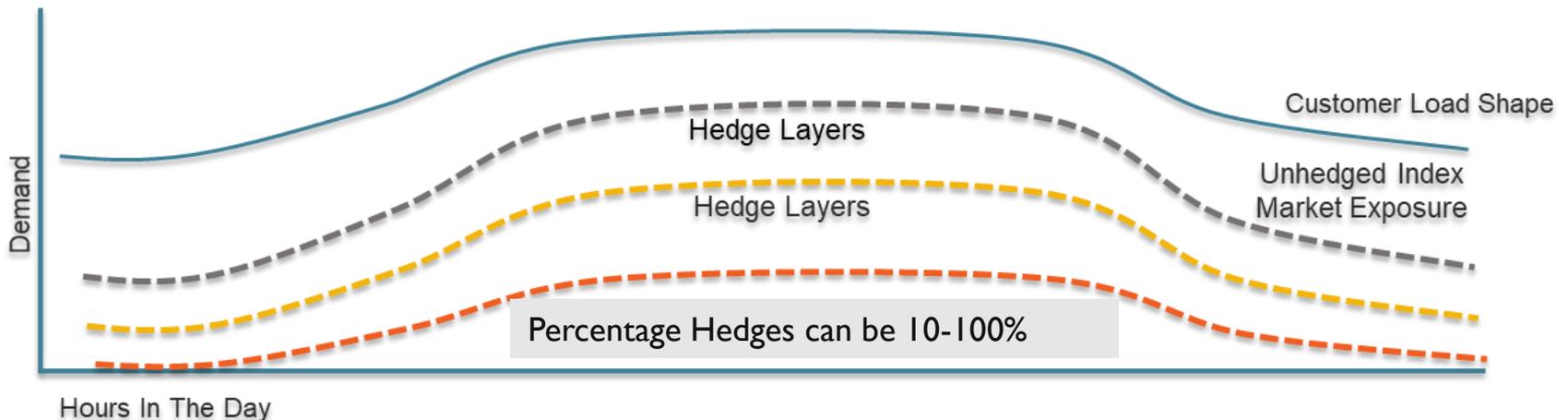
- RTP = Real Time Pricing (buying power on the spot market)
- Components like Ancillaries, Capacity & Transmission passed thru
- Customer subject to market risk

# How Load Following Index Works

## Customized Product Structure

- Choose the percentage of your load that you want to lock in at a fixed price (Around The Clock pricing); in increments of 10% up to 100% - and the duration of the term
- Hedges can be seasonal, monthly, annually or full term
- Any unhedged load remains in the hourly Index Market.
- **Benefit:** Customers can lock in load over time to become fully fixed, allowing them to take advantage of dips in a high market

## LOAD FOLLOWING INDEX



Capacity and Transmission may be Passed-Through or Fixed upfront.



# Block & Index Pricing

## Charges for Billing Period for Aug 13, 2021 to Sep 13, 2021

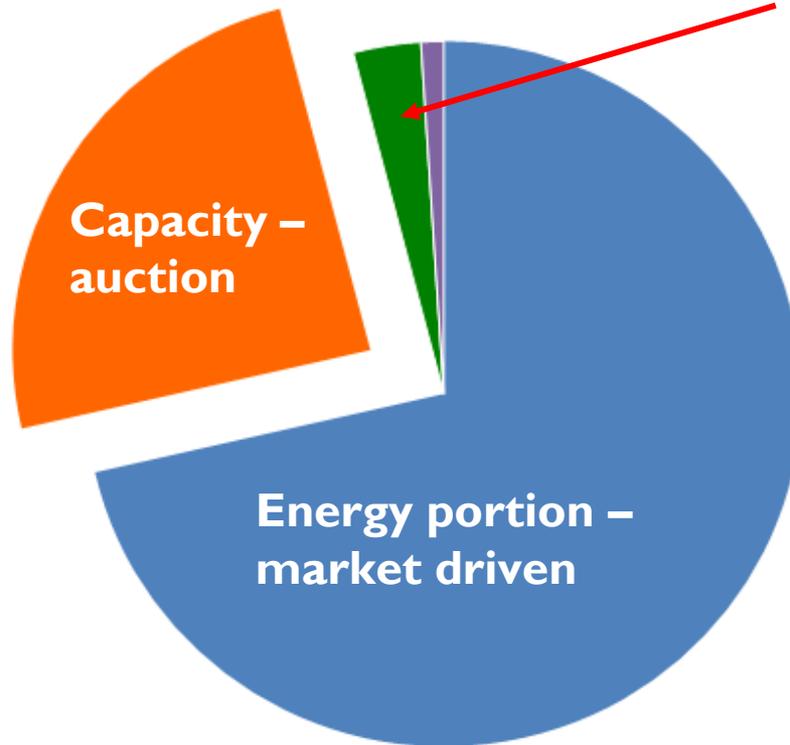
On-Peak Block Energy Charge 31200kWh @ \$-0.019	-\$592.74
On-Peak Block Energy Charge 26352kWh @ \$-0.00969	-\$255.40
On-Peak Block Energy Charge 52560kWh @ \$-0.00959	-\$504.14
On-Peak Block Energy Charge 62400kWh @ \$-0.0189	-\$1,179.24
Retail Adder Charge 425687.04kWh @ \$0.00135	\$574.68
Energy 450317.29kWh @ \$0.04408	\$19,850.68
<b>Subtotal Supplier Charges</b>	<b>\$17,893.84</b>
Ancillary Services Charge	\$777.45
Transmission Related Ancillary Charges	\$186.90
Unforced Capacity Charge 416.92kW @ \$0.16021 for 31 days	\$2,137.47
Transmission Charge 428.03kW @ \$0.18286 for 31 days	\$2,504.63
<b>Subtotal Settlement Charges</b>	<b>\$5,606.45</b>
<b>Current Energy Charges</b>	<b>\$23,500.29</b>
<b>Total Charges for this Billing Period</b>	<b>\$23,500.29</b>

