

# Cost Benefit Analysis of Energy Investments: How to sell the value proposition

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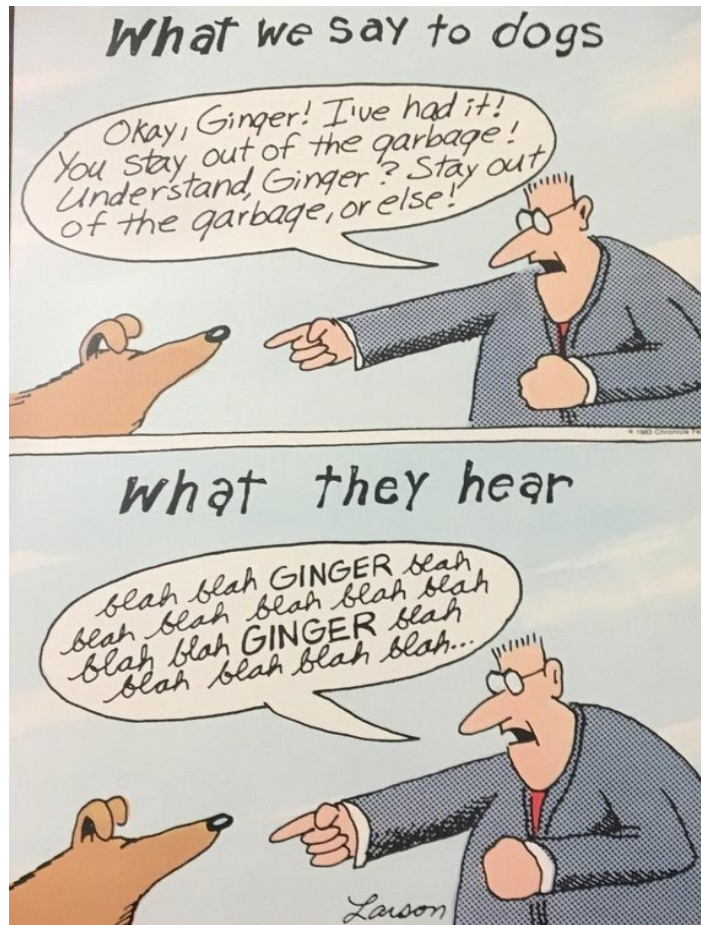
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**nationalgrid**

# Know Your Audience (and their language)



- > Translate from the boiler room to the board room
- > Message at a high-level first, THEN drill into the details
- > Understand organizational “pain points” and be able to position the investment as a solution to address them
- > Develop financial analysis that aligns with organizational decision-making
- > Highlight the non-energy benefits, which may ultimately be the key drivers to get something done

