Industrial Energy Efficiency

The Cost of Waiting & Financial Considerations

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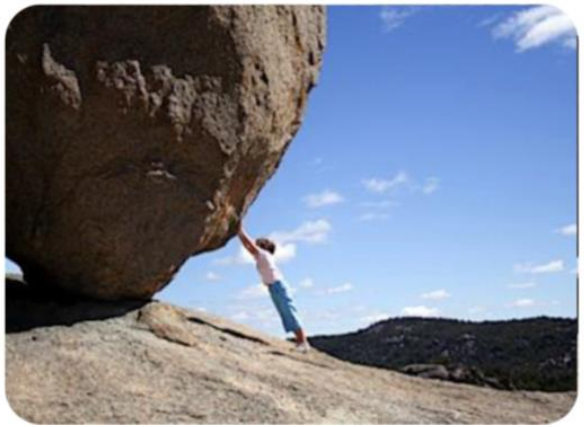
Agenda

- Energy Efficiency: a Wise Investment
- Waiting Can Cost You Money
- Methods of Financial Comparison
- Ameren Illinois Energy Efficiency Incentives

Perceived Energy Efficiency Barriers



- High upfront capital costs
- Uncertainty of savings and perceptions of risks
- Budgets do not prioritize energy efficiency
- Lack of both time and/or personnel
- Lack of motivation or understanding about energy efficiency

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Benefits of Energy Efficiency

- When you save an energy $, it goes directly to the bottom line of reducing operating costs
- Better security against future price increases
- Efficient equipment runs less, requiring less maintenance and extending its life

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Benefits of Energy Efficiency (cont.)

- Personnel productivity is higher with better lighting, more control, and better conditioning
- Good will in the community
- Reduced emissions and carbon footprint

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The Cost of Delay

- Each day, month, or year upgrade projects are delayed, potential savings are forever lost and will never be recovered
- Instead of quick ROI, think in terms of dollars lost without action

Energy Efficiency Money

A “good” energy efficiency project can have a rate of return over 20%. This is generally much higher than a company’s profit margins. Even with borrowing money at 10% financing costs to implement the project, the company would still be 10% ahead of doing nothing.

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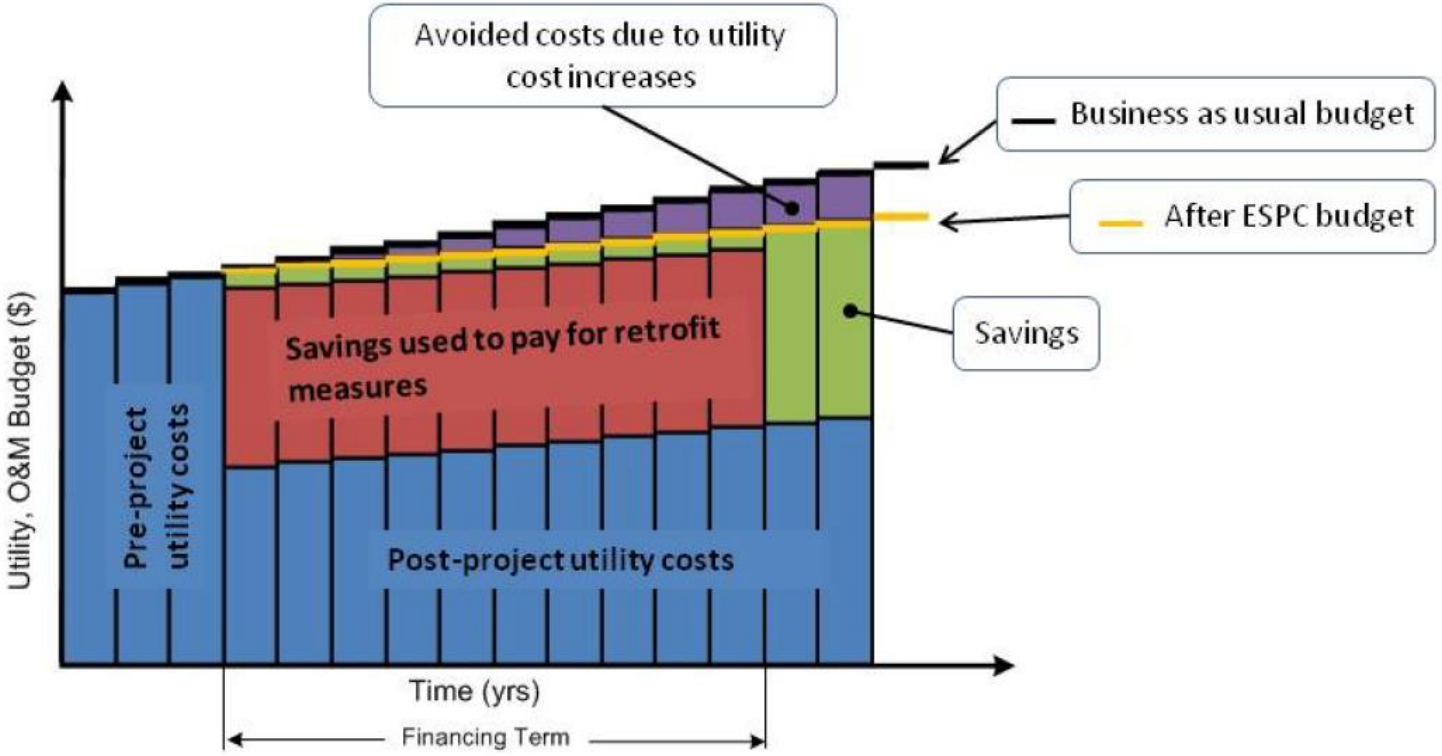
Profit Margin Considerations

