In conjunction with TURI & Office of Technical Assistance

POWERPLAY ENERGY GROUP

Energy Intelligence for Massachusetts Manufacturers

Turning Utility Data Into Cost Savings, Resilience, & Sustainability

Is your facility currently on a competitive electricity supply contract?

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Yes	No	Not Sure
Active Procurement	Utility Default Supply or Town/City Aggregation	Unmanaged Risk

Only by knowing your baseline can you begin to manage the hidden costs within your facility's profile.

Supply – Three Options for Customers

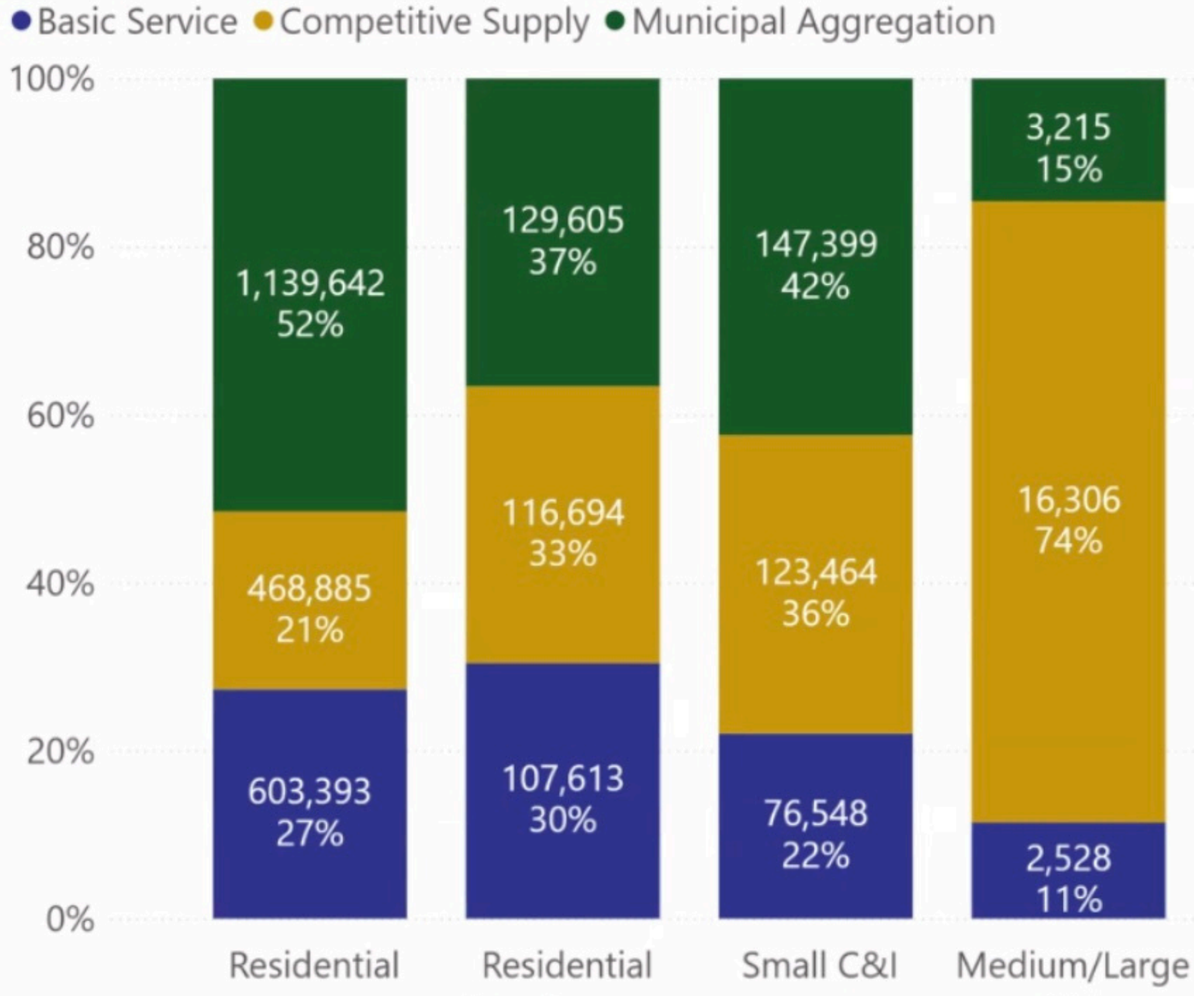
Basic Service: EDC procures power on behalf of customers through periodic competitive solicitations

- price changes every 6 months for residential customers.
- DPU approves the rate

Municipal Aggregation: municipality contracts with a supplier on behalf of constituents

- Contracts of 1-3 years
- Price often slightly lower than Basic Service, but savings are not guaranteed
- DPU regulates muni aggs but does not dictate contracts