# Issues With Simple Payback

## Project A

Project Cost	\$10K
Annual Savings	\$5K
Equipment Life	3 years

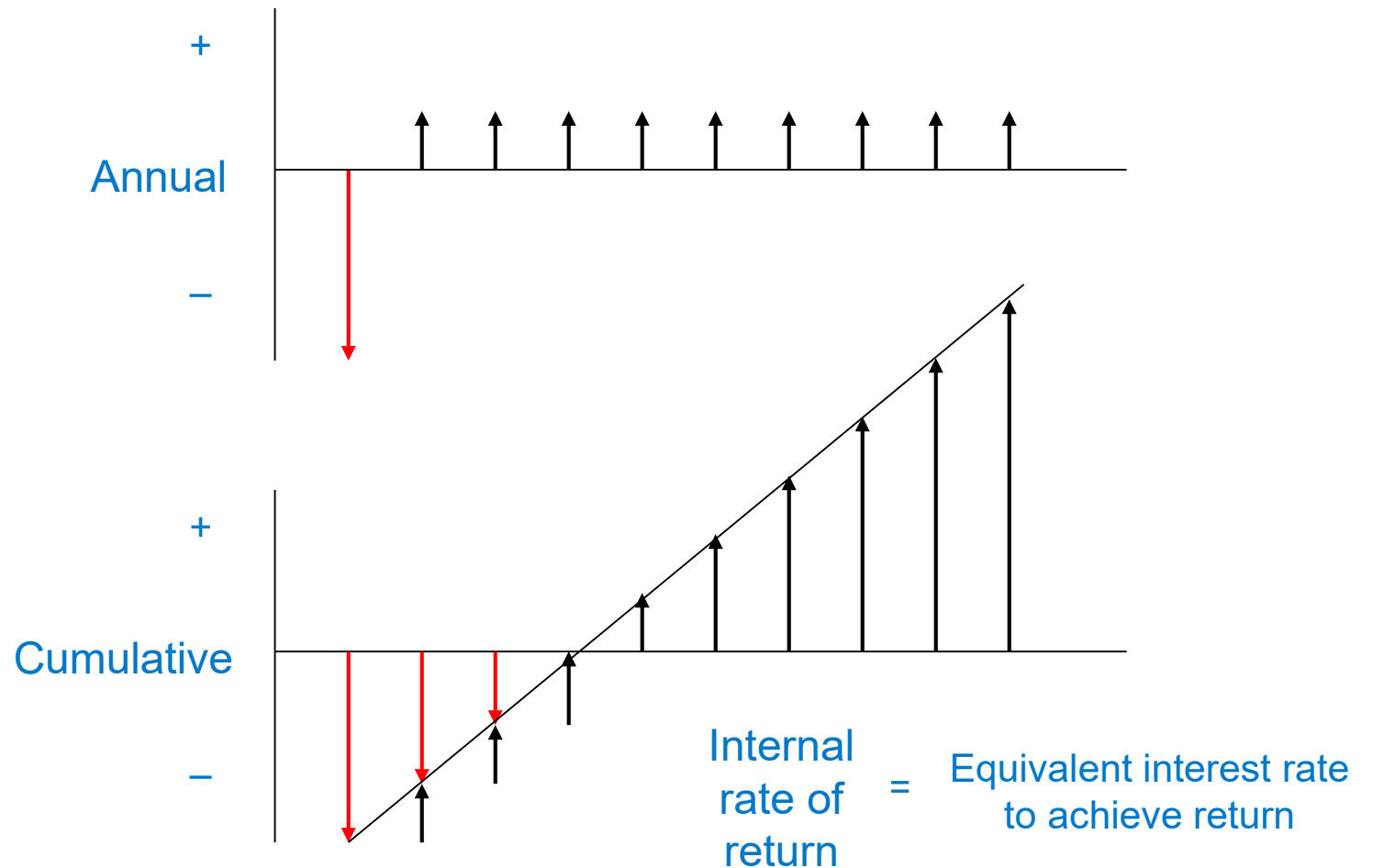
## Project B

Project Cost	\$100K
Annual Savings	\$50K
Equipment Life	15 years

- > Payback period ends...then what?
- > Ignores time value of money
- > Deals with opportunity cost, not financial return on investment
- > Unfortunately it is “simple” so used frequently