Block and Index product can expose you to market risk and price increases  
All components are passed through

# Managing kW Peaks

# Electric Supply Cost Components

Energy + Capacity + Ancillaries + Other = Total Supply Price



- Ancillaries
- Balancing & Congestion
- Losses
- Other

**Your Capacity (\$) =  
PLC X Capacity cost  
X PJM factor 1 X  
PJM Factor 2**

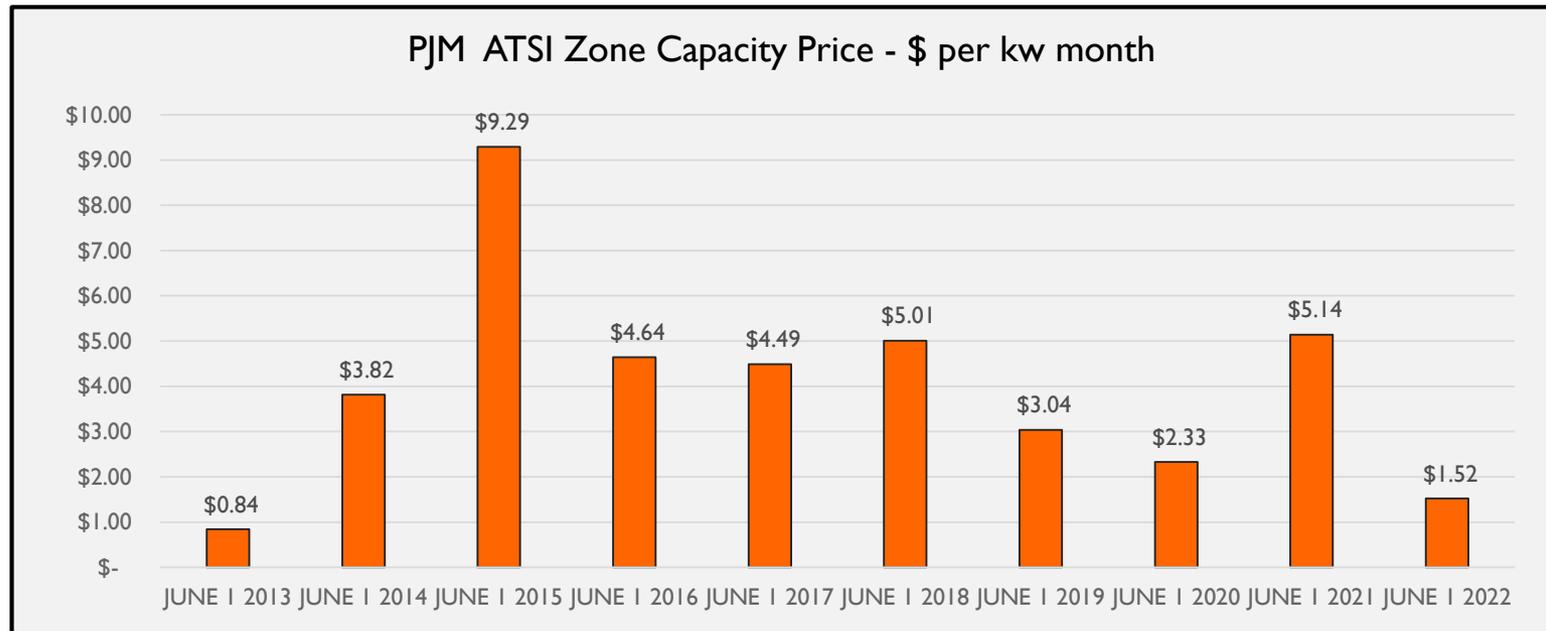
- Wholesale Energy Price
- Capacity





# Peak Shaving | Capacity Market | PJM Auction

Auction determines DR pay-outs and also Capacity Costs - part of Supply



Your Capacity (\$) = PLC X Capacity cost X PJM factor 1 X PJM Factor 2





# Demand Response

## Protecting the grid

**Three-year Base Capacity Payment = \$120,234**

Annual Energy Payment if emergency event called = \$7,824

- Based on 2017 PLC of 1739 kW (6 largest accounts)
- Reduction of 1304 kW

Reduction Amount	2019 Base Capacity Payment	2020 Capacity Performance	2021 Capacity Performance	Annual Energy Payment	Three Year Payment Totals
1,304 kilowatts (kW)	\$29,319.14	\$28,124.28	\$62,790.59	\$7,824.00	<b>\$143,706.01</b>

Participation in Demand Response has many benefits

- Operational Reliability
- Social/Community Responsibility
- Smart Meter provided

During curtailment event

- Tools help monitor the drop
- Goal – drop to 100 kW (per example)