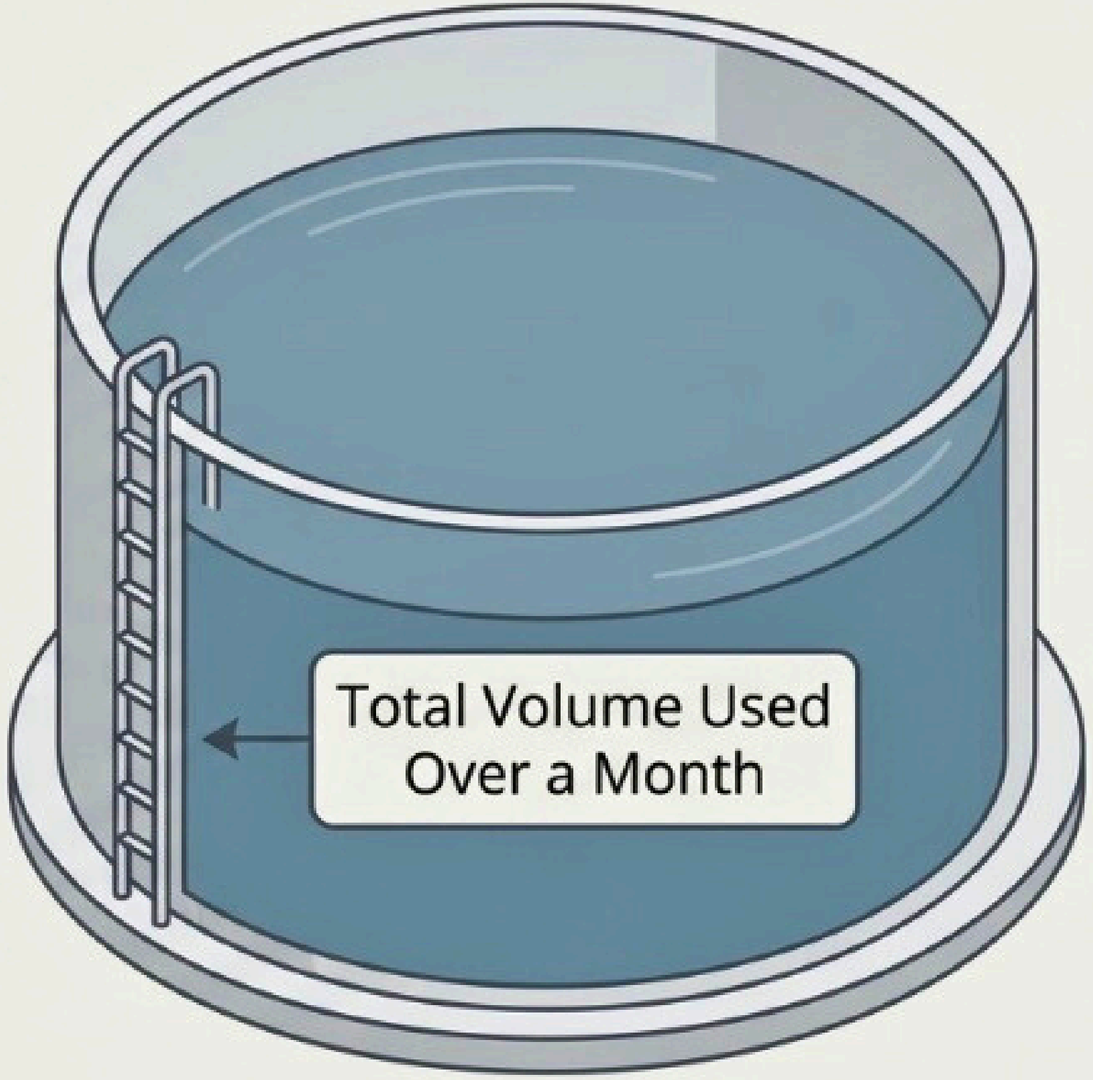
Competitive Supply: customer contracts directly with a third-party supplier



Understanding Consumption: Kilowatt Hours (kWh)

Kilowatt Hour (kWh) represents the absolute total amount of electricity consumed by your facility.

Insight: This metric drives the baseline energy (supply) portion of your electric bill.