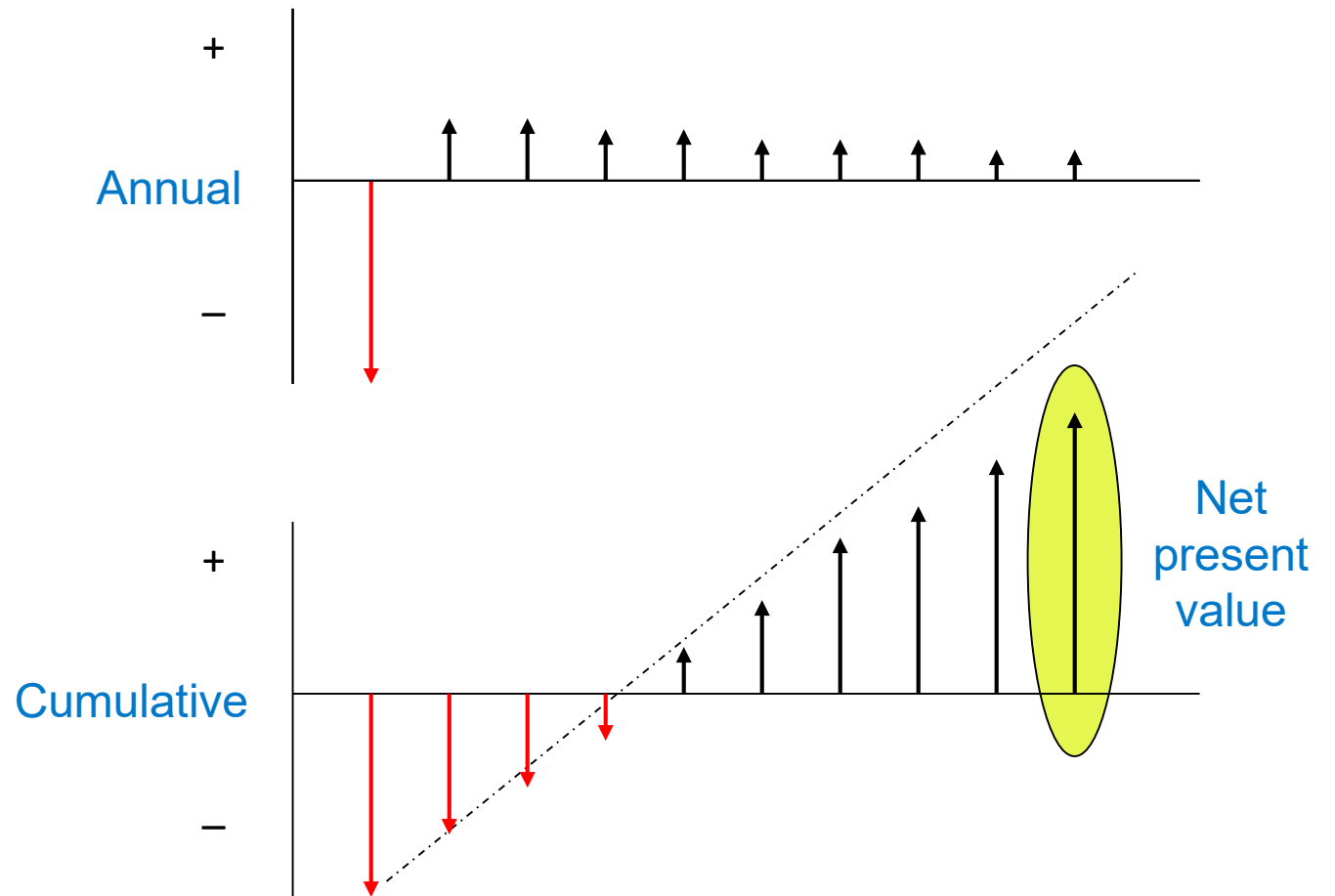
# Cash Flow Analysis

Year	Annual \$	Cumulative \$
0	-\$300K	-\$300K
1	+\$100K	-\$200K
2	+\$100K	-\$100K
3	+\$100K	\$0
4	+\$100K	+\$100K
5	+\$100K	+\$200K
10	+\$100K	+\$700K
15	+\$100K	+\$1.2M