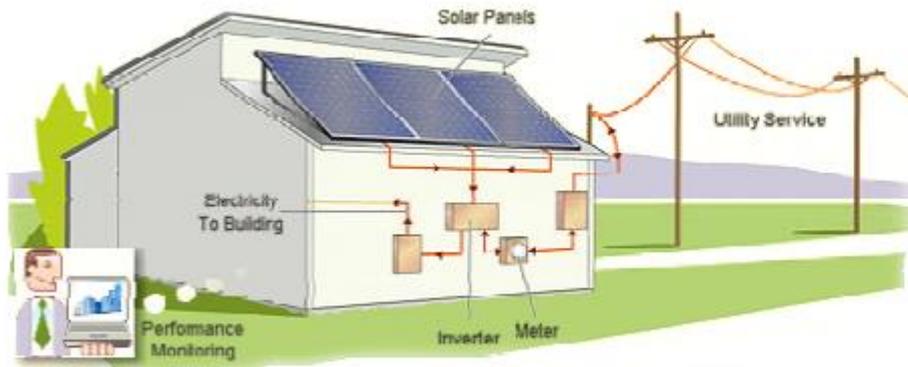
# Heat Map

Great for identifying Capacity, kW Demand opportunities

date	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
4/1/2014	57.3	58	61	63.2	81.5	99.9	138.1	152	147.6	140.3	140.3	149.8	152.8	136.6	135.9	124.8	122.6	124.8	110.9	109.4	102.8	77.8	60.2	58.8
4/2/2014	63.2	62.4	67.6	63.2	82.3	119.7	152	141	141.7	155	146.1	129.3	150.6	125.6	117.5	109.4	105.8	108	100.6	96.2	91.8	91.1	89.6	82.3
4/3/2014	66.1	56.5	58.8	61	83.7	127.8	132.2	138.8	149.8	142.5	141	143.9	134.4	120.4	118.2	113.1	110.9	110.2	106.5	99.9	95.5	86.7	83	61
4/4/2014	57.3	60.2	57.3	63.2	84.5	102.1	142.5	145.4	124.8	137.3	143.2	150.6	142.5	132.9	114.6	116.8	113.1	105.8	88.1	77.8	70.5	29.4	16.9	16.2
4/5/2014	16.9	16.9	16.9	16.9	16.9	51.4	72	72	72	71.2	70.5	71.2	72.7	71.2	71.2	71.2	67.6	66.1	66.1	65.4	66.1	36	28.6	28.6
4/6/2014	28.6	28.6	28.6	28.6	28.6	28.6	27.9	29.4	30.1	30.1	30.8	29.4	28.6	27.2	27.9	27.9	27.9	27.2	27.9	27.9	28.6	45.5	65.4	77.1
4/7/2014	71.2	72.7	70.5	69	80	110.9	141.7	136.6	127.1	132.2	127.8	138.1	144.7	121.9	108.7	111.6	95.5	99.9	96.2	80.8	69	58.8	79.3	76.4
4/8/2014	79.3	75.6	76.4	76.4	79.3	102.1	135.1	141.7	137.3	140.3	146.1	147.6	148.3	116.8	110.9	102.8	103.6	105	95.5	95.5	89.6	73.4	72	81.5
4/9/2014	74.2	77.8	77.1	75.6	83.7	119.7	146.9	149.1	160.8	146.1	148.3	155.7	140.3	116.8	105	107.2	102.1	99.9	99.1	101.3	92.5	79.3	77.1	80
4/10/2014	81.5	79.3	75.6	77.8	94.7	119.7	142.5	151.3	152	154.2	146.1	145.4	160.1	138.1	134.4	125.6	131.5	135.1	134.4	119.7	83.7	80.8	100.6	84.5
4/11/2014	81.5	77.8	82.3	83.7	96.9	124.8	160.8	160.1	140.3	154.2	155.7	159.4	160.1	138.8	139.5	135.1	119	113.8	117.5	118.2	110.2	74.9	72	74.2
4/12/2014	72	73.4	70.5	72	81.5	76.4	78.6	78.6	77.8	78.6	78.6	79.3	52.1	22.8	21.3	22	18.4	19.1	17.6	16.9	17.6	17.6	17.6	17.6
4/13/2014	16.9	17.6	16.9	17.6	17.6	17.6	17.6	16.9	17.6	17.6	16.9	17.6	19.1	19.8	22.8	21.3	22	19.8	20.6	17.6	19.1	47.7	75.6	77.8
4/14/2014	78.6	76.4	75.6	77.1	96.2	138.8	171.1	168.9	177.7	171.1	164.5	166	177.7	174.8	171.8	138.8	116.8	113.8	120.4	121.9	113.8	73.4	77.8	76.4
4/15/2014	77.1	75.6	79.3	85.2	94.7	114.6	143.9	143.9	146.1	138.1	136.6	150.6	143.9	138.1	124.8	131.5	131.5	116	115.3	121.9	121.2	74.2	74.9	72.7
4/16/2014	74.2	74.9	76.4	82.3	94.7	118.2	143.9	139.5	146.1	153.5	146.1	134.4	156.4	138.1	130	120.4	116.8	127.8	124.8	119.7	108	79.3	76.4	77.8
4/17/2014	74.2	74.2	69	65.4	96.9	109.4	136.6	136.6	126.3	123.4	127.1	133.7	149.8	132.9	130	116	113.1	105.8	101.3	102.1	84.5	21.3	15.4	15.4
