Better Buildings
U.S. DEPARTMENT OF ENERGY

Leveraging Utility Programs for Industrial Energy Efficiency

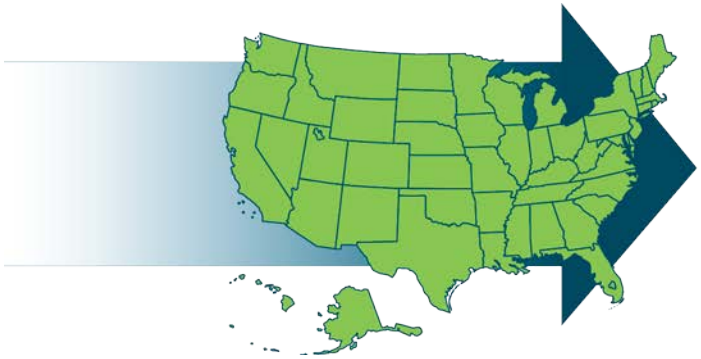
Moderator: Sandy Glatt, DOE

U.S. DEPARTMENT OF ENERGY

Leveraging Utility Programs for Industrial Energy Efficiency

Panel Presenters

- **Sandy Glatt,** Project Manager, US DOE, Advanced Manufacturing Office
- **Don Sturtevant**, Corporate Energy Manager, J.R. Simplot, Company
- **Gary Londo**, Senior Energy Engineer, General Motors Corporation (GM)



SEE Action

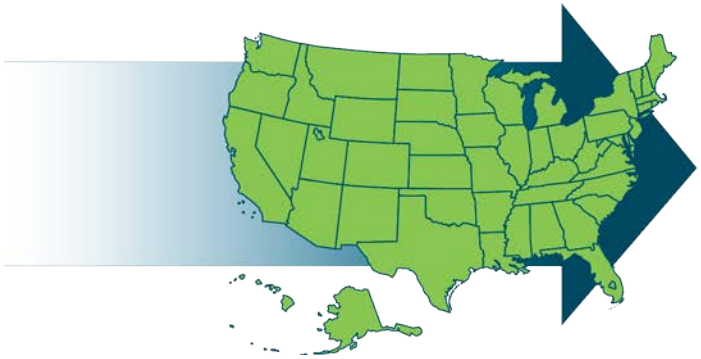
STATE & LOCAL ENERGY EFFICIENCY ACTION NETWORK

Industrial Energy Efficiency: Designing Effective State Programs for the Industrial Sector

Better Buildings Summit

May 8, 2014

Sandy Glatt, DOE AMO



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Outline

- Introduce SEE Action
- Purpose of the Paper
- Importance of Industrial Energy Efficiency Programs
- Current State of IEE Programs
- Ongoing and Useful Types of State Programs
  - Industrial Examples
- Self-Direct Programs
- Lessons in Designing and Delivering Programs
- Emerging New Directions

SEE Action

- Facilitated by DOE and EPA; builds upon the National Action Plan for Energy Efficiency
- Network of 200+, led by state and local policymakers, bringing EE to scale
- Provides best practices and recommended approaches on key EE policy/program areas based on state/local experience
  - Guidance Documents
  - Trainings
  - Dialogues and Events
  - Technical Assistance
- Goal: achieve all cost-effective EE by 2020
  - EE, not RE
  - Built environment, not transportation
  - State/local policy, not federal policy

8 working groups focus on largest areas of opportunity/challenge for greater investment in EE at state & local levels

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STATE & LOCAL ENERGY EFFICIENCY ACTION NETWORK

SEE Action IEE & CHP Working Group Overview

Industrial EE & CHP Working Group

- Co-chairs:
  - Todd Currier, Washington State University Extension Energy Office
  - Vacant
- 2 DOE staff leads and 2 EPA staff leads
- ~21 Working Group Members
  - State Programs, Coordinating Organizations, Utilities, Research/Academia, Industry

Industrial EE & CHP Working Group Goals

- Achieve a 2.5% average annual reduction in industrial energy intensity through 2020
- Install 40 gigawatts (GW) of new, cost-effective CHP by 2020

IEE& CHP Resources & Activities

- IEE & CHP Working Group Blueprint
- IEE/CHP Webinar Series
  - FY12: 3 webinars with over 300 participants
  - Discussed advancing IEE & CHP policies & programs
  - Future webinars on IEE & CHP targeting specific stakeholder groups (e.g. policymakers, regulators, utilities)
- *Guide to the Successful Implementation of State CHP Policies*
  - Completed March 2013
  - Targeted State CHP Workshops in 2014
- *Industrial Energy Efficiency: Designing State Programs for the Industrial Sector*
  - Completed March 2014
  - Target Regulators and Program Designers

Report on Designing State Programs for the Industrial Sector

Scope and Purpose

- Provide guidance on successful design & implementation of state IEE programs
- Focus on utility ratepayer-funded EE programs as well as other state programs
- Does not address issues of institutional planning and utility regulations

Objectives

- Demonstrate the significant benefits of IEE programs
- Explore how all states can promote IEE, even in diverse policy and local contexts
- Outline program features that respond to industry needs
    - Supported by numerous examples and case studies

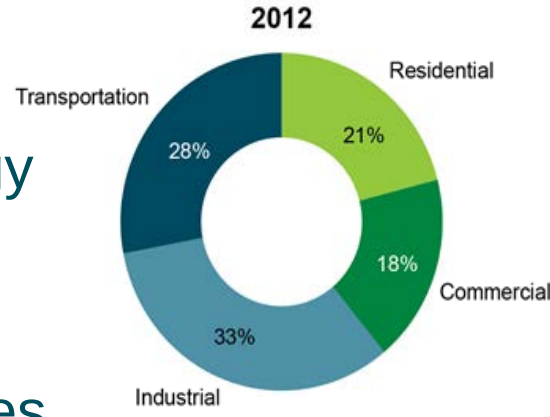
Audience

- State regulators, utilities and other program administrators

Importance of Industrial Energy Efficiency Programs

Why focus on industrial energy efficiency?