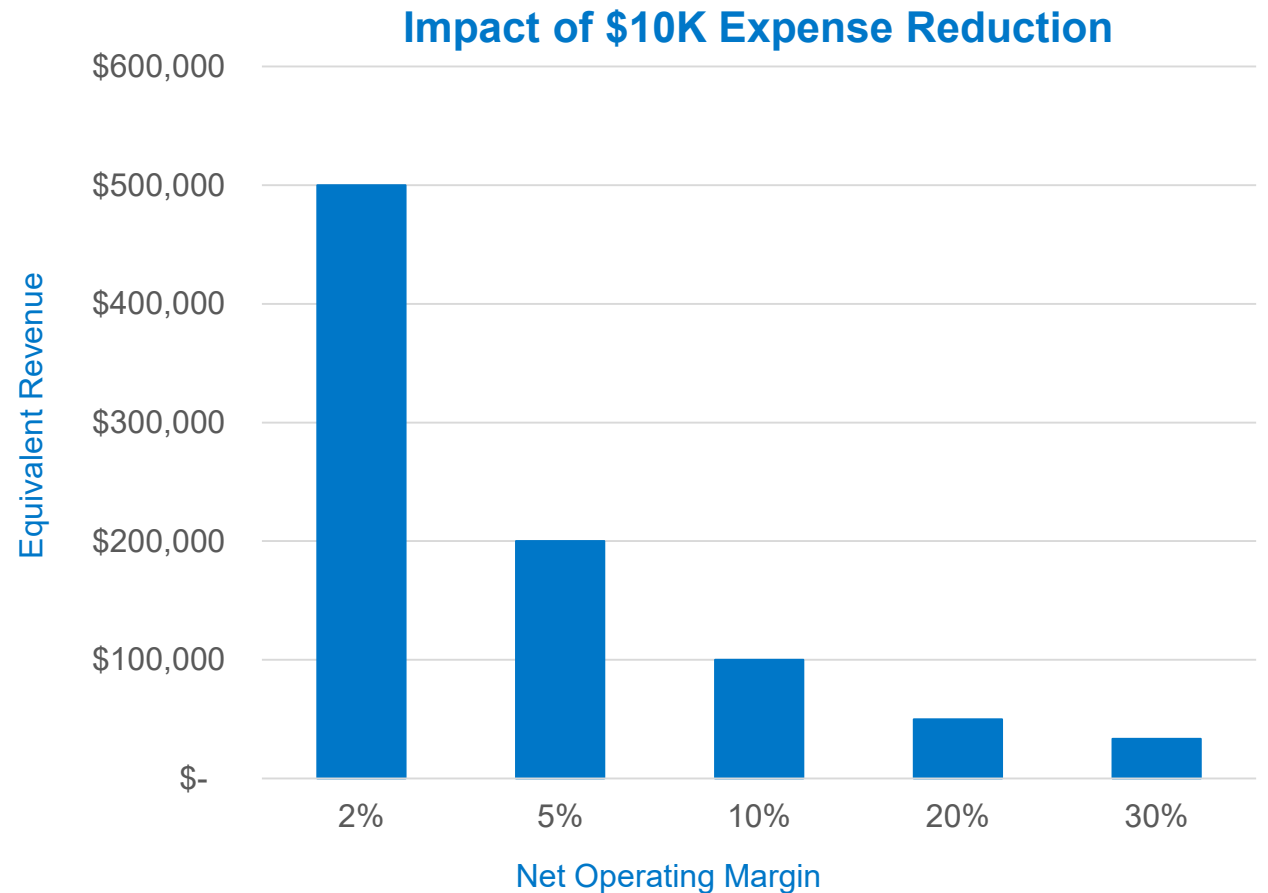
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# Translating into Equivalent Revenue

$$\begin{array}{c} \text{Operating Margin} = \frac{\text{Net Income}}{\text{Revenue}} \\ \downarrow \\ \text{Equivalent Revenue} = \frac{\text{Change in Net Income}}{\text{Operating Margin}} \end{array}$$





# Non-energy Benefits: Solving Real Problems

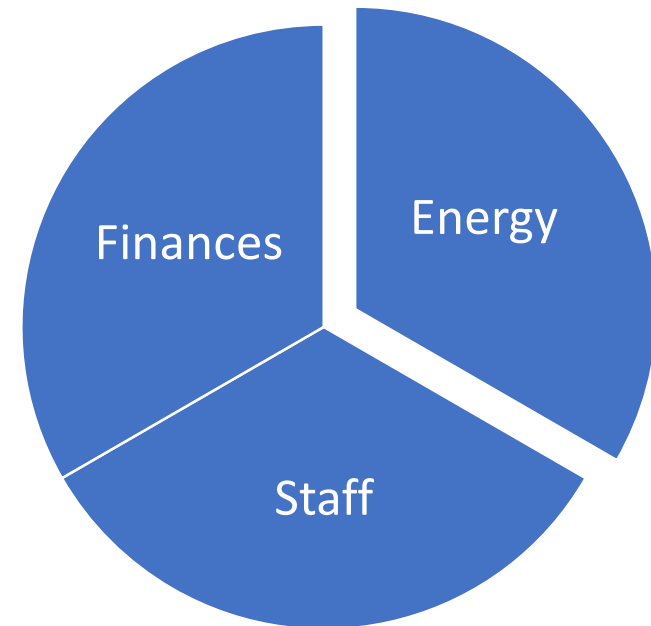
- > Health & Safety
- > Quality & Productivity
- > Reduce O&M Costs
- > Aesthetics & Comfort
- > Better Controls & Feedback
- > Reduce Environmental Impacts