4/18/2014	16.2	15.4	15.4	15.4	16.2	16.2	15.4	15.4	16.2	15.4	17.6	18.4	18.4	16.2	15.4	16.2	15.4	14.7	15.4	15.4	16.2	15.4	15.4	16.2
4/19/2014	16.2	15.4	16.2	16.2	16.2	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	14.7	16.2	15.4	15.4	16.2	15.4	16.2	16.2
4/20/2014	16.2	16.2	16.2	16.2	16.2	16.2	16.2	15.4	15.4	15.4	14.7	15.4	14.7	15.4	14.7	15.4	14.7	14.7	14.7	15.4	15.4	37.5	57.3	58.8
4/21/2014	60.2	62.4	65.4	64.6	62.4	89.6	110.2	137.3	144.7	127.8	130	159.4	167.4	174.1	174.8	163.8	156.4	149.1	144.7	155	153.5	123.4	121.2	85.2
4/22/2014	88.9	83	83	80	102.1	129.3	165.2	162.3	164.5	168.2	166	149.8	149.8	135.1	128.5	126.3	126.3	124.8	129.3	132.2	127.8	98.4	91.1	77.1
4/23/2014	72	69	75.6	80	102.1	118.2	141.7	146.9	139.5	139.5	152.8	156.4	148.3	129.3	118.2	116.8	112.4	118.2	132.2	123.4	119.7	105	101.3	84.5
4/24/2014	77.1	74.2	75.6	74.2	97.7	118.2	138.1	147.6	159.4	144.7	156.4	153.5	147.6	135.9	141	134.4	124.1	126.3	134.4	128.5	123.4	102.1	94.7	74.2
4/25/2014	79.3	85.2	83.7	80.8	102.1	113.1	128.5	143.2	158.6	160.1	151.3	163	165.2	149.8	132.2	136.6	126.3	116	120.4	115.3	113.8	67.6	62.4	64.6
4/26/2014	72.7	73.4	70.5	72.7	74.9	100.6	107.2	109.4	116	113.8	99.9	86.7	70.5	69.8	68.3	69	69	68.3	69	66.8	34.5	32.3	32.3	31.6
4/27/2014	33	32.3	32.3	33	46.3	66.1	66.1	65.4	65.4	65.4	65.4	65.4	63.2	66.8	66.8	66.1	65.4	49.9	33.8	21.3	21.3	45.5	65.4	69.8
4/28/2014	69	68.3	77.1	73.4	79.3	108.7	153.5	151.3	153.5	152	138.8	152	145.4	105.8	106.5	103.6	94.7	97.7	93.3	90.3	81.5	63.9	67.6	72.7
4/29/2014	74.9	77.1	74.2	77.1	76.4	114.6	141.7	146.1	141.7	155	157.2	164.5	171.1	156.4	157.2	154.2	148.3	153.5	160.8	158.6	143.9	103.6	96.9	82.3
4/30/2014	79.3	84.5	97.7	89.6	83.7	98.4	153.5	159.4	164.5	172.6	179.9	174.1	171.1	146.1	146.9	143.9	128.5	130.7	135.1	127.1	113.8	77.1	75.6	82.3
5/1/2014	72	67.6	67.6	64.6	72	101.3	164.5	168.9	155	156.4	162.3	158.6	148.3	130	125.6	121.9	128.5	129.3	132.9	127.1	113.8	70.5	74.2	60.2
5/2/2014	69	65.4	65.4	58	63.2	85.2	115.3	125.6	132.2	132.9	139.5	149.8	157.2	137.3	134.4	130	128.5	126.3	125.6	129.3	108	29.4	18.4	16.2
5/3/2014	16.2	15.4	16.2	15.4	20.6	57.3	64.6	65.4	63.9	64.6	65.4	47.7	19.1	17.6	16.9	14.7	14.7	14.7	14.7	14.7	15.4	15.4	15.4	15.4
5/4/2014	15.4	15.4	15.4	15.4	16.2	15.4	16.9	18.4	16.9	16.2	14.7	15.4	15.4	14.7	14.7	14.7	14.7	15.4	14.7	14.7	15.4	40.4	56.5	61.7
5/5/2014	59.5	67.6	69	66.1	74.9	102.1	128.5	134.4	141	135.9	143.2	145.4	147.6	124.1	109.4	105	107.2	102.8	107.2	121.2	119.7	66.8	65.4	61
5/6/2014	66.1	63.9	68.3	76.4	75.6	106.5	141	144.7	141	144.7	155	157.9	157.2	111.6	121.2	115.3	108.7	111.6	109.4	117.5	105.8	67.6	74.9	70.5