- Industrial accounts for 1/3 of all U.S. end-use energy
- IEE resources are cost-effective
- Industry programs will be needed to meet overall state-level energy efficiency goals in almost all cases
- U.S. is beginning an expansion of manufacturing, potentially using more energy



Source: U.S. Energy Information Administration

Benefits for manufacturers

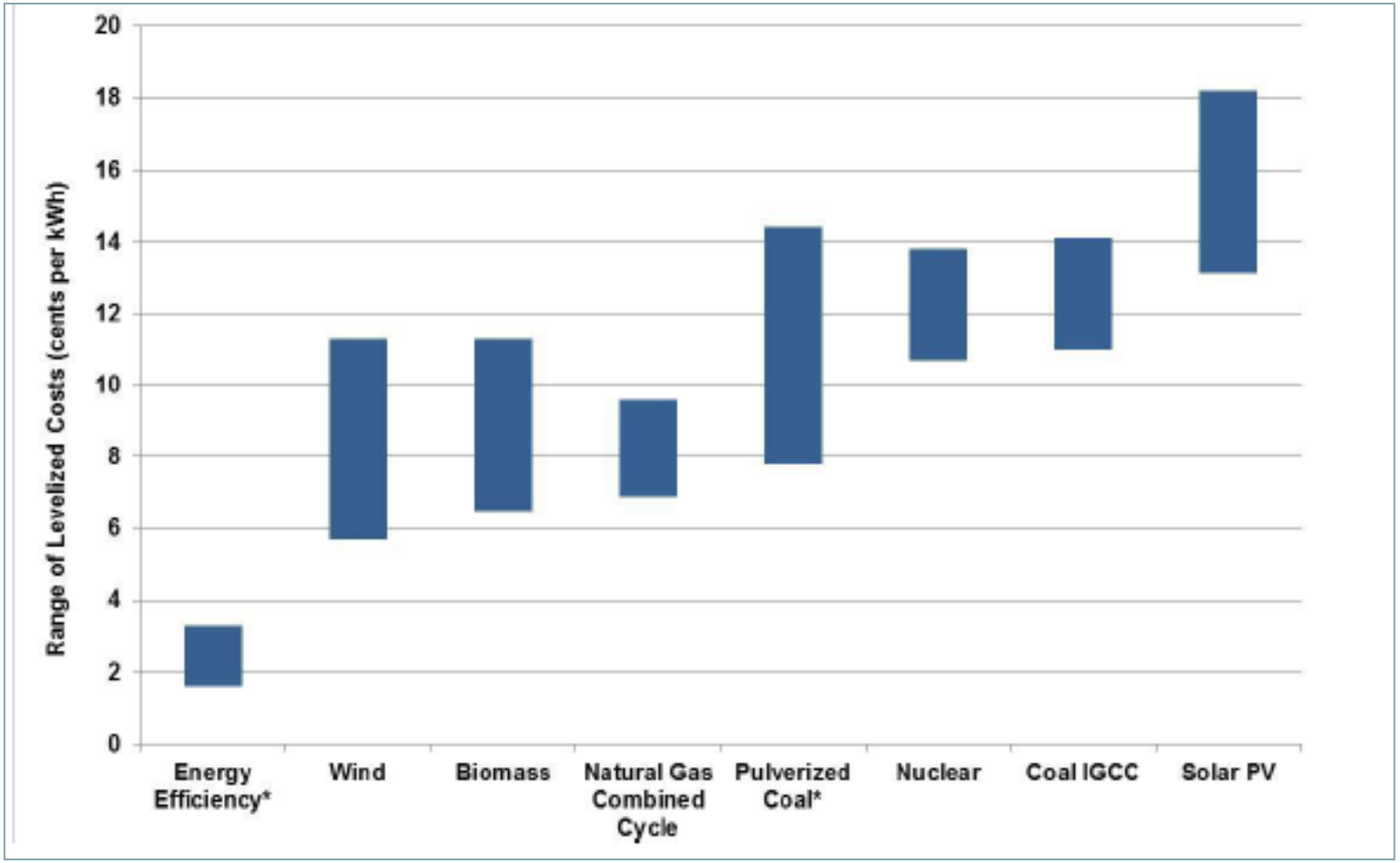
- Hedge against energy price spikes & volatility
- Increased productivity & competitiveness
- Improved product quality, reduced waste
- Reduced energy bills in mid- to long-term in the context of utility programs

Benefits for society

- Economic development & job retention/creation
- Environmental & health benefits
- Reduced energy bills in mid- to long-term in the context of utility programs

Cost-effectiveness of EE Resources

The cost of energy saved through customer energy efficiency is cheaper than conventional energy supply side resources: EE costs about $0.025 per kWh, compared to $0.07-0.15 per kWh for supply resources (Nowak et al. 2013).

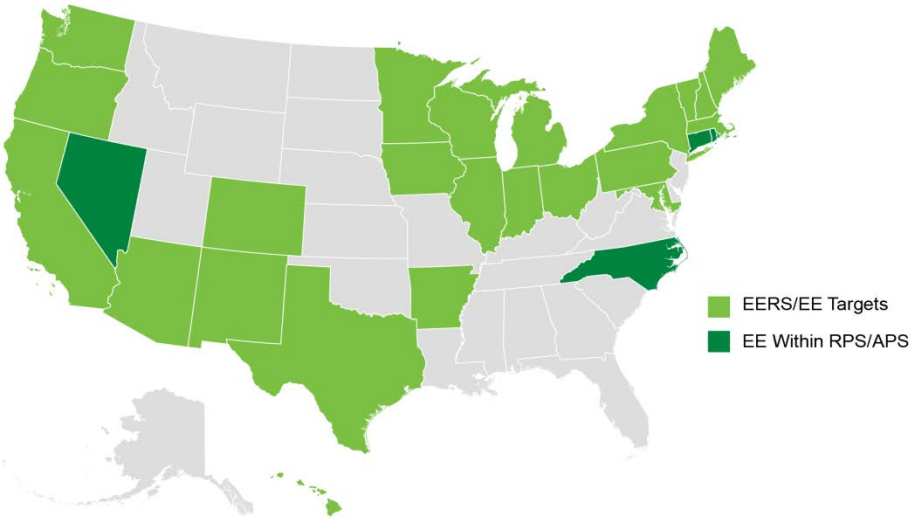


Source: ACEEE/Chittum 2011

Current State of IEE Programs

- Just over one-half of all states operate ratepayer-funded programs with Clean Energy Portfolio Standards / Energy Efficiency Resource Standards or utility energy efficiency targets
- 41 states have ratepayer-funded energy efficiency programs