# How NYSERDA Can Help With Your Energy Strategy

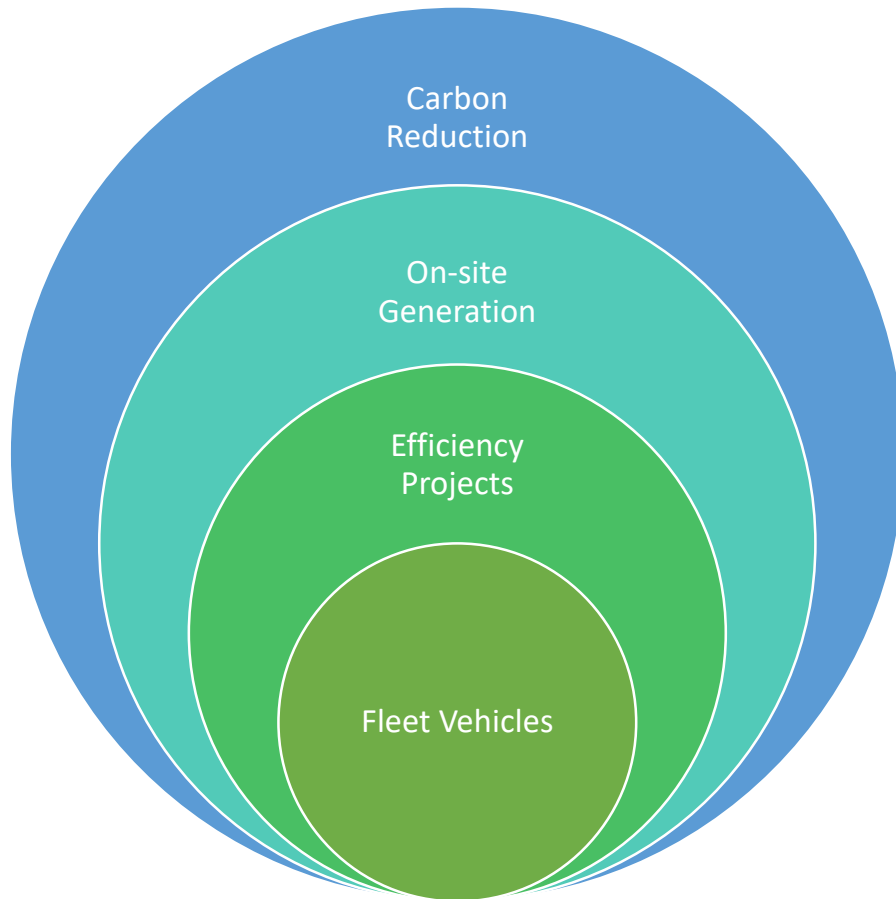
What we'll look at:

- > Large Innovative Projects
- > On-site Personnel
- > Managing Your Energy in Your Business
- > Answer Your Energy Questions





# C&I Carbon Challenge



## Program Goal:

Cost-effective carbon emission reduction

## Benefits

- \$15 million available, awards range from \$500,000-\$5 million
- **One-stop shop** for NYSERDA Incentives
- **Phased Payments** to match expenditures