# Renewables

# Grid-Tied Solar Photovoltaic Systems



- **Solar Array:** Powering your business with the Sun starts here. The solar array is comprised of a series of solar panels. The bigger the array, the more electricity it is capable of producing. When sunlight hits the solar array, DC electricity is generated.
- **Inverter:** The DC electricity from your array travels to the inverter, where it is converted from DC to AC electricity. AC electricity is identical to the type of power you receive from the utility power grid.
- **Electric Meter:** AC electricity from your inverter passed to the electric service panel where it is routed to power your facility's various electric loads.
- **Utility Power Grid:** When your solar electric system generates more power than your business is consuming, excess electricity is routed to the power grid. When you feed electricity back to the grid your meter will spin backwards, earning you credits on your bill (net metering).

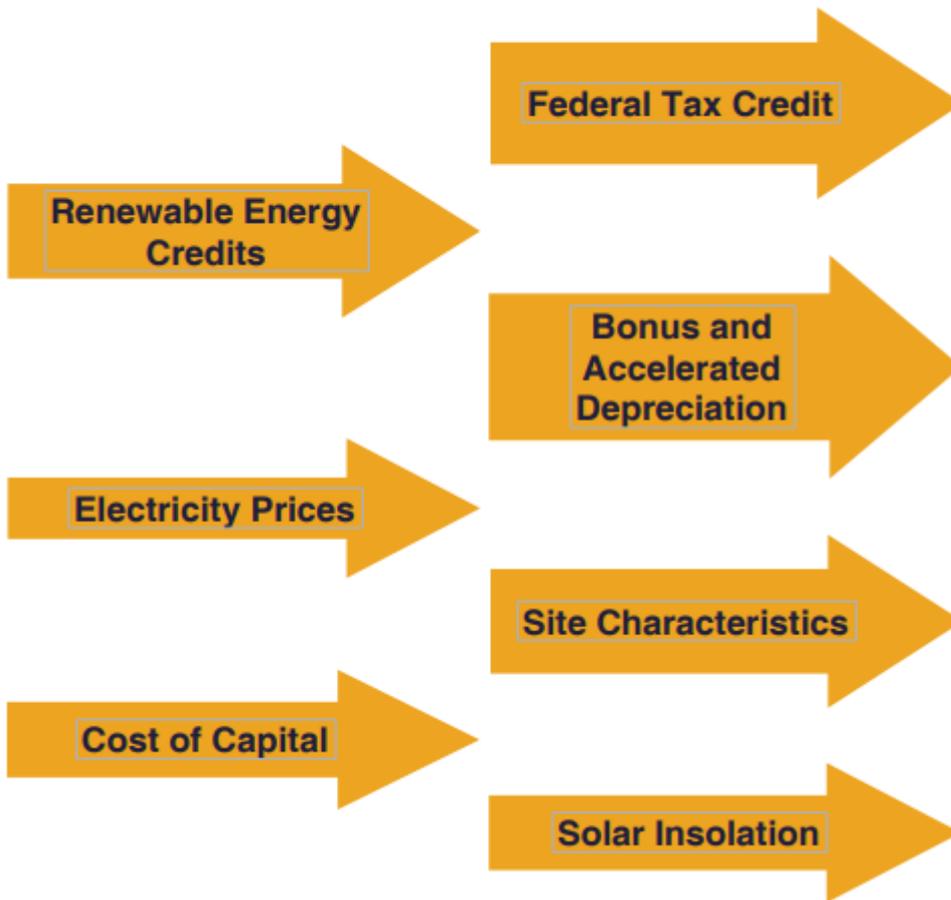


Typical Roof Mount



Typical Ground Mount

# Key Drivers of Solar Energy Economics



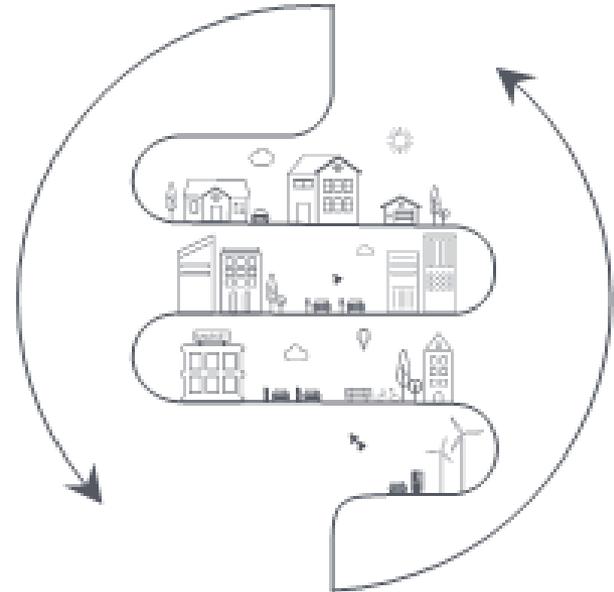
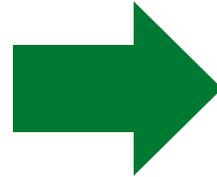
Typical Returns  
=  
10% to 13% IRR  
and  
5½ to 7 year payback

