



CHEM | E SHOW | 23



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Energy Management Principles For Carbon Reduction Frank Roberto

Gulf Energy[®]

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Introduction

- **Retired, ~ 45 years experience** in Utility Systems & Energy with ExxonMobil
 - **Extended Assignments:**
 - NJ, TX, Louisiana, Netherlands, UK, Italy
 - Global Experience in all stages of projects, energy system improvement, & process/energy optimization activities
 - **Last Role:**
 - Manager, Offsites and Utilities, Project Development Division
 - **Many Parallels** between Energy Mgt & Carbon Mgt
 - Require similar, rigorous approaches
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Outline

- Management **Engagement**
 - Realistic & Achievable **Goals**
 - Management System **Tools**
 - Affordable Improvement **Practices & Processes**
 - Accurate & Timely **Performance Monitoring**
 - **Stewardship & Accountability**
 - Continual Improvement - **Updated Goals**
 - Next Steps
-

Management Engagement

- **INITIATIVES REQUIRE TOTAL MANAGEMENT COMMITMENT:**

No initiative or activity gets attention/priority unless,
- there is local & global commitment
- throughout the entire management structure

- **Business**
 - **Operations/Process**
 - **Technical**
 - **Maintenance/Mechanical**
 - **Technology/Engineering Organizations**
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Management Engagement

- **COMMITMENT MEANS:**

- Budgeted & Available Resources - Both Monetary & Assigned Personnel

- **PRIORITIZATION**

- Priority must be clearly written & communicated with date expectations

- **STRATEGIC PLAN INCLUSION**

- Cannot be an “add-on” or “unofficial” objective
 - Must be built into the over-arching Strategic Plan
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Setting Realistic & Achievable Goals



- **Energy Activities are Long term** with Long Time Implementation
 - Near term goals need to reflect this
- **Goals must have a reasonable path**
 - Unrealistic goals hinder progress
 - No goal should be included unless there is a reasonable path to get there along with activities planned to make it happen
 - Stretch objectives can help stimulate the organization

Setting Realistic & Achievable Goals



- **Build Capabilities of Current Facility** & Potential Improvements and/or additions into goals
 - Currently available as well as developing technologies apply
- **Industry Benchmarks** help set the scene & confirm expectations
- **Consider Renewables** in your Business
 - Recognize their place on the learning curve & potential level of contribution__

Management System Tools



- **In-house and/or purchased management system tools need to be thoughtful, proven, & available**
 - **ISO 50001**
 - **Multiple DOE, IEDO, & EPA resources**
 - **A customized in-house tool building off or incorporating these**

Management System Tools



- **Uniform System** across a company
 - maintains a level playing field
 - helps address common issues
 - allows company-wide prioritization, not just a local optimization

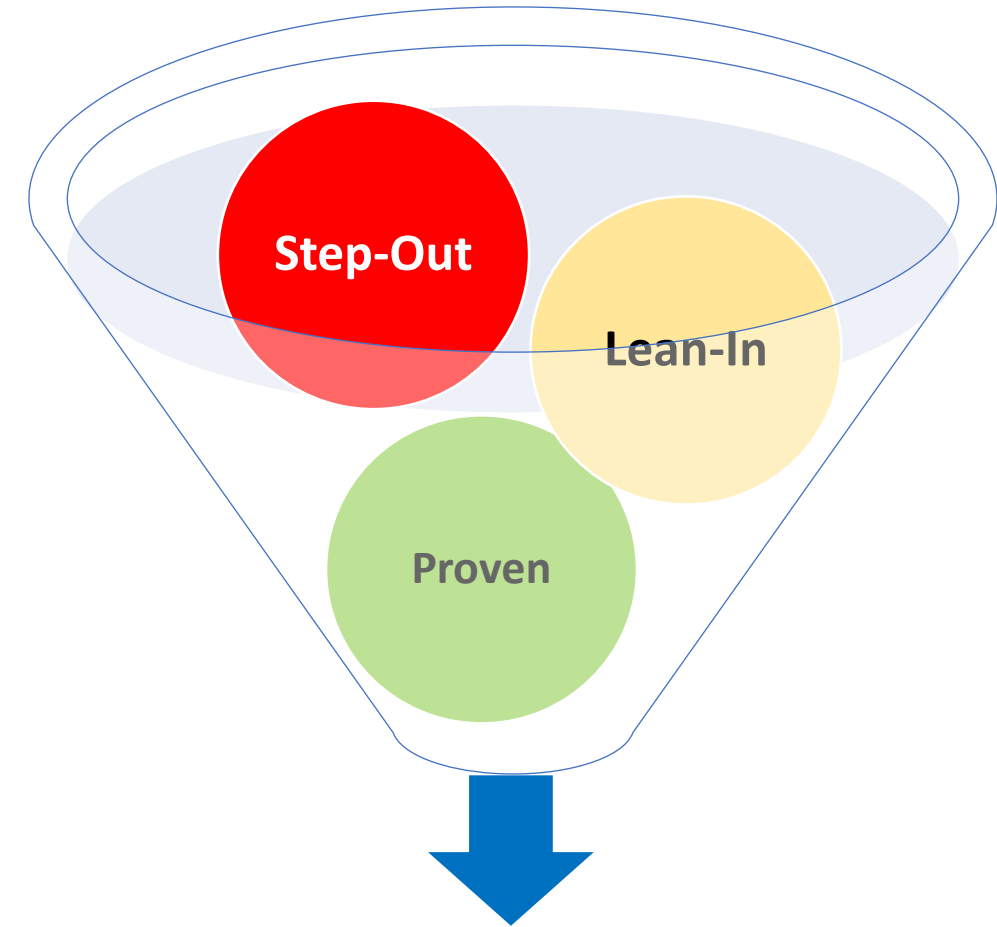
Management System Tools



- **Management System** must be evergreen
 - updated as technology, tools & circumstances evolve