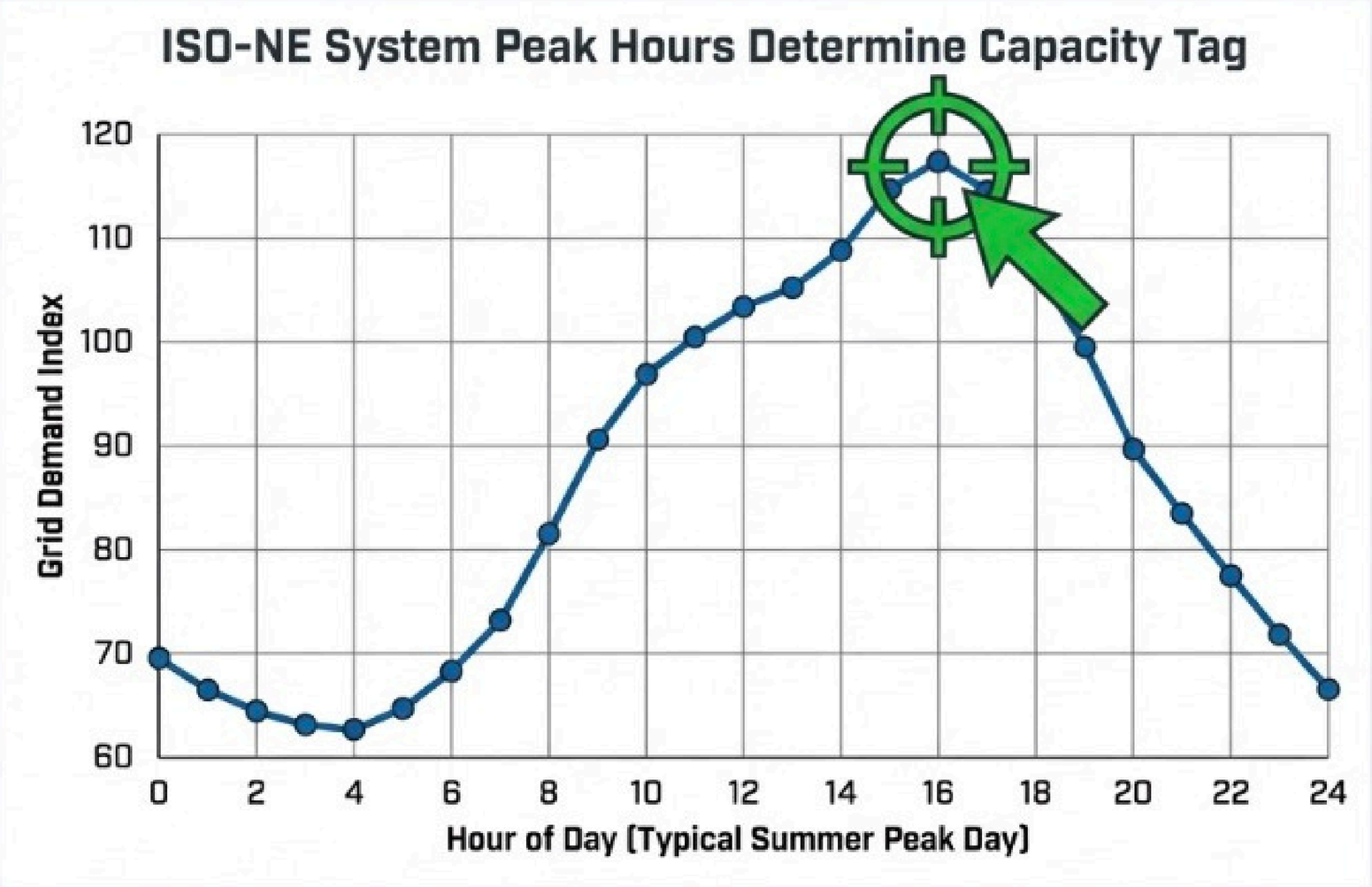


Understanding Demand: Kilowatts (kW)

Demand (kW) is the highest 15-minute usage spike your facility hits during a billing period. Utilities must build permanent infrastructure to support this temporary peak.

Critical Insight: For many manufacturers, Demand charges make up 30–70% of the entire electric bill.

How the Capacity Tag is Set (ISO-NE 5 Coincident Peaks)



1. ISO-New England identifies the 5 highest demand hours across the entire grid each summer.
2. Your facility's exact demand during those specific hours is recorded.
3. The average of those 5 hours becomes your **Capacity Tag** (PLC).

That single number dictates your capacity charges for the entire following year.

The Financial Mathematics of a Single Hour

The Scenario: One high demand hour impacts electricity costs for an entire year.

Capacity Tag: **500 kW**

Capacity Price: $7 per kW per month

Annual Cost: 500 kW × $7 × 12 months = $42,000

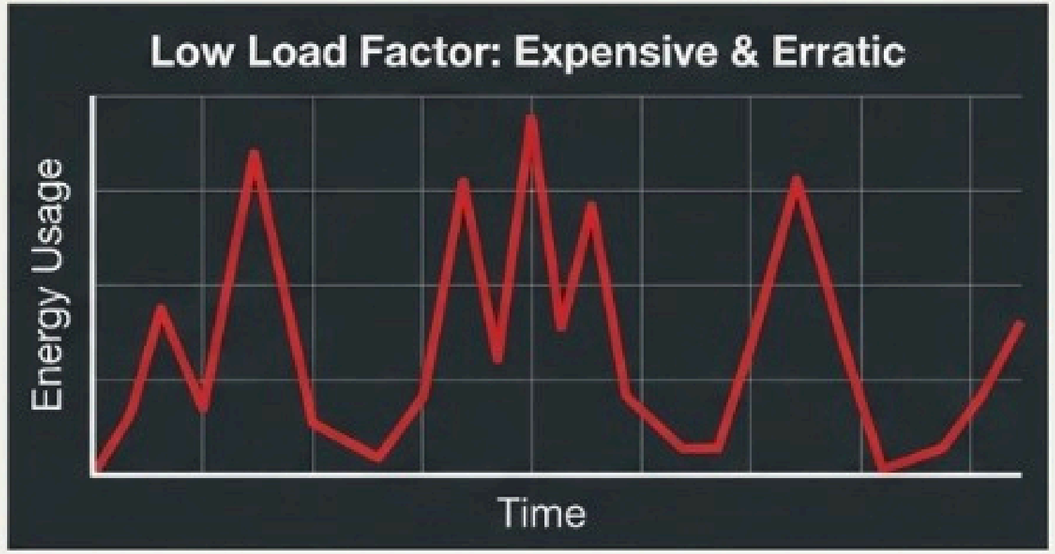
The Opportunity: Shedding just 100kW of demand during a peak grid event drops next year's capacity costs by **$8,400**.