If a company's profit margin is 5%, and the energy efficiency improvements are $1,000

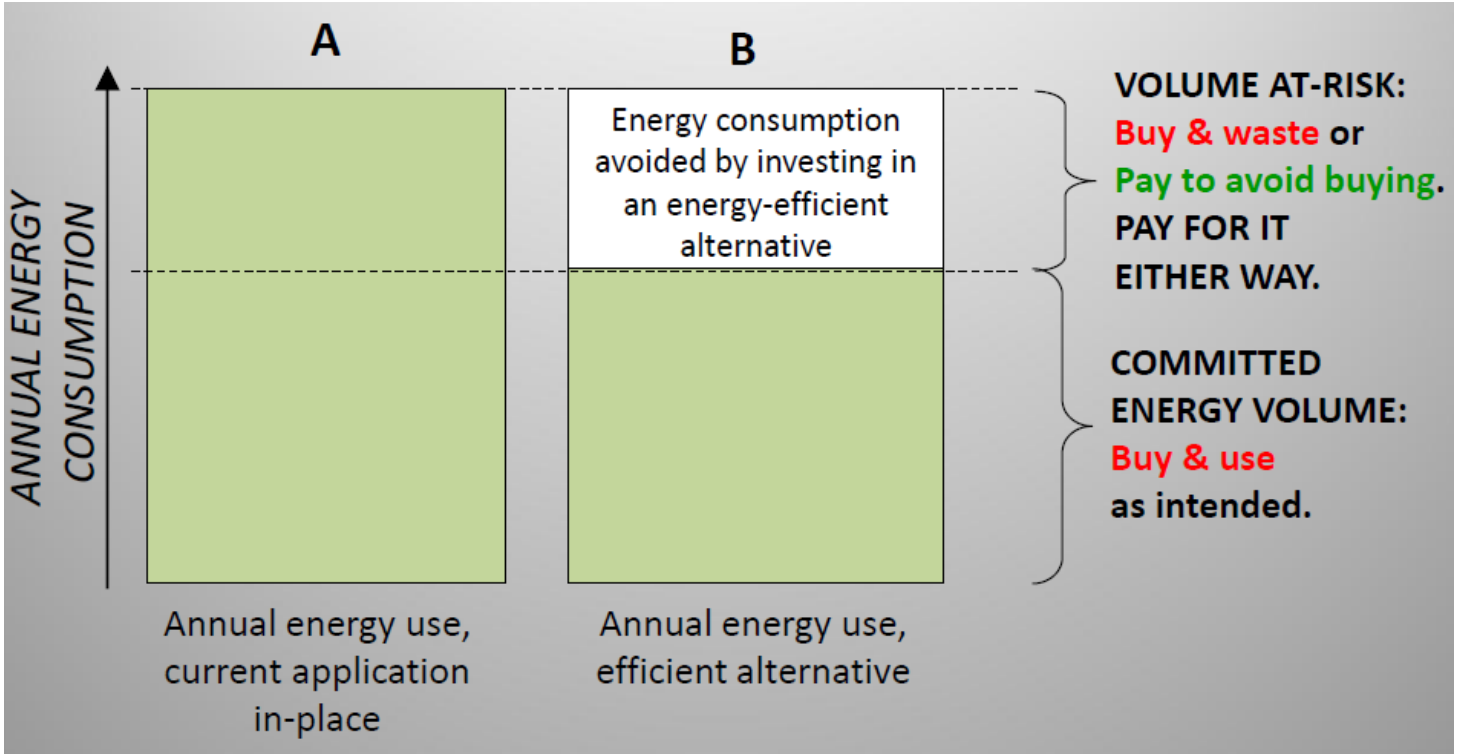
In order to achieve that same $1,000 through sales, the business would need to earn another $20,000 in revenue