# EV Charging Stations

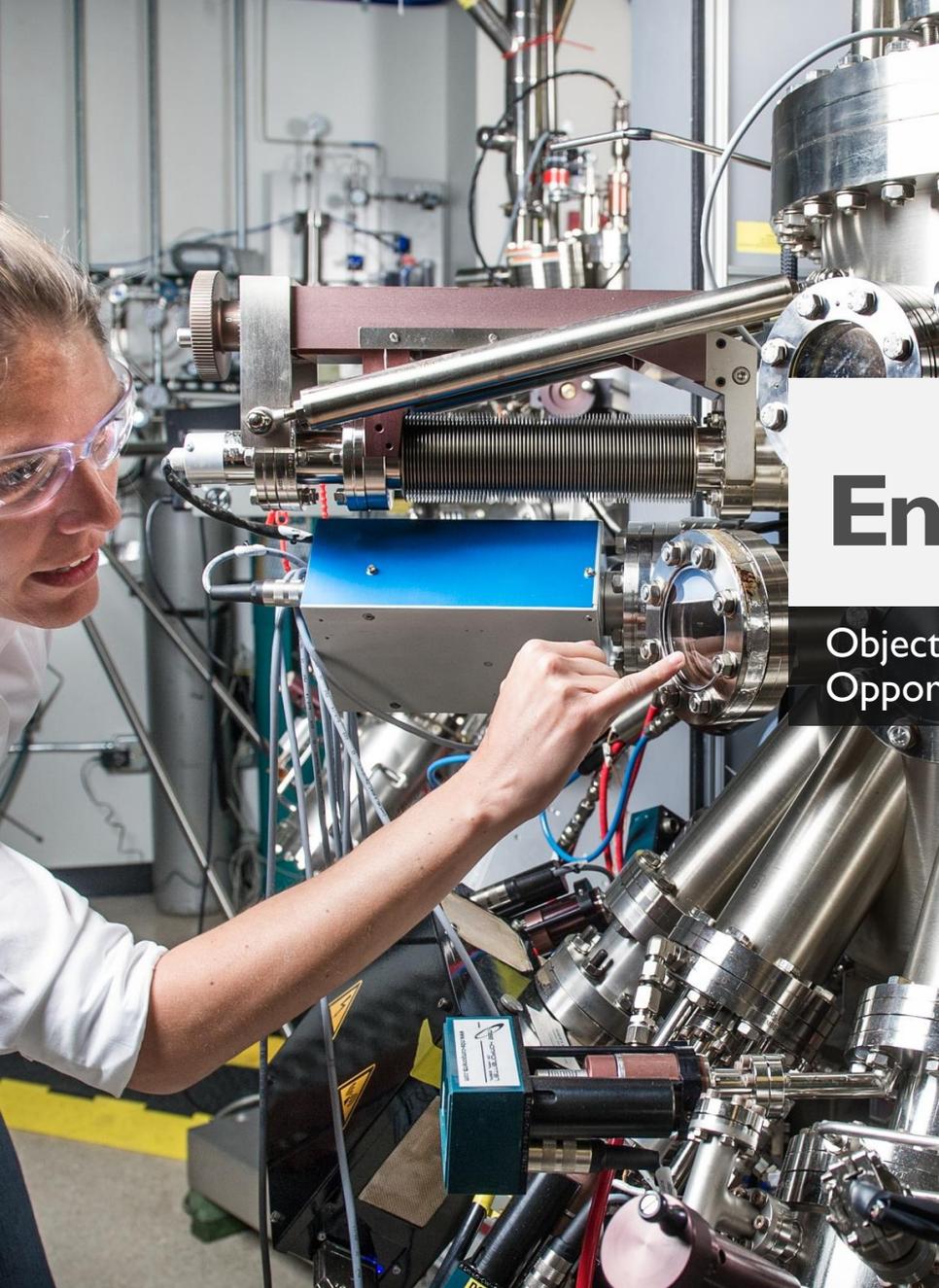
OLD: Find a Gas Station



NEW: Charge Wherever You Park



**OCPP (Open Charge Point Protocol)**



# Energy Audits

Objective – Identify No Cost/Low Cost and Capex Opportunities for Energy Savings

- Provides comprehensive, detailed approach to reducing a major cost category
- Develops an actionable strategy to address critical infrastructure needs
- Prepares organization for pivoting to adapt to change

# ASHRAE

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**American Society of  
Heating, Refrigeration &  
Air-Conditioning  
Engineers**

- **Energy auditing is unregulated**
- **Lighting and HVAC contractors will say they do energy audits**
- **How do you know what will be included in an energy audit?**
- **How do you know what level of rigor will be used?**
- **Will energy savings be calculated or estimated? If calculated – by what standard?**
- **Will recommendations be unbiased and independent?**

# ASHRAE

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**American Society of  
Heating, Refrigeration &  
Air-Conditioning  
Engineers**

**ASHRAE got involved and developed ASHRAE  
Standard 211-2018, which provides clear  
guidelines on energy audits**

# ASHRAE 211-2018

## Scope of an Energy Audit

- ✓ Building envelope
- ✓ Lighting (interior and exterior)
- ✓ HVAC
- ✓ BASs and EMSs
- ✓ Heating, chilled, condenser, and DHW systems/pumps
- ✓ Motors and pumps
- ✓ Steam systems
- ✓ Industrial processes
- ✓ Refrigeration systems
- ✓ Agricultural processes
- ✓ Irrigation systems
- ✓ Onsite power generation
- ✓ Uninterruptible power systems
- ✓ Data centers
- ✓ Conveyance systems
- ✓ Plug loads
- ✓ Laundries
- ✓ Food prep
- ✓ Pool, saunas, and spas

## Your Qualified Auditor should comply with ASHRAE Standard 211-2018.

- **Level 1** – Walk-around with very experienced engineer; only observations noted; utility bills reviewed. No calculations made, either technical or financial.
- **Level 2** – Comprehensive. Data collected, technical and financial calculations made. 95% of all audits are this level.
- **Level 3** – Deeper engineering level of analysis. Often called for when building must be modeled with software or 3<sup>rd</sup> party financing for large upgrade. Also includes assessing risk levels.

**Auditor should hold a C.E.M, or C.E.A.**

**Auditor should have previous experience with similar buildings.**



# Qualified Auditor

# ASHRAE 211-2018

## Scope of an Energy Audit

- ✓ Building envelope
- ✓ Lighting (interior and exterior)
- ✓ HVAC
- ✓ BASs and EMSs
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- ✓ Conveyance systems
- ✓ Plug loads
- ✓ Laundries
- ✓ Food prep
- ✓ Pool, saunas, and spas

# ASHRAE 211-2018

## General Procedures

### General

- Prelim evaluation of energy use from 12 – 36 months of bills
- Determine energy intensity (EUI) (kBtu/SF or as appropriate)
- Determine energy cost index (Total \$/SF)
- Compare EUI to peer group
- ID any hazardous materials and notify appropriate personnel

### Level I

- Review historical utility data
- Review rate structure
- Pre-visit interview
- Facility site survey
- Review O&M problems/needs
- Interview key personnel
- Space function analysis
- ID no/low cost EEMs
- ID potential capex EEMs
- Review results with key personnel