The Efficiency Multiplier: Load Factor

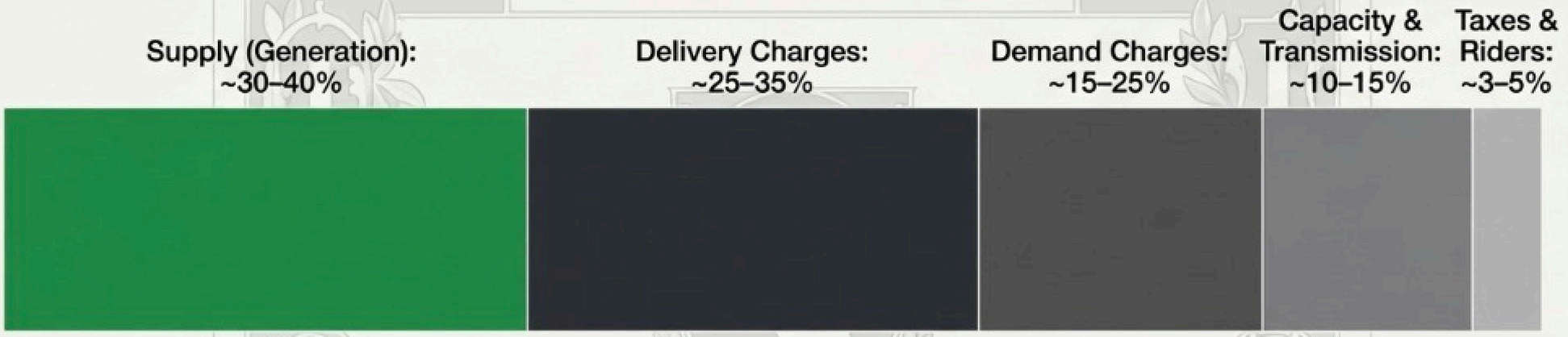
Load Factor measures how efficiently a facility uses its electricity infrastructure. Higher load factors equal smoother operations and lower proportional costs.

$$\left[\begin{matrix}\textbf{Average}\\\textbf{Load}\end{matrix}\right] \div \left[\begin{matrix}\textbf{Peak}\\\textbf{Demand}\end{matrix}\right] = \begin{matrix}\textbf{Load}\\\textbf{Factor}\end{matrix}$$

Example: A 100kW Peak with a 50kW average yields a 50% Load Factor.



Where the Manufacturing Electric Bill Actually Goes



The Pressure

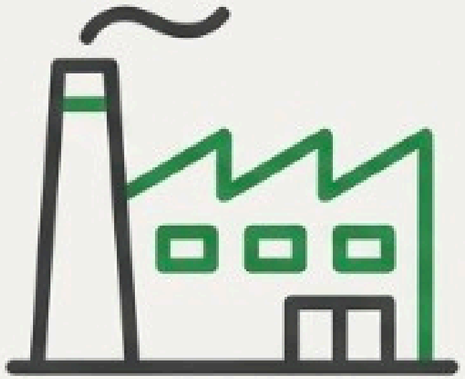
Manufacturers face a dual threat: volatile wholesale energy markets and increasing sustainability pressures. Navigating complex utility tariffs is almost impossible without specialized tools.

The Opportunity

Most facilities have massive untapped savings and CO2 reductions hidden inside their raw energy data, waiting to be unlocked.

Case Study I: Procurement Strategy in Plastics

The Facility Profile



150,000 sq. ft. plastics manufacturer.

Challenges:

- Crippled by volatile market costs
- Overwhelming 'broker noise' without strategy

The Catalyst: PPEG Actions

1. Executed a full usage and load profile analysis.
2. Identified exact peak demand exposure points.
3. Ran a structured RFP with 12 distinct suppliers.
4. Built a transparent pricing comparison model to implement a blended strategy.

Case Study I: The Impact

$142,000

Annual Energy Savings

Rate secured 18% below renewal offer.

1,200

Metric tons of CO2 reduced annually

50% renewable energy credits added to the portfolio.

"PPEG didn't just get us a lower rate — they gave us clarity and a strategy." — Client Feedback

Decoding the Anatomy of a Utility Bill

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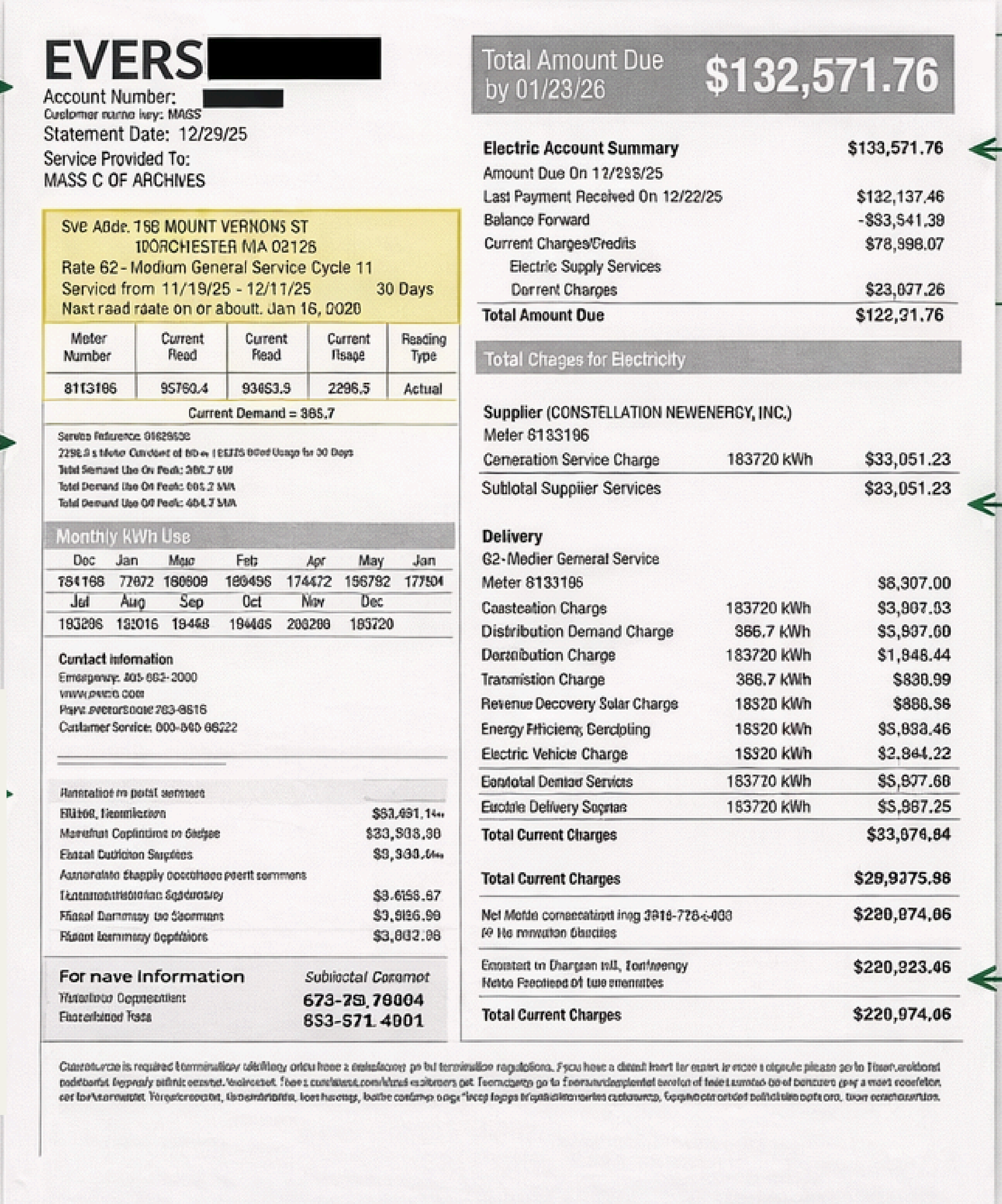
Rate Class Verification & Capacity Exposure