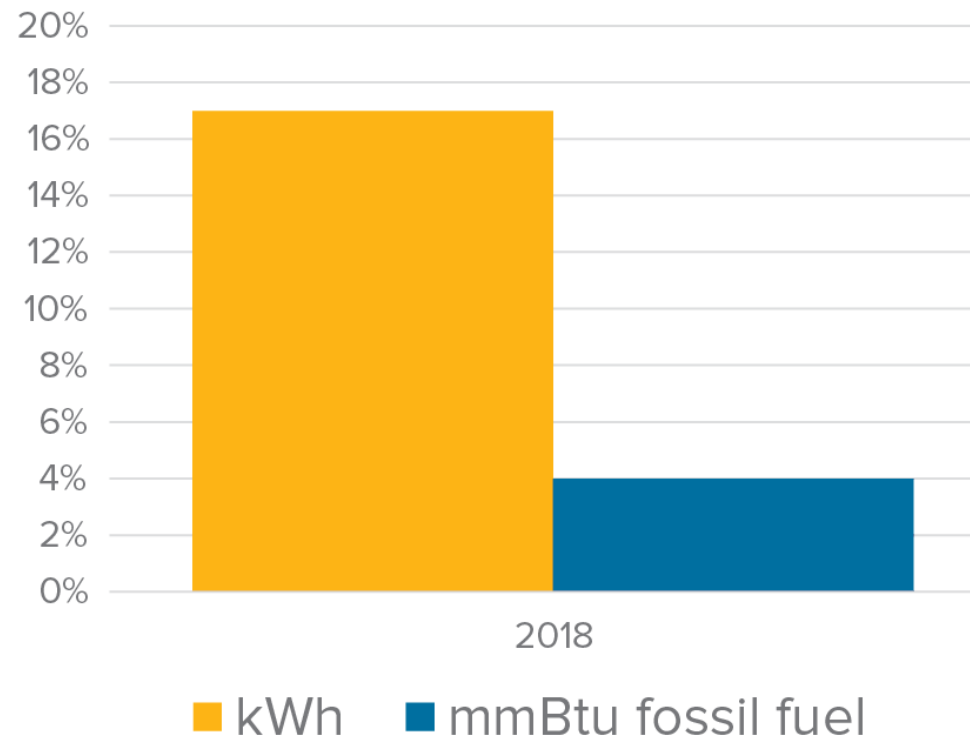
Bring us your best ideas!

# On-site Energy Manager

*Made us think differently, understand the cost of wasted energy and where the waste is. It is hard to quantify the unseen waste.*

*The program was inexpensive and we dropped a full megawatt in usage, about 50% more than we were anticipating, while we maintained output or increased it slightly.*

## Percent Savings for Installed ECMs Relative to Baseline Energy Use



## Benefits

- 75% cost share for On-Site Energy Manager
- A **dedicated employee** focusing on energy savings and **reducing** operational costs
- Creation of an **Energy Management Plan** to target and achieve goals specific to your facility