$1,000/0.05 = $20,000

Potential Avoided Costs



Energy At-Risk



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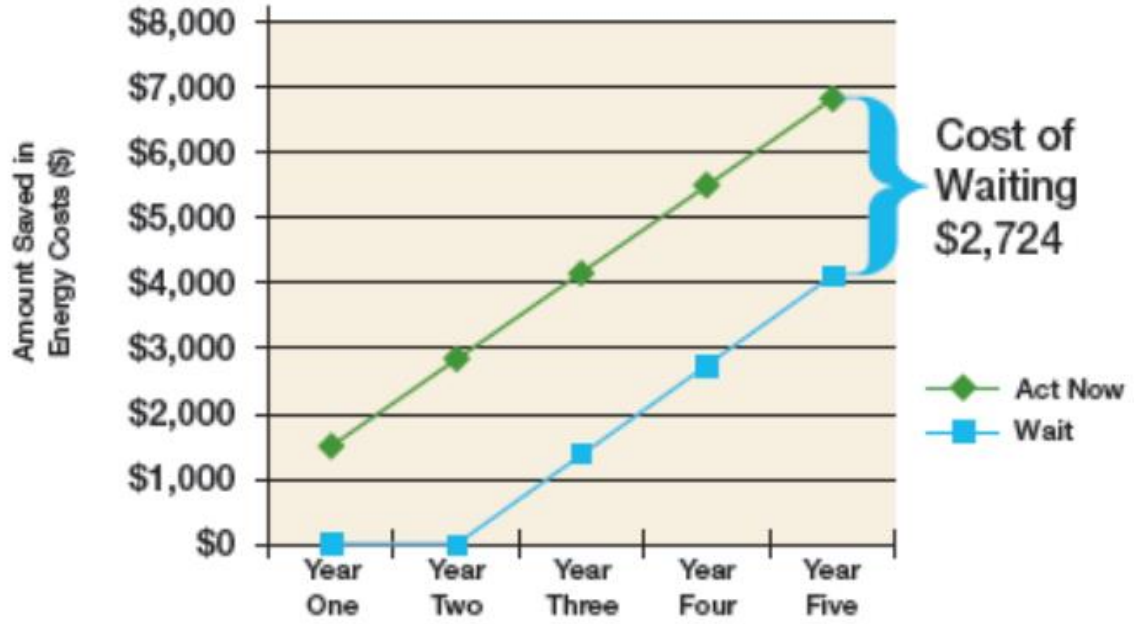
Cost of Waiting

Project cost: $2,025
Annual Energy Savings: $1,362

Ameren IL Incentive: $580
Project Payback: 1.03 years



Summary

- After the first month the customer saved $114
- After six months saw savings of $681 and annual savings amounted to $1,362
- By delaying energy-efficient upgrades for two years instead of acting now, the dollar amount of forgone energy savings totals $2,736

What Makes a Good Energy Efficiency Project?

- Positive cash flow
- Reasonable payback
- Acceptable risk

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Methods of Financial Comparison

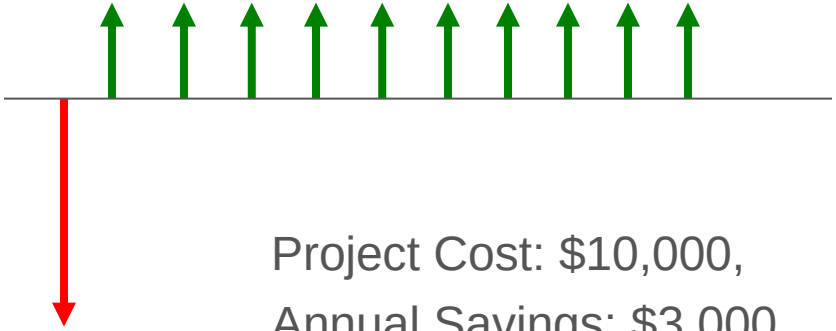
- Simple Payback Period
- Net Present Value
- Internal Rate of Return
- Return on Investment