Verify rate type, capacity limits, and billing setup

15-Minute Demand Spikes & Load Profile Anomalies

Analyze spikes impacting your facility's peak demand costs



EVERS[redacted]
Account Number: [redacted]
Statement Date: 12/29/25
Service Provided To:
MASS C OF ARCHIVES
Sve Addr. 156 MOUNT VERNONS ST
1DORCHESTER MA 02126
Rate 62 - Modium General Service Cycle 11
Serviced from 11/19/25 - 12/11/25 30 Days
Meter Number
Current Read
Current Read
Reading Type
8113166
95760.4
93653.9
2296.5
Actual
Current Demand = 365.7
Monthly KWh Use
Doc Jan Feb Apr May Jan
184168 72672 180609 186496 174472 156792 177504
Jul Aug Sep Oct Nov Dec
183296 182016 19468 194466 208208 183720
Contact information
Emergency: 805-662-2000
For nave Information
673-75,78004
653-571 4001
Total Amount Due by 01/23/26 $132,571.76
Electric Account Summary $133,571.76
Amount Due On 12/283/25
Last Payment Received On 12/22/25 $132,137.46
Balance Forward -$83,541.39
Current Charges/Credits $78,998.07
Electric Supply Services
Current Charges $23,077.26
Total Amount Due $122,31.76
Total Chages for Electricity
Supplier (CONSTELLATION NEWENERGY, INC.)
Meter 8133196
Generation Service Charge 183720 kWh $33,051.23
Subtotal Supplier Services $23,051.23
Delivery
G2-Medier General Service
Meter 8133196 $8,307.00
Distribution Demand Charge 366.7 kWh $5,907.00
Transmistion Charge 366.7 kWh $830.99
Electric Vehicle Charge 18320 kWh $2,844.22
Total Current Charges $33,074.84
Total Current Charges $29,9375.98
$220,974.06
$220,923.46
Total Current Charges $220,974.06

Total Cost Due

Spot chack trends & confirm payment due dates

The Actual Ratio of Supply vs. Delivery Costs

Understand how much goes to energy supply vs. utility grid delivery

Hidden Operational Inefficiencies & Direct Tax/Incentive Opportunities

The Metrics

The Players	Usage (Volume)	Demand (Speed)
Supply	**$33,051.23** (183,720 kWh × 0.17990). Constellation bills you entirely on volume.	**$0.00** The supplier does not care about your peak draw.
Delivery	**~$7,548.51** Eversource charges a smaller fraction for the volume of energy moved (Distribution charge + efficiency riders).	**$13,375.95** (386.7 kW x Distribution/Transmission rates). Eversource heavily taxes your peak surge.

Supply Charges (183,720 kWh @ 0.17990): $33,051.23
Supply Demand Charge:
Delivery Usage Charges: ~$7,548.51
Eversource Demand Charges (386.7 kW): $13,375.9

$0.00
$0:00

Synthesis Takeaway: The structural flaw in most energy strategies is focusing only on the Supplier rate (Top Left). Over $13,000 of your bill is hiding in the Bottom Right quadrant—a pure infrastructure penalty that a supplier contract cannot fix.

The Anatomy of Delivery Charges

Deconstructing Eversource's $20,924.46 assessment.

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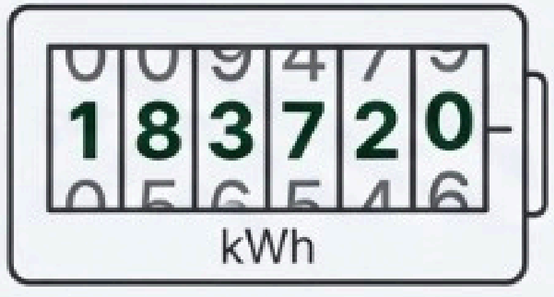
Major Hitters

Over 63% of your delivery cost ($13.3k) is driven purely by 'Demand'—a specific metric that operates entirely differently than your total volume usage.