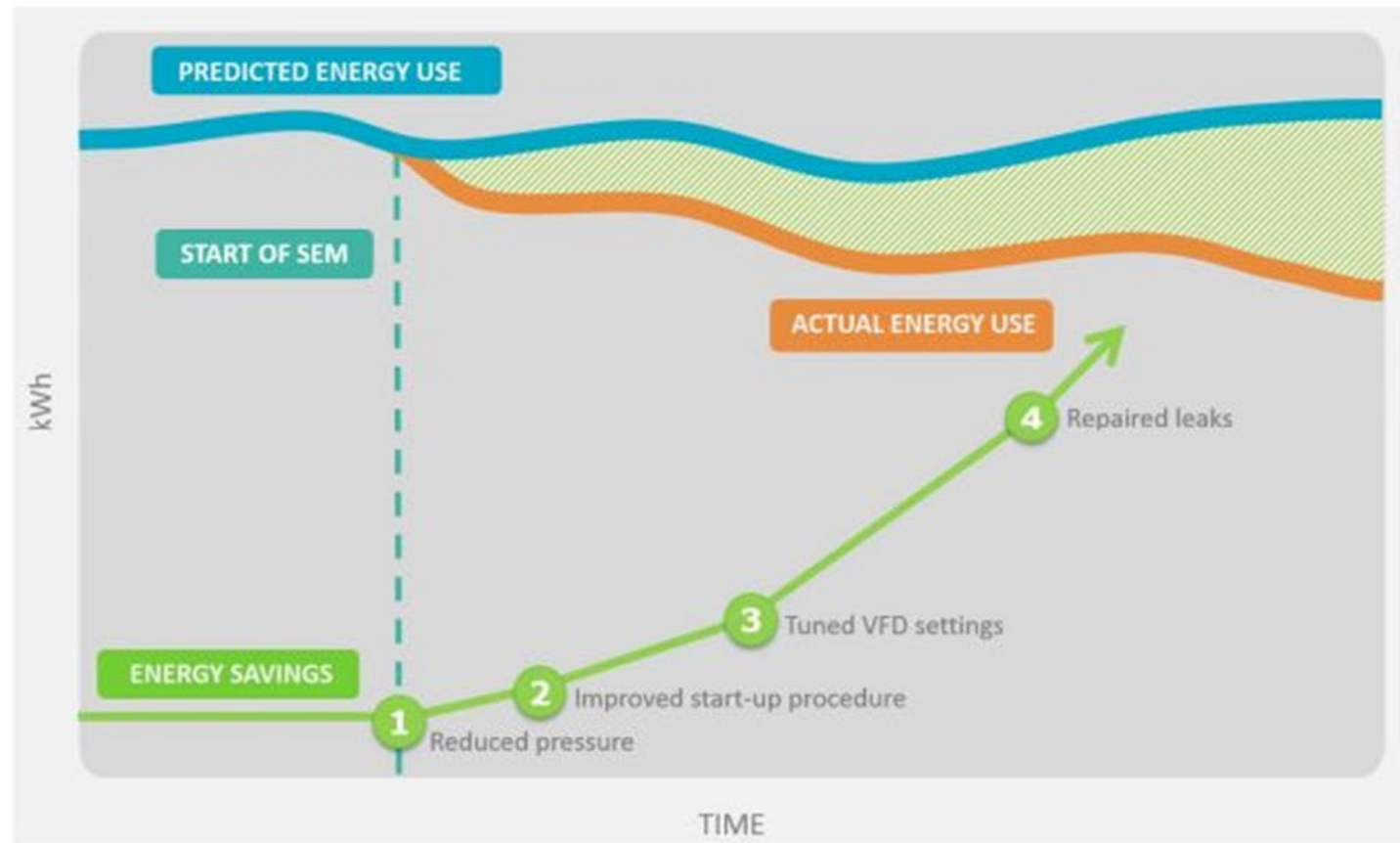
# Continuous Energy Improvement

## Programs

- Strategic Energy Management
- ISO 50001-Ready
- Real Time Energy Management

## Benefits

- A **systematic approach** to energy savings
- Provides **Continual monitoring** of energy use to ensure **persistence**
- **Teaches** co-workers to **identify** and **quantify** energy-saving opportunities
- Sets up **data review** and **reporting systems** to support lasting change



# Flexible Technical Assistance

Is a clean energy  
project right for  
you?

How to reduce  
energy bills

Payback on  
potential energy-  
related projects or  
building upgrades

Investigate  
distributed energy  
resources

Conduct a  
targeted or  
comprehensive  
energy study

# Getting to **YES** with National Grid's Energy Efficiency Programs



WHY  
DOES  
IT MATTER

# 4 ways to Score with Energy Efficiency Projects





# Grocery Stores – Single Measure Value Proposition

1. Margins low
2. Sales Prop
3. Energy Benefits:
  - a. \$39,825.40 annual energy & maintenance savings.
  - b. \$57,886.00 in NG incentives (50% of project cost).
  - c. Frees up \$ for future EE projects

## A Single



<https://ouc.bizenergyadvisor.com/article/grocery-stores>



# Grocery Stores – Multi Measures

## 1. Energy Benefits:

- a. \$84.186 annual energy & maintenance savings.
- b. \$95,786 in NG incentives (30% of project cost).