Simple Payback (SPB)

The Simple Payback = Cost of investment / annual cash flow

- Measurement of how long it takes to return the investment capital
- Conceptually, the project with the quickest return is the best investment

Simple Payback (SPB)- Example



Project Cost: $10,000,

Annual Savings: $3,000

Life: 10 years Discount Rate: 10%

SPB = 3.3 years ($10,000/$3,000)

Simple Payback

- Does not take into account the time value of money. A dollar today is worth more than a dollar in the future
- Does not take into account what happens after payback, and thus ignores the overall profitability of the investment

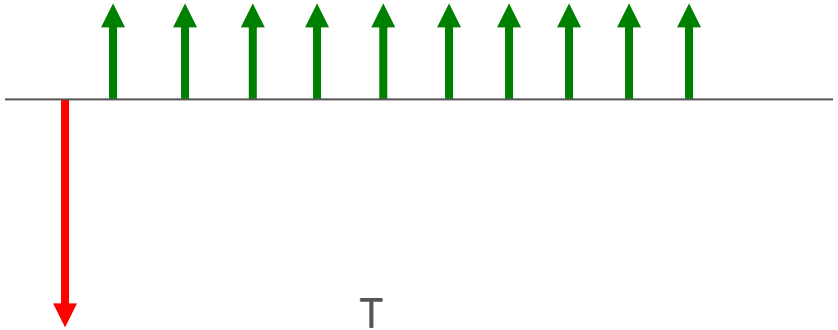
Present Value

- This factor shows the worth of an EE project as a present value

$$PV = FV / (1+r)^n$$

PV is Present Value **FV** is Future Value
r is the interest rate as a decimal, so 0.10, not 10%)
n is the number of years

Net Present Value (NPV)- Example



Project Cost: $10,000,
Annual Savings: $3,000
Life: 10 years
Discount Rate: 10% (.10)

$$NPV = \sum_{t-1}^{T} \frac{\text{Annual Cash Flow}_t}{(1+r)^t} - \text{Cash Flow In Year}_0$$

$$\sum_{t-1}^{T} \frac{\$3,000}{(1+.10)^t} - \$10,000 = \$8,430$$

Internal Rate of Return

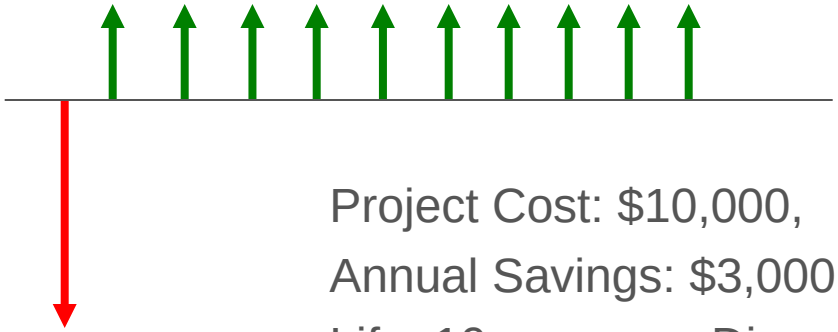
The **Internal Rate of Return** is the interest rate that makes the Net Present Value zero.

IRR = r so that:

$$\text{Cash Flow In Year}_0 + \sum_{t-1}^{T} \frac{\text{Cash Flow}_t}{(1+r)^t} = 0$$

Where “T” = economic life of the project in years
“t” represents each individual year in the project’s economic life
∑ indicates summation across all “t” years

Internal Rate of Return (IRR) - Example



Project Cost: $10,000,

Annual Savings: $3,000

Life: 10 years Discount Rate: 10%

SPB = 3.3 years ($10,000/$3,000)

NPV= $8,429

IRR = 28% by setting NPV = 0

Return on Investment

$$\text{ROI} = \frac{\text{Nominal Average Annual Return}}{\text{Total Nominal Investment}}$$