Minor Riders & Adjustments: Net Meter Recovery ($1,642.46) · Distributed Solar ($439.09) · Electric Vehicle Program ($244.35) · Renewable Energy ($91.86) · Customer Charge ($27.00) · Transition & Decoupling Credits (-$260.88)

Usage (kWh)



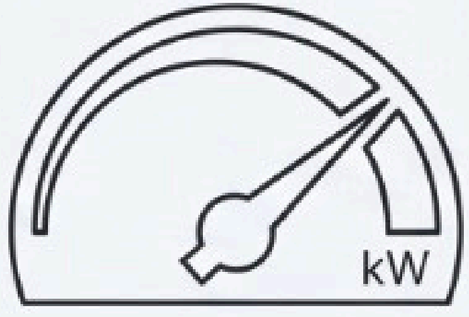
183,720 kWh

December Billed Usage

The total volume of energy consumed over the entire 30-day billing period.

Analogy: How many total miles you drove this month.

Demand (kW)



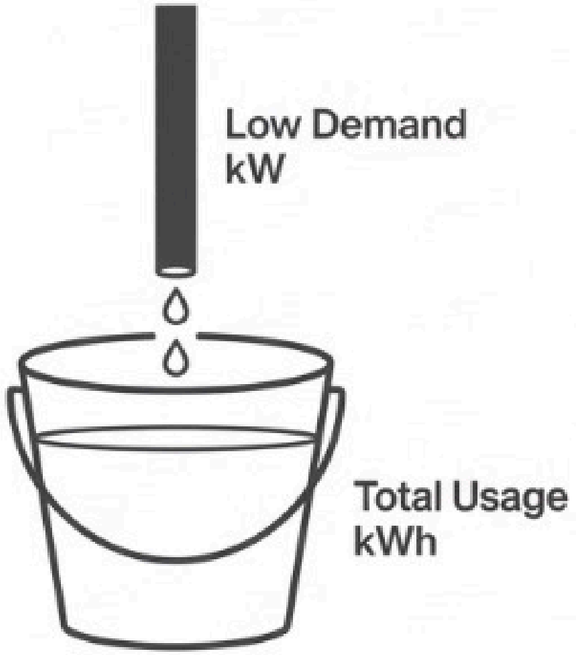
386.7 kW

Current Peak Demand

The single highest rate of energy flow required by your facility at any given 15-minute interval during the month.

Analogy: The fastest speed you hit, even if only for a moment.

The Pipe and Bucket: Understanding Demand Charges



Facility A: Steady Operations. Draws a small amount of power continuously all month. Requires small, inexpensive grid infrastructure (transformers, wires).

Facility B (Your Reality): Peaking Operations. Turns on heavy machinery simultaneously. Uses the exact same total energy, but requires Eversource to build massive, expensive infrastructure to handle the sudden surge.

Insight

Demand charges are how the utility penalizes facilities that require them to maintain oversized grid capacity. You pay for the width of the pipe, not just the water.

The Bill Fluency Matrix: Identifying Your Financial Levers

Bill Component	Billed Unit (The Physics)	How to Control It
Raw Energy Generation (Supply)	**kWh** (Odometer / Total Volume)	Negotiate lower third-party rates; implement LED retrofits; reduce operational hours.
Grid Maintenance & State Policies (Delivery)	**kWh** (Odometer / Total Volume)	Improve baseline building efficiency.
Peak Grid Capacity (Delivery)	**kW** (Speedometer / Peak Spike)	Stagger heavy equipment startups; install smart building controls; utilize battery storage to shave peaks.

Insight:

- **Supply** is a pricing strategy decision.
- **Delivery** is an operational behavior problem.
- **Peak demand** is where the largest savings opportunity lives.

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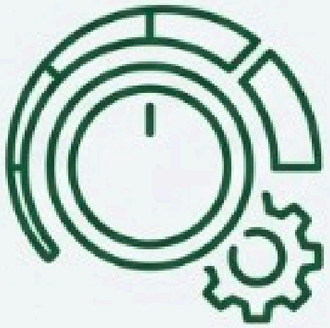
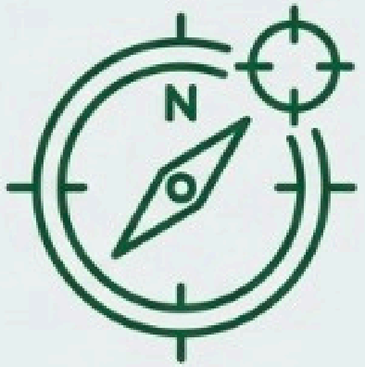
Optimize the Left Side (Usage)

Because Supply costs ($33k) are 100% Usage-driven, PowerPlay audits your load profile to aggressively negotiate a lower per-kWh rate with Constellation or competing suppliers.



Optimize the Right Side (Demand)

Because Delivery costs are heavily Demand-driven ($13k penalty), PowerPlay engineering teams identify peak-shaving opportunities—staggering equipment start-ups to lower your maximum kW draw.



Holistic Bill Management

We don't just broker power. We manage the entire 2x2 matrix, actively auditing both deregulated supply contracts and regulated utility tariffs to protect your bottom line.

Unlocking the Massachusetts Energy Sales Tax Exemption

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The Rule

Facilities qualify for exemption if >75% of energy is used directly in the manufacturing process.

(Applies universally to Electricity, Natural Gas, and Steam)

The Math

On a typical $1,000,000 annual energy spend, eliminating the 6.25% tax instantly yields $62,500 in direct annual savings.

The Lookback Catalyst

Facilities can legally recoup back-credits for the preceding 24 months—often returning $125,000 in immediate, unbudgeted capital.