# ASHRAE 211-2018

## General Procedures

### Level 2

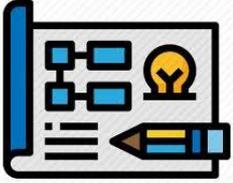
- All Level 1 procedures
- Breakdown of energy use, demand and cost categories
- Facility site survey with knowledgeable personnel
- Review of O&M procedures
- Determine key operating parameters
- Conduct end use breakdown
- Review building end-use categories
- Evaluate distributed and renewable energy opportunities
- Develop initial EEM list
- Determine impact of each EEM as well as method to determine savings (calculation, energy model, stipulated values)
- Evaluate each EEM
- Consider interactive effects
- Estimate EEM costs
- Provide written report
- Review with owner's representative

# ASHRAE 211-2018

## General Procedures

### Level 3

- All Level 2 procedures
- Conduct deeper energy analysis on capex EEMs
- Determine which EEMs are recommended for implementation
- Develop energy models as required
- Conduct more in-depth economic analysis on EEMs
- Conduct life cycle cost analysis
- Evaluate risk assessment
- Provide written report



# Energy Master Plan

## Components:

- Current State Assessment, Energy Audit
- Carbon Reduction Goals
- Review of Operating and Maintenance Records
- Load Growth Projections
- Energy Conservation Improvements Already Made
- Self-Generation/Fuel Diversity
- Power and Gas Supply and Distribution Analysis
- Environmental Compliance Strategies
- New Facility/Infrastructure Siting
- Consider Renewable Energy
- Reliability Improvements
- Cost Estimating
- Economic Evaluation
- Funding/Phasing/Scheduling Plans
- Create Key Metric (kBtu/SF ?)

# IRA



# Inflation Reduction Act

## Alternative Energy Credits (2022? - ...)

Technology	Base Credit	5x Bonus Credit	Made in USA	Energy Community	Low Income	Range
Solar PV	6%	30%	2%/10%	2%/10%	10%/20%	6%-70%
<b>Ground Source Heat Pump</b>	6%	30%	2%/10%	2%/10%	0%	6%-50%
Microturbine	2%	10%	2%/10%	2%/10%	0%	2%-30%
<b>CHP</b>	6%	30%	2%/10%	2%/10%	0%	6%-50%
Microgrid Controller	6%	30%	2%/10%	2%/10%	0%	6%-50%
Standalone Energy Storage Systems	6%	30%	2%/10%	2%/10%	0%	6%-50%
<b>Thermal Energy Storage Systems</b>	6%	30%	2%/10%	2%/10%	0%	6%-50%

Note: **Blue and Bold** = ITC plus 179D



# Inflation Reduction Act

## Alternative Energy Credits (2022? - ...)

- Normally, when laws come out in August, they apply to January 1 of the following year. However, it appears that the IRA will apply to project started in 2022.
- By April 15 of 2023, the IRS will have the forms needed to file the ITC and 179D deductions under the IRA. Only then will we know what the IRS Guidelines are.



## Alternative Energy Credits - Bonus

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- 5 Times Bonus ( $6\% \times 5 = 30\%$ )
  - Project with a Net Output of less than 1 MW (284 tons?), or
  - Meets the Prevailing Wage and Apprenticeship (P+A) Requirement, or
  - Projects that begin Construction prior to release of P+A guidance (+60 days)
  
- Domestic Content Bonus (Qualified Facility)
  - 40% of the cost of steel, iron or manufactured product is produced in USA
  - If not qualified, then 2% Bonus ( $6\% + 2\% = 8\%$ )
  - If project meets 5x Bonus requirements, 10% Bonus ( $30\% + 10\% = 40\%$ )

Note: Apprenticeships must be 15% of labor force and be part of a registered program.



# Alternative Energy Credits - Bonus

## ➤ **Energy Community Bonus**

- Brownfield Site, or
  - Area with 0.17% direct employment related to Coal, Oil, or Ngas and higher than average unemployment, or
  - Area with 25% tax revenue related to Coal, Oil, or NGas and higher than avg unemployment, or
  - Census tract or adjoining tract with a Coal Mine closed since 2000, or
  - Census tract or adjoining tract with Coal Fired plant closed since 2010
- 2% Bonus (6% + 2% = 8%)
- If project meets 5x Bonus requirements, 10% Bonus (30% + 10% = 40% + 10% Domestic = 50%)

## ➤ **Low Income**

- Low-income Community or Indian Land 10% Bonus (2023 & 2024)
- Qualified Low-Income (QLI) Residential Building or QLI Economic Benefit Project 20% Bonus (2023 & 2024)



## Alternative Energy Credits (continued)

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- **Tax credit from Commercial Clients can be Transferred to other Commercial Clients**
  - Sec 6418 (2023-...)
  - If credit receiver does not have a tax capacity, then they can sell the credit to a taxpayer that does
  - Our understanding is this does NOT allow Gov't Buildings/Not-for-Profits to sell the credit
  
- **Elective Payment of Applicable Credits**
  - Some Gov't and Not-for-Profit can benefit from the credit
  - ...any organization exempt from the tax imposed by subtitle A,
  - ...any State or political subdivision thereof,
  - ...any corporation operating on a cooperative basis that is engaged in furnishing electric energy to persons in rural areas