States with EERS



Source: ACEEE State Energy Efficiency Resource Standards Policy Brief, July 2013

- At least 35 state energy offices operate some type of *industrial* energy efficiency program separate from, or in support of, ratepayer-funded programs

Ongoing and Useful Types of State Programs

- The spectrum of industrial energy efficiency program approaches include:

Technical Assistance and Knowledge-Sharing Programs	Prescriptive Programs	Custom Programs	Market Transformation Programs	Strategic Energy Management and Energy Manager Support Programs

Self-Direct Programs

- Each offering can be effective in its own way, depending on a state's regulatory contexts and circumstances

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STATE & LOCAL ENERGY EFFICIENCY ACTION NETWORK

Types of State Programs

Technical Assistance and Knowledge-Sharing Programs

- Low-cost or no-cost technical assistance that can include workshops, networking, and success story dissemination

Prescriptive Incentive Programs

- Standard incentives or rebates that are straightforward to administer for common efficient technologies, like lighting, motors, and drives

Custom Incentive Programs

- Financial and technical support for potentially complex EE projects tailored to individual customers or specific industrial facilities

Market Transformation Programs

- Addresses structural barriers in order to streamline introduction of new EE products or practices to market for consumer acceptance

Strategic Energy Management and Energy Manager Support Programs

- Embedded energy manager taps operational, organizational, and behavioral changes through SEM rather than only technology or equipment

Industry Example - NORPAC

Company:

- NORPAC, located in Washington, is the largest newsprint and specialty paper mill in North America
- The 33-year-old mill produces 750,000 tons of paper per year
- Uses 200 MW annually; largest industrial electricity consumer in WA

Project:

- Bonneville Power Administration and Cowlitz County PUD funded $25 million of a $60 million project for installation of new screening equipment between refiners to reduce electricity and chemical use

Benefits:

- Estimated to save 100 million kWh per year
  - Equivalent to ~12% reduction in power use
  - Equivalent to enough energy to power 8,000 Northwest homes
- Construction phase of project created 64 full-time family-wage jobs

Industry Example – Arctic Cold Storage

Company:

- Arctic Cold Storage, located in Minnesota, has more than 5.5 million cubic feet of temperature-controlled warehouse space for storing meat, poultry, packaged foods, and raw materials

Project:

- Xcel Energy provided an $8,300 rebate for a $16,965 project to install a high-speed roll door with operating speeds of more than eight feet per second, which reduces energy by keeping the cold air from escaping

Benefits:

- Estimated 110,000 kWh per year in electricity savings
- Totaling $8,130 in annual energy cost savings
- Resulting in a payback period of 1.1 years

Industry Example – BD Medical

Company:

- BD Medical, located in Utah, is a medical technology company that manufactures medical supplies, devices, laboratory equipment and diagnostic products

Project:

- Rocky Mountain Power provided $712,900 in incentives for a $1,880,500 project
- Completed 62 energy efficiency projects since 2001, including 29 lighting projects, as well as compressed air upgrades/replacements

Benefits:

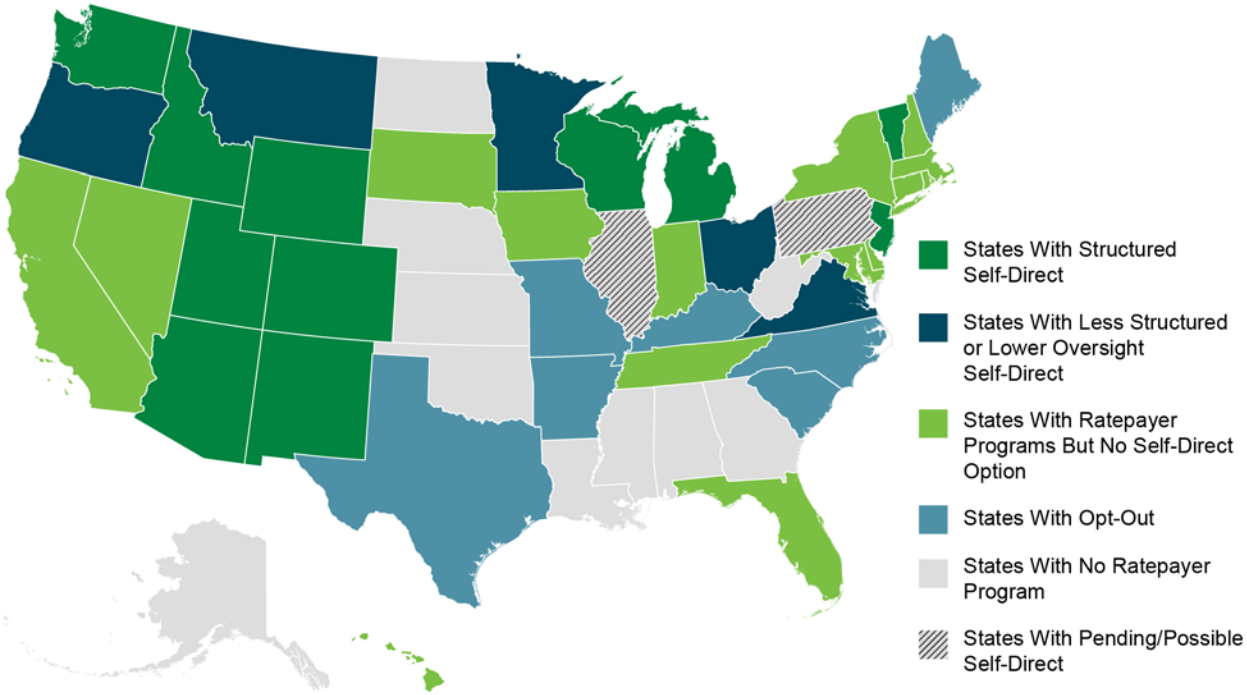
- Totaling 10.4 million kWh per year in electricity savings
- Resulting in $580,000 in annual energy cost savings
- Projects have facilitated maintenance of ISO certifications

Self-Direct Programs

- Industrial customers often raise legitimate concerns about the extent to which these ratepayer-funded programs will be able to meet their specific needs
  - Some states allow industrials to “opt out” of paying fees collected for energy efficiency programs
- Rather than allowing industrial customers to opt out, some states have designed “self-direct” programs where:
  - Customer fees can be directed into energy efficiency investments in their own facilities instead of a broader aggregated pool of funds
  - Eligibility for participation is often based on threshold amount of energy use or energy use capacity