From our Example

$$\text{ROI} = \frac{\$3{,}000}{\$10{,}000} \quad \text{or} \quad 30\%$$

Comparison of Economic Indicators

	Simple Payback (SPB)	Net Present Value (NPV)	Internal Rate of Return (IRR & ROI)
Meaning	# of years to recoup additional costs from annual savings	Total value of project in today's dollars	Annual interest yield of project during its lifetime
Example	5 year simple payback	$1.5 million NPV	10 % IRR
Criteria	Payback < n years	Positive indicates profitable project	IRR > discount rate
Comment	▪ Misleading ▪ Ignores financing & long-term cash flows ▪ Use when cash is tight	▪ Good measure ▪ User must specify discount rate ▪ Long time horizon	▪ Can be fooled when cash flow goes positive-negative-positive ▪ Shorter horizon

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Greenhouse Gas Emission Reductions from Energy Savings

ITEM	UNIT	LBS. CO_2 PER UNIT
Electricity	KWh	1.7lbs/KWh
Gasoline	Gallon	24 lbs/gal
Propane	Gallon	14 lbs/gal
Natural Gas	Therms	12 lbs/therm

Greenhouse gas equivalencies calculator
https://www.epa.gov/energy/ghg-equivalencies-calculator-calculations-and-references

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BUSINESS PROGRAM INCENTIVES

- **Two Types of Incentives**
  - •Standard or Prescriptive – pre-determined incentive
  - •Custom – anything not Standard (1 – 10 year payback)
  - •Incentives based on kWh and Therm reduction
- **Pre-Approval**
  - •Under $10,000 incentive – NO
  - •At or Over $10,000 incentive – YES

  AND

  •All Custom, Retro-Commissioning and New Construction Projects require pre-approval
- **Incentive Cap**
  - •$500,000 Electric – per project
  - •$250,000 Natural Gas – per project

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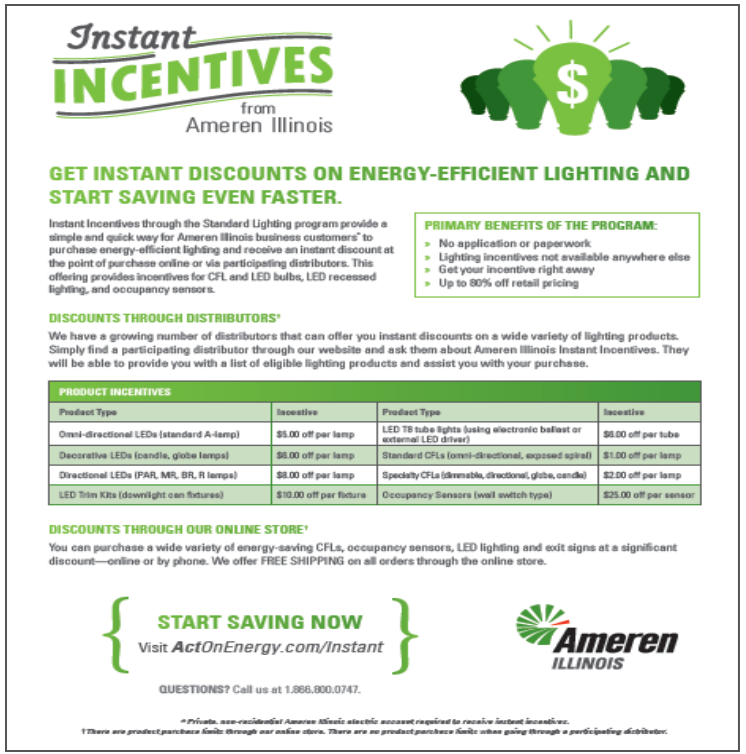
INSTANT INCENTIVES



Instant INCENTIVES from Ameren Illinois

GET INSTANT DISCOUNTS ON ENERGY-EFFICIENT LIGHTING AND START SAVING EVEN FASTER.

Instant Incentives through the Standard Lighting program provide a simple and quick way for Ameren Illinois business customers* to purchase energy-efficient lighting and receive an instant discount at the point of purchase online or via participating distributors. This offering provides incentives for CFL and LED bulbs, LED recessed lighting, and occupancy sensors.

PRIMARY BENEFITS OF THE PROGRAM:
- No application or paperwork
- Lighting incentives not available anywhere else
- Get your incentive right away
- Up to 80% off retail pricing

DISCOUNTS THROUGH DISTRIBUTORS†

We have a growing number of distributors that can offer you instant discounts on a wide variety of lighting products. Simply find a participating distributor through our website and ask them about Ameren Illinois Instant Incentives. They will be able to provide you with a list of eligible lighting products and assist you with your purchase.