On-Bill Funding

PACE Financing

Equipment Supplier

Port Authority Financing

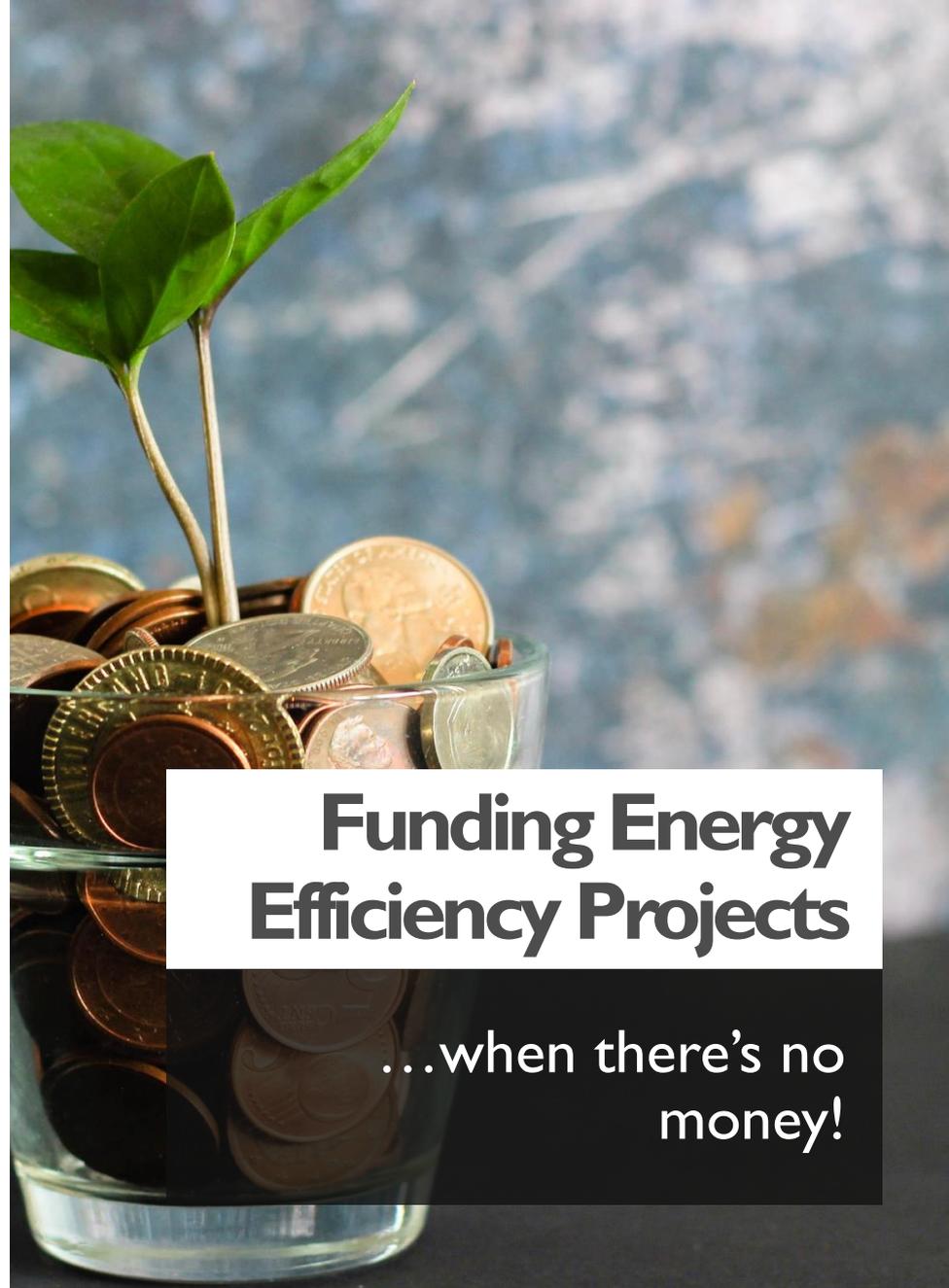
ODSA Grant & Loan Funding

Power Purchase Agreements

Capital Lease

Operating Lease

Commercial Loan



## Funding Energy Efficiency Projects

...when there's no money!



# Questions?



Tom Sherman, *CEM, CEA, CDSM, CCASS*  
*President*

440-773-5044

Tom@sustainable-energy-services.com

# Our Energy Management Services

- ✓ Energy Procurement (competitive RFP process)
- ✓ ASHRAE Level 1, 2 and 3 Energy Audits (Level 2 required for outside financing)
- ✓ Demand Response Related Planning, Engineering
- ✓ Energy Efficiency Financing
- ✓ IRS 179d deduction analysis for energy efficiency
- ✓ Tariff Analysis
- ✓ Energy Efficiency Engineering & Project Management
- ✓ Post Project Measurement & Verification
- ✓ Utility Rebates
- ✓ Energy Tracking
- ✓ Energy Modeling
- ✓ Multi-Variable Regression Analysis
- ✓ Power Quality Analysis
- ✓ Lighting Analysis
- ✓ Motor Analysis
- ✓ Compressed Air Analysis



# Sustainable Energy Services

## Company Overview

Sustainable Energy Services was founded as one of the first energy consulting firms to combine energy purchasing and energy efficiency services. As a nationally certified woman-owned company, SES acts as an owner's advocate in all energy matters for customers in diverse industries, from manufacturing and retail to healthcare and education, as well as cities and public entities.

The energy specialists at SES are experts in executing customizable solutions to complex energy problems, drawing on 50+ years of energy consulting and engineering experience. The managing partners have shared their expertise as regular speakers at national and regional conferences including the AEE World Energy Conference, AEE East/West Conference, and the Ohio Energy Conference. SES is a registered Trade Ally to all major utilities in Ohio.

The SES managing partners are certified by the PUCO for Electric and Natural Gas, by the Association of Energy Engineers and the Compressed Air & Gas Institute:

- C.E.M. (Certified Energy Manager)
- C.E.A. (Certified Energy Auditor)
- C.E.P. (Certified Energy Procurement Professional)
- C.D.S.M. (Certified Demand Side Manager)
- C.C.A.S.S. (Certified Compressed Air System Specialist)



# Block and Index Structure