Self-Direct Programs

A snapshot of the prevalence of self-direct programs among the states as of January 2014:



Source: ACEEE, R.N. Elliott, Presentation to the ACEEE Energy Efficiency as a Resource Conference, September 2013

Lessons in Designing and Delivering Programs (1-5)

Ten IEE program features that consistently add value and contribute to success:

1. Clearly demonstrate the value proposition of energy efficiency projects to companies
2. Develop long-term relationships with industrial customers that include continual joint efforts to identify energy efficiency projects
3. Ensure program administrators have industrial sector credibility and offer quality technical expertise
4. Offer a combination of prescriptive and custom offerings to best support diverse customer needs
5. Accommodate scheduling concerns

(6-10 on next slide)

Lessons in Designing and Delivering Programs (6-10)

Continued: Ten IEE program features that consistently add value and contribute to success:

6. Streamline and expedite application processes
7. Conduct continual and targeted program outreach
8. Leverage partnerships
9. Set medium to long term goals as an investment signal for industrial customers
10. Undertake proper project M&V and completing program evaluations

Emerging New Directions

Four key areas of interest for further program evolution:

1. Increasing support for Strategic Energy Management growth in industry
2. Developing approaches for providing energy efficiency incentives for whole-facility performance
3. Capturing more energy efficiency projects by expanding quantification and recognition of project non-energy benefits
4. Continuing efforts to expand industrial natural gas efficiency programs

For more information on the IEE report, visit:

- Executive Summary: http://www1.eere.energy.gov/seeaction/pdfs/industrial_energy_efficiency_executive_summary.pdf
- Full Report: http://www1.eere.energy.gov/seeaction/pdfs/industrial_energy_efficiency.pdf

Contacts:

- Sandy Glatt, DOE Advanced Manufacturing Office
  - sandy.glatt@go.doe.gov
- Elizabeth Dutrow, U.S. Environmental Protection Agency
  - dutrow.elizabeth@epamail.epa.gov

Backup Industrial Examples

Industry Example – Irving Tissue

Company:

- Irving Tissue, located in Fort Edward, New York, is one of North America's leading manufacturers of household paper products

Project:

- NYSERDA provided a $1.8 million incentive for a $4.3 million project to construct a new pulp processing and paper machine with built-in energy efficiency processes and systems

Benefits:

- Resulted in electricity savings of 14.8 million kWh per year compared to the standard paper machine installation

Industry Example – Wise Alloys

Company:

- Wise Alloys, located in Alabama, is the third leading U.S. producer of aluminum can stock for the beverage and food industries

Project:

- Alabama State Energy Office provided a loan for $3.75 million to complete an energy efficiency project that included improving lighting and compressed air systems
- Partnered with Poplar Hill, Blake & Pendleton, and iZ Systems for the project implementation

Benefits:

- Totaling 30.6 million kWh per year in electricity savings
- Resulting in $1.5 million in annual energy cost savings