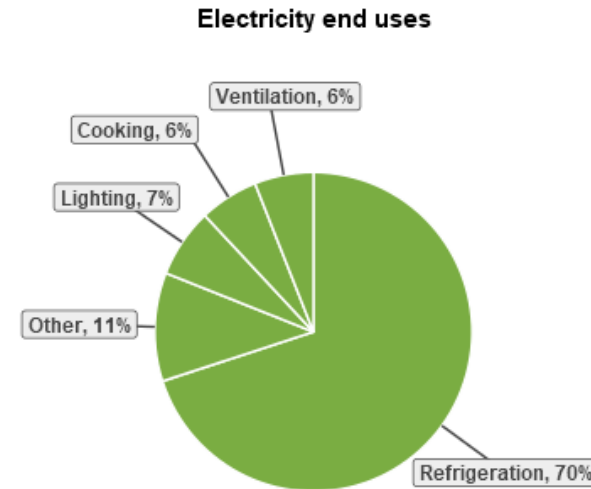
## 2. Financials:

- a. Simple payback = 2.8 years/ROI = 15.3%
- b. Savings to Investment = 2.5%
- c. Net Present Value = \$347,279
- d. Equivalent 2.9 M in revenues from maintenance & energy savings

## 3. Non-energy benefits:

- a. Improve visual merchandizing (LEDs make produce look more vibrant/appealing)
- b. Extend shelf life of meat, fish, produce
- c. Improve shopping experience & working conditions
- d. Avoid 1,531,517 annual CO2 emissions (**boost Energy STAR score**)

## A Double



# Manufacturing- Paper Processing: Multi Measure + NEB

## 1. Energy Benefits:

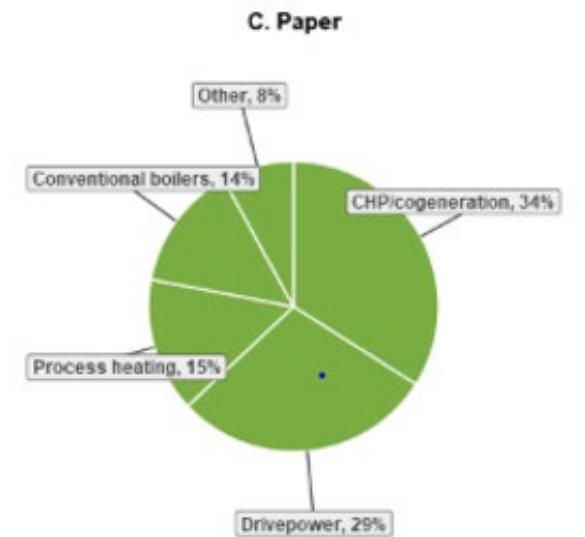
- a. \$671,378 annual energy & maintenance savings
- b. \$1,152,771 in NG incentives (47% of project cost)

## 2. Financials & Financing:

- a. Simple payback = 2.0 years/ROI = 19.3%
- b. Savings to Investment = 3.5
- c. Net Present Value = \$3,303,106
- d. Equivalent \$11.8 M in revenues from maintenance & energy savings

## 3. Non-Energy Benefits:

- a. Avoid 11,756,771 annual CO2 emissions
- b. **Increased revenue from additional paper production**



Notes: CHP = combined heat and power. Sectors shown are in order of total energy use. The "Other" category combines all end uses that consume less than 5% of the overall energy for this sector, including HVAC and lighting.

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## A Triple



# Manufacturing- Paper Processing: Home Run

1. Energy Benefits:
  - a. \$541,288 annual energy & maintenance savings
  - b. \$1,810,488 in NG incentives (36% of project cost)
2. Financials & Financing:
  - a. Simple payback = 6.0 years/ROI = 7.8%
  - b. Savings to Investment = 1.7
  - c. Net Present Value = 2,412,303
  - d. Equivalent \$9.5 M in revenues from maintenance & energy savings
3. Non-Energy Benefits:
  - a. Avoid 14,212,526 annual CO2 emissions
  - b. Wood handling & transportation cost reductions
  - c. Pulpwood yield improvement
  - d. Reduced amount of wood procured & per ton procurement costs
4. Other Benefits:
  - a. **Allowed plant to increase production and Expand Operations**



# Learn More

Learn more about how to manage your energy  
**[nyserderda.ny.gov/putenergytowork](https://nyserderda.ny.gov/putenergytowork)**

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# Questions?