PRODUCT INCENTIVES			
Product Type	Incentive	Product Type	Incentive
Omni-directional LEDs (standard A-lamp)	$5.00 off per lamp	LED T8 tube lights (using electronic ballast or external LED driver)	$6.00 off per tube
Decorative LEDs (candle, globe lamps)	$6.00 off per lamp	Standard CFLs (omni-directional, exposed spiral)	$1.00 off per lamp
Directional LEDs (PAR, MR, BR, R lamps)	$8.00 off per lamp	Specialty CFLs (dimmable, directional, globe, candle)	$2.00 off per lamp
LED Trim Kits (downlight can fixtures)	$10.00 off per fixture	Occupancy Sensors (wall switch type)	$25.00 off per sensor

DISCOUNTS THROUGH OUR ONLINE STORE†

You can purchase a wide variety of energy-saving CFLs, occupancy sensors, LED lighting and exit signs at a significant discount—online or by phone. We offer FREE SHIPPING on all orders through the online store.

START SAVING NOW
Visit ActOnEnergy.com/Instant

QUESTIONS? Call us at 1.866.800.0747.

*Private, non-residential Ameren Illinois electric account required to receive instant incentives.
†There are product purchase limits through our online store. There are no product purchase limits when going through a participating distributor.

- No application or forms to fill out
- Instant discount at point of purchase through Participating Distributors
- Includes LED light bulbs and LED tube lamps
- Customer eligibility: must be a private, non-residential Ameren Illinois electric customer
- No purchase limits
- Save up to 80% off retail pricing
- Go to ActOnEnergy.com/Instant for more information

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EARLY COMPLETION BONUS

- Complete projects early and receive up to 9% more cash incentives!
- Must complete project between June 1, 2016 and March 31, 2017
- Tiered bonus structure:

Complete your project by	Bonus amount
Sept. 30, 2016	9%
Dec. 31, 2016	6%
March 31, 2017	3%

- This offer cannot be used in conjunction with any other special offer or bonuses
- Visit ActOnEnergy.com/Bonus for details

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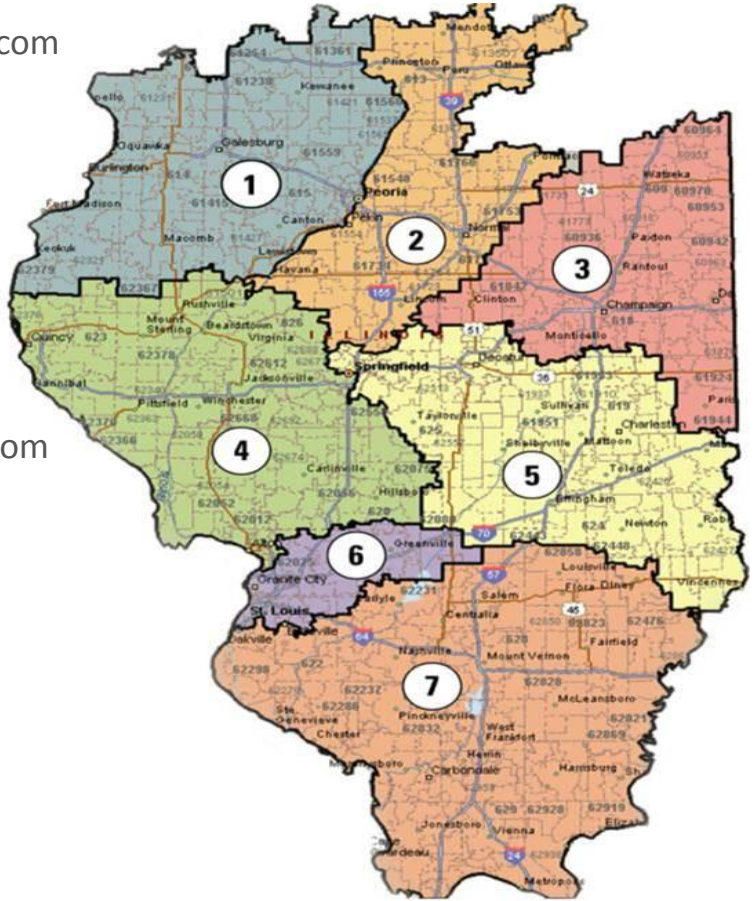

Ameren Illinois Energy Efficiency Program Energy Advisors

Call 1.866.800.0747 to request a consultation with an Energy Advisor

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Questions?

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