UTILITY BASED INCENTIVE PROGRAMS FOR ENERGY REDUCTION

2014 U.S. Department of Energy Better Buildings Better Plants

Gary J. Londo
Energy Leader/Senior Energy Engineer Global Engineering

May 7, 2014

GENERAL MOTORS

AGENDA

GM ENERGY MANAGEMENT

GM PROJECT PLANNING

TARGETING INCENTIVES

140 GLOBAL MARKETS

DESIGNING & ENGINEERING 100 VEHICLES AROUND THE WORLD

GENERAL MOTORS

OVERVIEW OF GM MANUFACTURING

Design, build and sell the world's best vehicles

Build 9 million vehicles per year= $1 billion in energy

Enough electricity to power 1 million homes

Carbon equivalent of 172 million trees for 10 years

Enough water to fill 166 billion glasses




GM ENERGY MANAGEMENT

Sites: 166

Countries: 30

Regional teams: 4

Site utility managers: 120

$7M/person

GENERAL MOTORS

WE STRIVE TO REDUCE EMISSIONS & PETROLEUM DEPENDENCE BY BEING MORE ENERGY EFFICIENT

Reduce Use

Renewable Energy

Reduce Emissions

GENERAL MOTORS

ENERGY USE REDUCTION AT GLOBAL FACILITIES

28%

FROM 2005 – 2010

3.34 M

METRIC TONS
GREENHOUSE GAS
EMISSIONS AVOIDED

7%

FROM 2010 – 2012

GENERAL MOTORS

EMISSIONS REDUCTION AT GLOBAL FACILITIES

28%
FROM 2005 – 2010

5.3%
FROM 2010 – 2012

60%
SINCE 1990

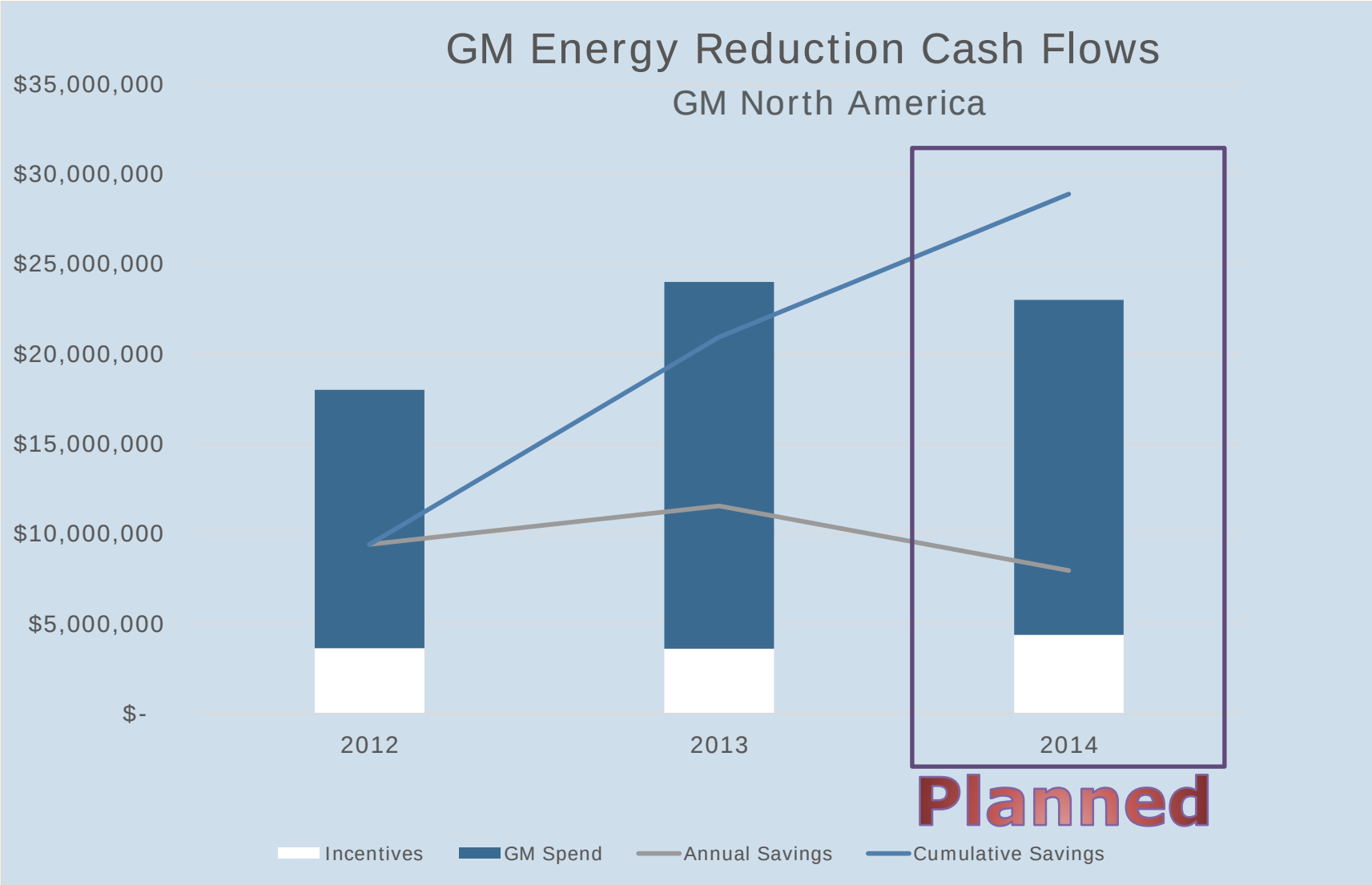
GENERAL MOTORS

GM ENERGY PROJECTS

- GM commits funding and resources continuously to reduce energy, water and carbon emissions.
- We work with stakeholders to reduce energy and related costs
- Common desire to save the most amount of energy at the least amount of cost and as quick as possible
- Budgeting and scheduling of work are the some of the greatest obstacles to industrial energy reduction.
- Committed to working with energy reduction stakeholders/partners to continuously reduce consumption responsibly

GM ENERGY PROJECT INVESTMENT HISTORY

ENERGY PERFORMANCE CONTRACTS AND DIRECT FUNDED PROJECTS

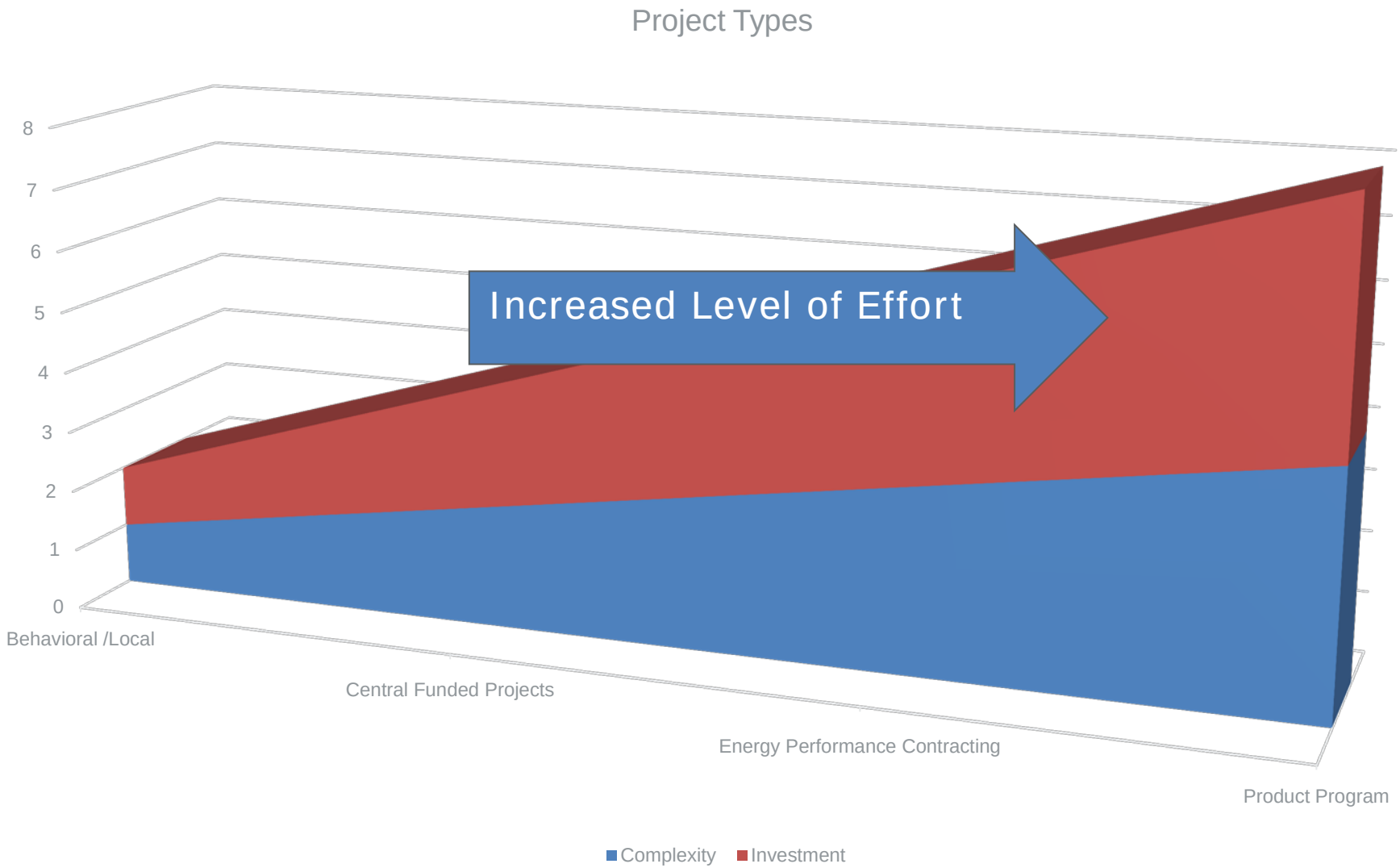


GM ENERGY / WATER PROJECT TYPES

Projects are classified by investment and involvement required to execute

- Direct centrally-managed energy and water reduction projects (2 year or less payback)
- Energy performance contracting (2-5 year payback)
- Direct product program changes (which are product driven but reduce energy)
- Locally-managed reduction projects/behavior changes (low cost projects with quick payback)