Community Shared Solar: Resource Conservation + ESG Strategy for TURA Facilities

Community Shared Solar enables facilities to aggressively reduce Scope 2 emissions and lower energy costs without the need for on-site solar installation. It acts as a highly scalable, zero-capital resource conservation strategy that seamlessly integrates into existing utility accounts.

TURA Alignment (Resource Conservation)

- Reduces reliance on fossil-fuel-generated electricity (indirect emissions reduction).
- Supports resource conservation planning (energy is a recognized TURA asset).
- Requires zero operational disruption and zero upfront capital investment.
- Directly supports state decarbonization mandates and MA 2050 goals.

Strategic Anchor Partnership

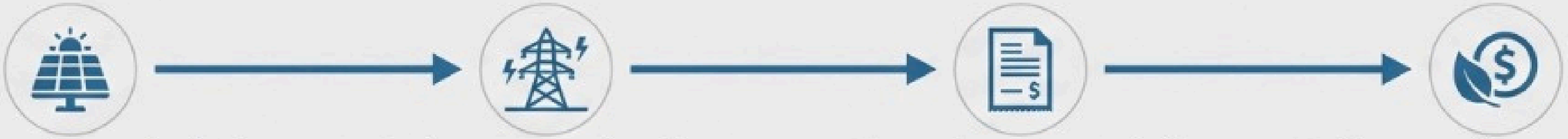
- **Target:** Ideal for facilities using ~1,000,000+ kWh annually.
- **Scale:** Larger allocations drive greater emissions impact and cost reduction.
- **Stability:** Long-term participation (~20 years) ensures reporting consistency.

ESG + Business Value

- Provides direct Scope 2 emissions reduction via clean energy sourcing.
- Strengthens annual ESG reporting and corporate sustainability disclosures.
- Demonstrates measurable, transparent environmental action to stakeholders and investors.
- Delivers predictable energy cost savings (~5–10% on total electric bill).

How It Works:

Process Flow: Zero-Friction Clean Energy Sourcing



Facility subscribes to a local solar farm (no equipment installed).

Project generates electricity, sending credits to the utility.

Solar credits are automatically applied to the facility's electric bill.

Facility pays a discounted rate for credits, yielding net savings

Top 5 Energy Traps for Massachusetts Manufacturers

Common Blindspots	The Integrated Strategy
Focusing solely on supply rates	Managing demand and delivery multipliers
Blindness to load profiles	Eliminating invisible 15-minute demand spikes
Accepting default tax status	Capturing massive manufacturing sales tax exemptions
Operating with outdated controls	Upgrading hardware to run efficiently by default
Siloed thinking for budgets	Integrating procurement, efficiency, and power quality

The Biggest Insight: Facilities that integrate all domains unlock the largest compound savings.

The New Standard for Manufacturing Energy

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01

Look Beyond the Supply Rate.

Real strategy and massive capital recovery happen in the demand, delivery, and tax layers of your profile.

02

Quality Drives Cost.

Operational efficiency and power quality (voltage optimization) are not just maintenance issues—they are your highest-yield financial levers.

03

Integration is Mandatory.

Siloed approaches leak capital. Deep data analysis combined with an integrated operational and procurement strategy unlocks the largest compound results for your facility and the environment.

The Planner's Mandate

Reduce operational consumption and improve facility performance.

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THE BLIND SPOT

Traditional conservation focuses on usage *(turning things off, using less)*.

This ignores **phantom costs** flowing through the meter, including:

- **Aerated volume in water systems** (paying for *air, not actual water*)
- **Heat-generating harmonic distortion** (silent energy waste & added cooling load)
- **System inefficiencies embedded in infrastructure** (pumps, HVAC, compressors, etc.)

Shift from **Usage Reduction** to **System Optimization**

THE SOLUTION

Intervene at the source to eliminate invisible waste before it impacts facility performance.

True conservation requires addressing **structural inefficiencies within the energy supply system**, not just reducing usage.

Insight: Most facilities are optimizing behavior.
The real opportunity is optimizing the system behind the meter.

Case Study II: Technical Interventions

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Diagnostic Phase

- 24 months of historical utility data analysis
- +
- 15-minute demand interval mapping
- +
- Physical facility motor inventory

Hardware Deployments

- LED high-bay lighting & Variable Frequency Drives (VFDs).
- Load balancing controls to flatten demand spikes.
- **Powerhouse Voltage Recycling System:** Installed for precise voltage stabilization, harmonic mitigation, and drastically improved motor performance.

Case Study II: The Transformation

Usage Reduction

32% reduction in total energy usage

~12% reduction in peak demand charges

Financial Return

$140,000+ in pure annual cost savings

$85,000 captured in direct utility incentives

Environmental Impact

4,200 metric tons of CO2 permanently eliminated annually.

Business Case

22–26 month total project ROI.

Case Study III: Intelligent Water Conservation

The Challenge

A mid-sized MA facility's cooling water system operated at maximum flow 24/7, completely disconnected from actual operational demand. High costs, zero control.