PROJECT TYPES



GM ENERGY / WATER PROJECTS OVERVIEW

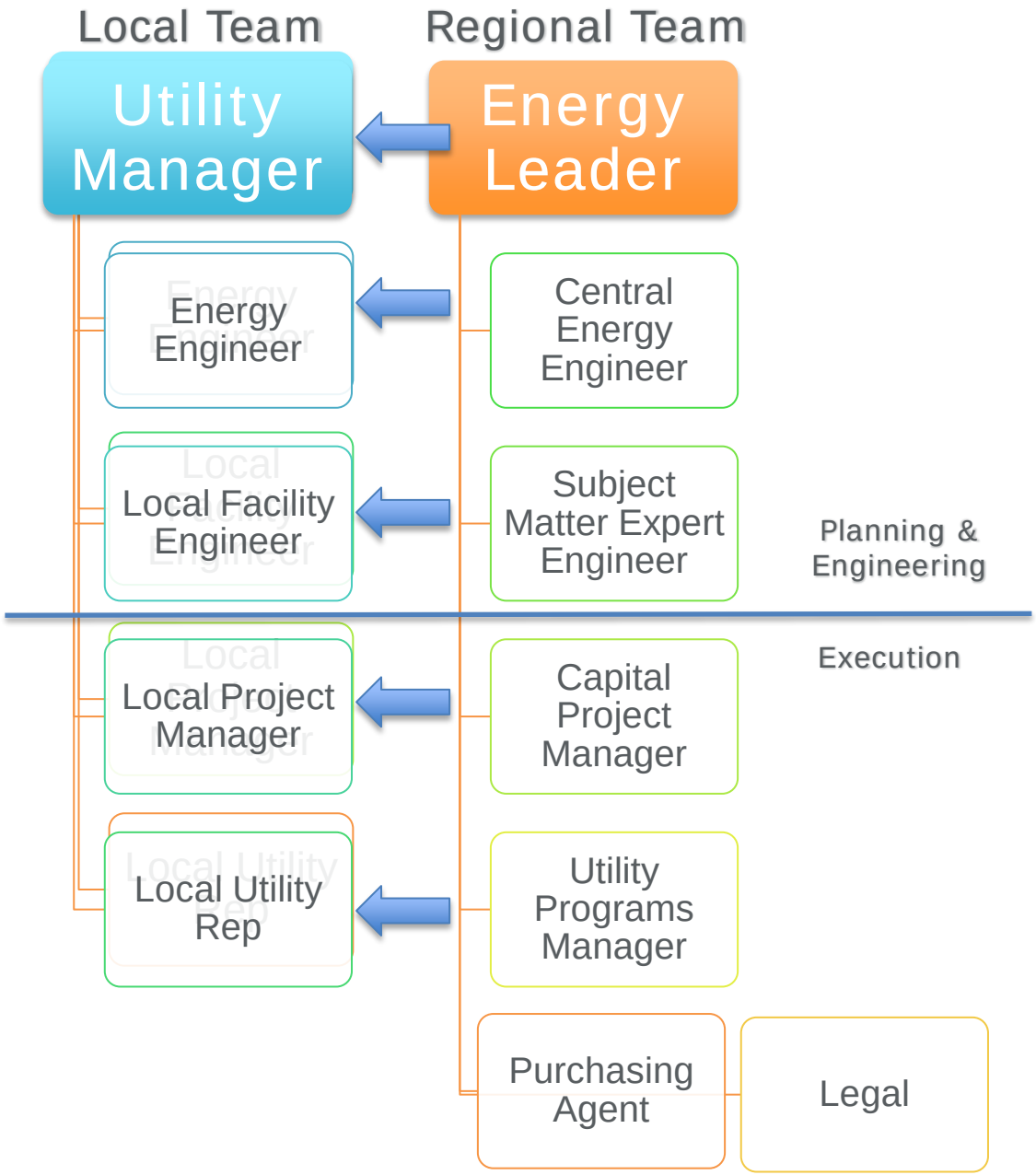
Functional Project Team Structure

(FUNCTIONAL RELATIONSHIPS)

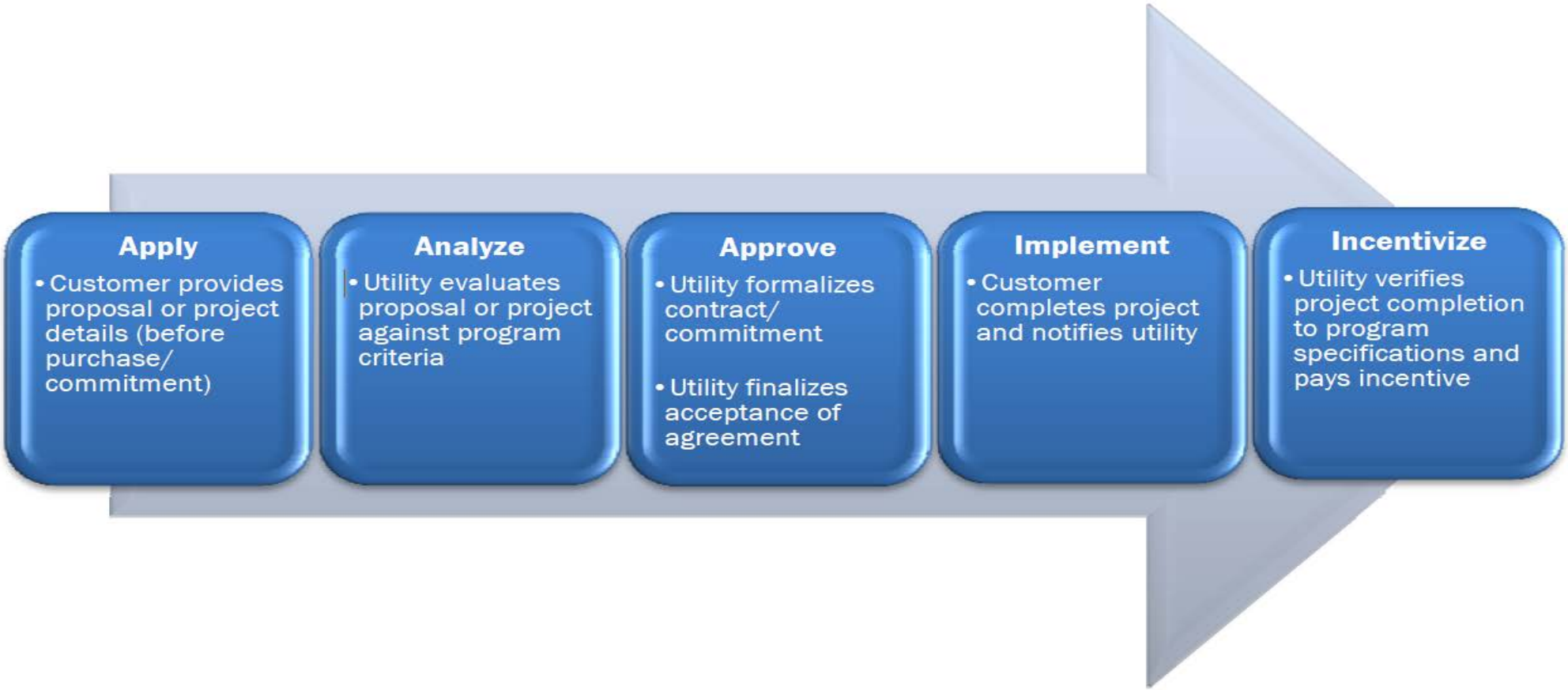
Larger Projects with High Investment and Complexity

Project Team Advantages

- Coordination with program owners
- Projects are planned to maximize incentive/investment
- Technical assistance is greatly increased
- Utilities and GM are able to plan long-term



GM ENERGY / WATER PROJECTS OVERVIEW
STEPS REQUIRED TO USE UTILITY INCENTIVES



Source: Greengrid.org

GM PROJECT APPROVAL

GM prioritizes energy and water reduction projects based on:

- Strategic goals
- Financial considerations
  - Simple payback (cost savings)
  - Complex Payback (cost-incentives/savings)
- Risk and timing
  - Possible change in incentive
  - Meeting commitment dates
  - Annual incentive caps

UTILITY BASED INCENTIVE PROGRAM

Advantages:

- Direct source of supplemental funding for energy projects
  - Offset capital investment in business planning
- Business planners have shorter “paybacks”
  - Longer paybacks limit investment and energy saved

Opting Out:

- Attractive depending on the economics
- Always reduce the amount of energy projects performed if concerned with ROI
- Economics generally NOT accounted for in ROI calculations

GM ENERGY / WATER PROJECTS OVERVIEW

Noted differences in incentives across utility sector

- Program annual caps
- Facility caps
- Experience in large projects
- Third party M&V
- Pay for engineering on large projects
- Difficulty with commitments between fiscal calendar years
- Short implementation windows
- Flexibility, willingness to implement meaningful energy projects within program rules
- Program rules change year-to-year

OPPORTUNITIES FOR IMPROVEMENT

Implementation windows for projects present risk for customers

Utilities that require a project to be executed within 90 days of incentive approval insert risk into the financial and planning part of project approvals. Most utilities offer extensions, however when a project is complex and lengthy getting continuous extensions puts companies at risk of loosing incentives half way through execution.

Engineering on large projects is costly and risky

Engineering often times is required to execute large energy and water reduction projects. Sometimes the engineering reveals projects are technically or economically impractical. This represents risk and slows down project evaluation. A good example of an engineering assistance program is NYSERDA's Flextech program which is very aggressive with conceptual engineering funding.

Fiscal year funding is problematic for customers

Projects are planned continually at many customers, although spending is managed year to year prioritization and scheduling occurs continuously. Utilities that will not approve projects in the last quarter of the year delay execution of first quarter projects

annual budgets by company and by facilities

This has the ability to make large aggressive energy projects happen quicker. Large aggressive projects at one location is the best use of utility rebate dollars, company investment dollars and resources to achieve the highest possible savings in the shortest amount of time.

Increased certainty

Increased accommodation for large projects

NEW TRENDS

Construction incentives

- These are a good idea and are difficult to use
- Construction is very complex and anything that makes it more complex is a challenge to integrate into the planning process

Water based incentives

- GM is striving to reduce water consumption as are many other industrial customers
- No known water savings incentives in any area where GM operates
- GM is working with the DOE on water consumption reduction pilot program similar to the DOE Better Plants Better Buildings program

SUMMARY

- When ROI and business case based, utility incentives increase the number and complexity of projects performed
- Maximizing utility incentives requires coordination and a great degree of planning
- Opting out of incentive programs rarely makes sense financially and reduces the energy one can save
- Business planners require certainty when approving projects that the economics will not change
  - If incentive outlook is unclear the project will not use incentives in business case and some will not be completed
- Utility-based energy efficiency incentive programs need to work for all project types and sizes

QUESTIONS / ANSWERS

Leveraging Utility Programs

May 7, 2014

Don Sturtevant, MBA, PE, CEM

Corporate Energy Director

GOOD TO GREAT

Simplot

Simplot Overview

- One of North America's **largest, privately held Companies**
  - **Gives us a *Generational* view - not the next quarter**
- Annual revenues of approximately **$4.5 billion** and approximately **10,000 employees**
- Phosphate **mining**, **fertilizer** manufacturing, farming, **ranching** and cattle production, **food** processing, food brands and other agriculture enterprises.
- Major operations in the U.S., Canada, Mexico, Australia, New Zealand and China, with products marketed in over 40 countries worldwide.