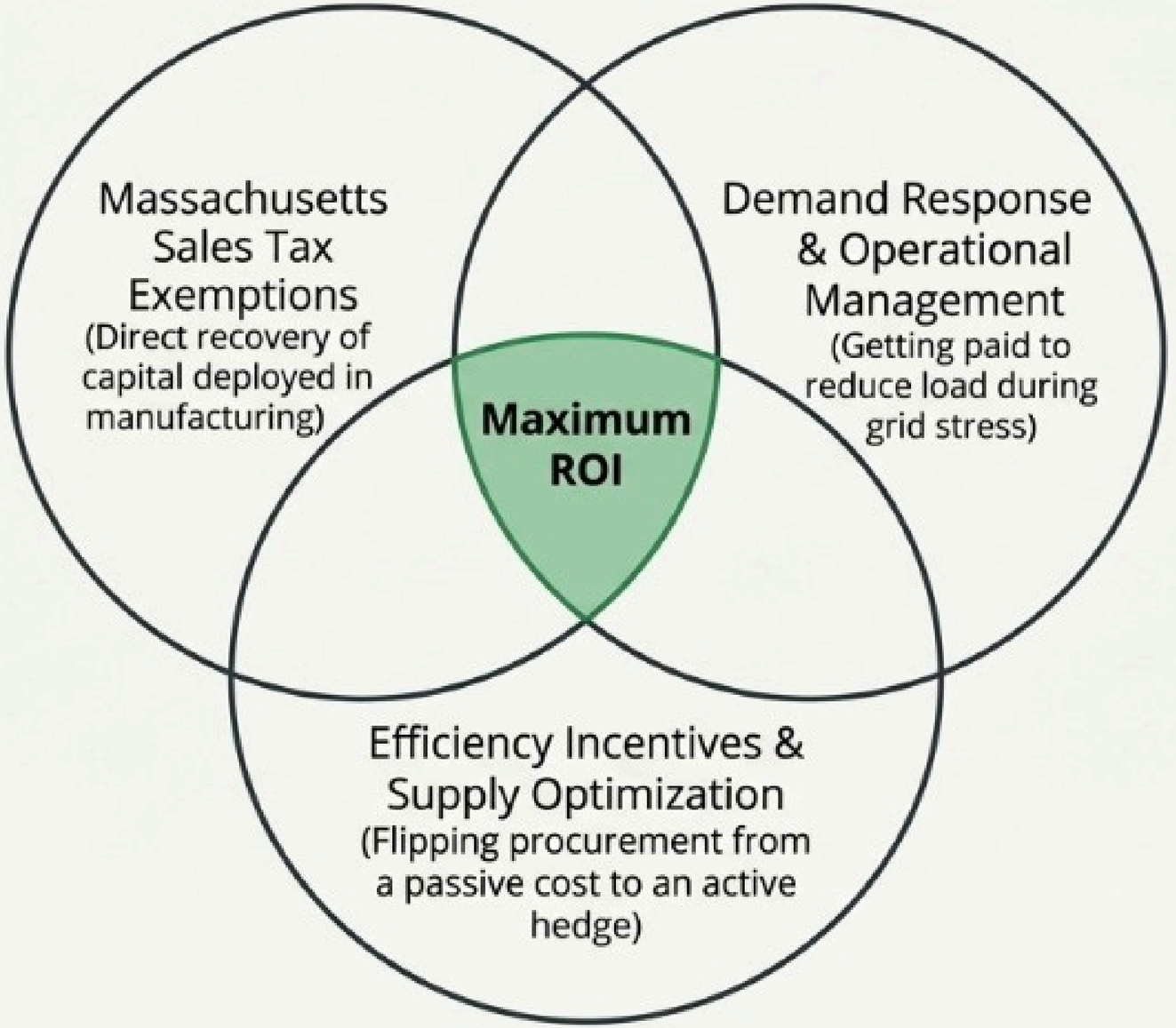
The Solution

Deployed a Flow Dynamics Smart Water Valve system to automatically throttle and adjust water flow in real-time based on actual facility demand.

The Results

- **23% absolute reduction** in water consumption.
- Substantial reduction in pump motor runtime (saving electricity).
- Blistering **11-month project payback**.

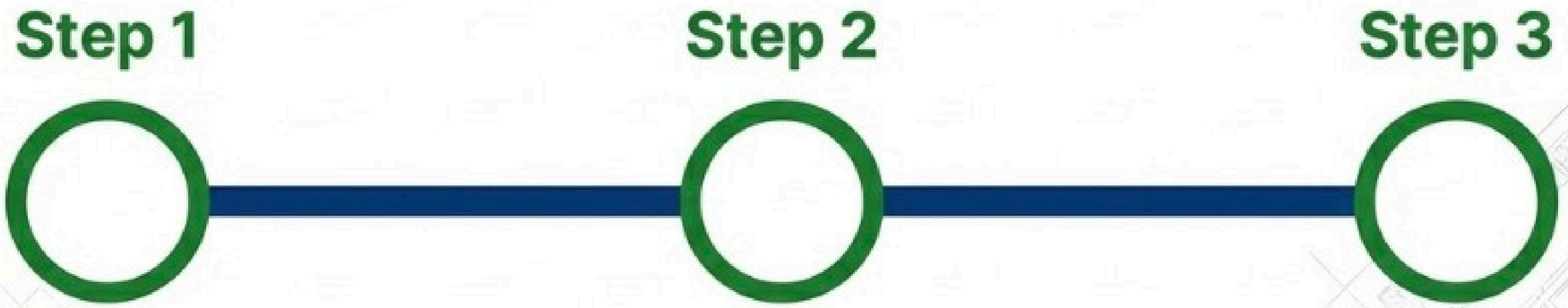
Illuminating Hidden Capital



The Translation Pipeline: Data to Strategy

Next Steps for Planners

A frictionless pathway from assessment to seamless facility integration.



Initial Assessment

Identifying the exact invisible waste points in your specific fluid and electrical infrastructure.

Strategic Consultation

Reviewing the data, prioritizing rapid ROI wins, and aligning on facility conservation goals.

Implementation Plan

Establishing exact timelines and deployment milestones to ensure zero operational disruption.

Financial Friction Removed

Financing options available with zero upfront costs. Full assistance provided in securing energy rebates and federal tax credits.