GOOD TO GREAT Simplot

Simplot Overview

- North America's **fourth-largest phosphate mining company**.
- One of the world's largest frozen-potato processors, with production of more than **3 billion pounds of french fries** and related products.
- Extensive farm and ranch holdings.
- Second largest cow/calf herd and sixth-largest cattle feeding capacity in the United States.
- Simplot **ranching operations are twice size of the State of Delaware.**

GOOD TO GREAT Simplot

Saving Energy

- Five years into the goal
- Four large industrial locations have met 25x10
- Two more should beat 25x10 this year
- Saving the company over $4MM per year

President's Award for Energy Excellence

- Thriving on a spirit of teamwork and competition
- Presented annually to the best facility
- "It's simply amazing the power a $150 trophy has"
- Started as 1 trophy; now 12
- Plaques and certificates, too.
- Best: "Grip and Grin" with the boss

Simplot

Bringing Earth's Resources to Life

“Tapping” the Next Generation

GOOD TO GREAT Simplot

“Simplot’s Top 10”

10. Provide capital & expense dollars
9. Track results and communicate
8. Training
7. Clear Obstacles
6. Partner with EVERYONE!
5. Clearly define and communicate goal (“25x10”)
4. Get Presidential sponsorship and leadership
3. “Build the business case”
2. Establish teams and champions
1. Provide Reward and Recognition

GOOD TO GREAT Simplot

“Traditional” Utility Programs

- Targets only 1/10th of our “Top 10”
- Involves 1/10th of our people
- Incentives for things, not people
- Requires out of pocket money / capital
- Can be undone
- Fairly easy to do
- Provide short-term results

GOOD TO GREAT Simplot

"My dad's credo to ***hire good people and turn 'em loose*** … is one reason why we have been so successful."

- Scott Simplot, Chairman of the Board

"People are our single best asset!"

Simplot

Better Utility Programs

- Target *people* **AND** equipment
- **BPA's Energy Smart Industrial Program (ESIP)**
  - Best example in the nation:
  - Pays for an energy manager on site
  - Behavior-based and traditional incentives
  - Strongly relies on MVR statistics
  - Defensible to the PUC / ratepayers

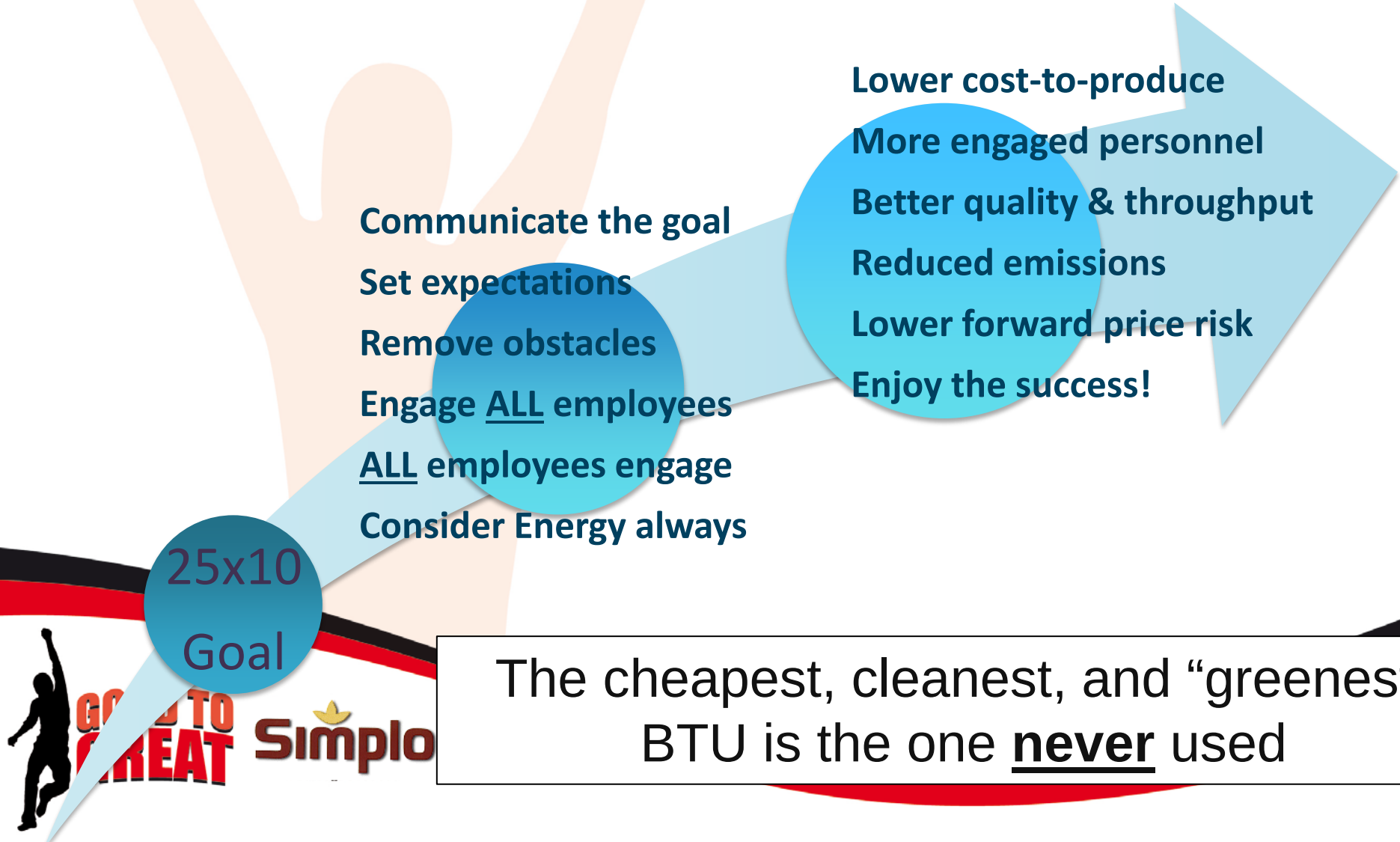
GOOD TO GREAT Simplot

Better Utility programs

- Target 90% of our Top 10
- Involves everyone, not just engineers
- Incentives for people and things
- Requires much less money / capital
- Harder to bypass
- Difficult to get started
- Provide long-term, substantial results

GOOD TO GREAT Simplot

Good to Great:
Energy Efficiency and the ”25x10” Goal



The cheapest, cleanest, and “greenest” BTU is the one **never** used

“It’s not about the light-bulb you are turning off, It’s about the light you are turning on.”

Dave Jones, FG Caldwell Energy Champion

GOOD TO GREAT Simplot

Sustainable Simplot™

Bringing Earth's Resources to Life

Questions?

GOOD TO GREAT Simplot