Proven & Affordable Improvement Practices & Processes

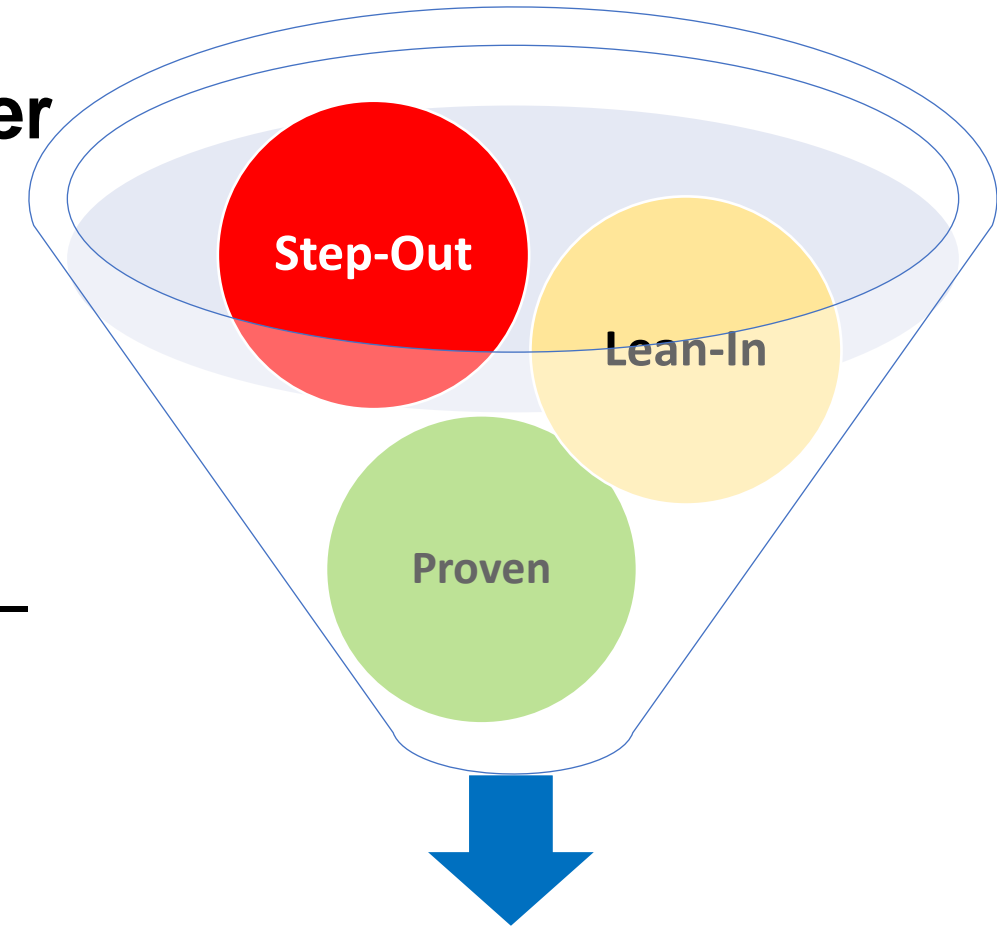
- **Use all available tools** at your disposal
 - Internal & Industrial Networking a valuable multiplier
 - Look to similar & different industries for innovation
 - Lawful Plagiarism saves time



Strategic Plan

Proven & Affordable Improvement Practices & Processes

- **Government-sponsored programs** can offer funding, resources, & technology
- **Consider Technologies** in all stages of development
 - Proven, “Lean-In,” & “Step-Out” all apply —

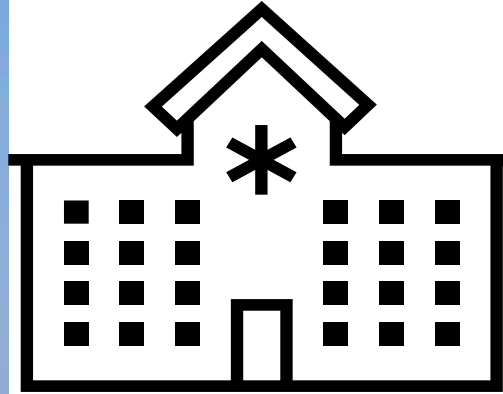


Strategic Plan

Often Challenging at **Scale**

- **Typical Challenge in Process Industry** is Applicability at Scale with significant heat & power loads
 - Not uncommon to have a complex demand of 400-500 MW electric power demand & an additional few hundred MW process drives
 - Add significant steam demand to above for process needs & furnace fuel firing
-

Often Challenging at **Scale**



A windmill or two can power buildings



Often Challenging at **Scale**

Acres (& Acres) of windmills/solar panels are needed for a major industrial or utility complex



Accurate, Timely Performance **Monitoring**

- **Must Know Current Use**, what form of energy needed & used, & where you use it
 - **Realtime Measurements** to make meaningful adjustments that impact performance
 - **Routine Summaries** track progress towards goals & smooth-out anomalies
 - Daily, Weekly, Monthly, Quarterly, Annually
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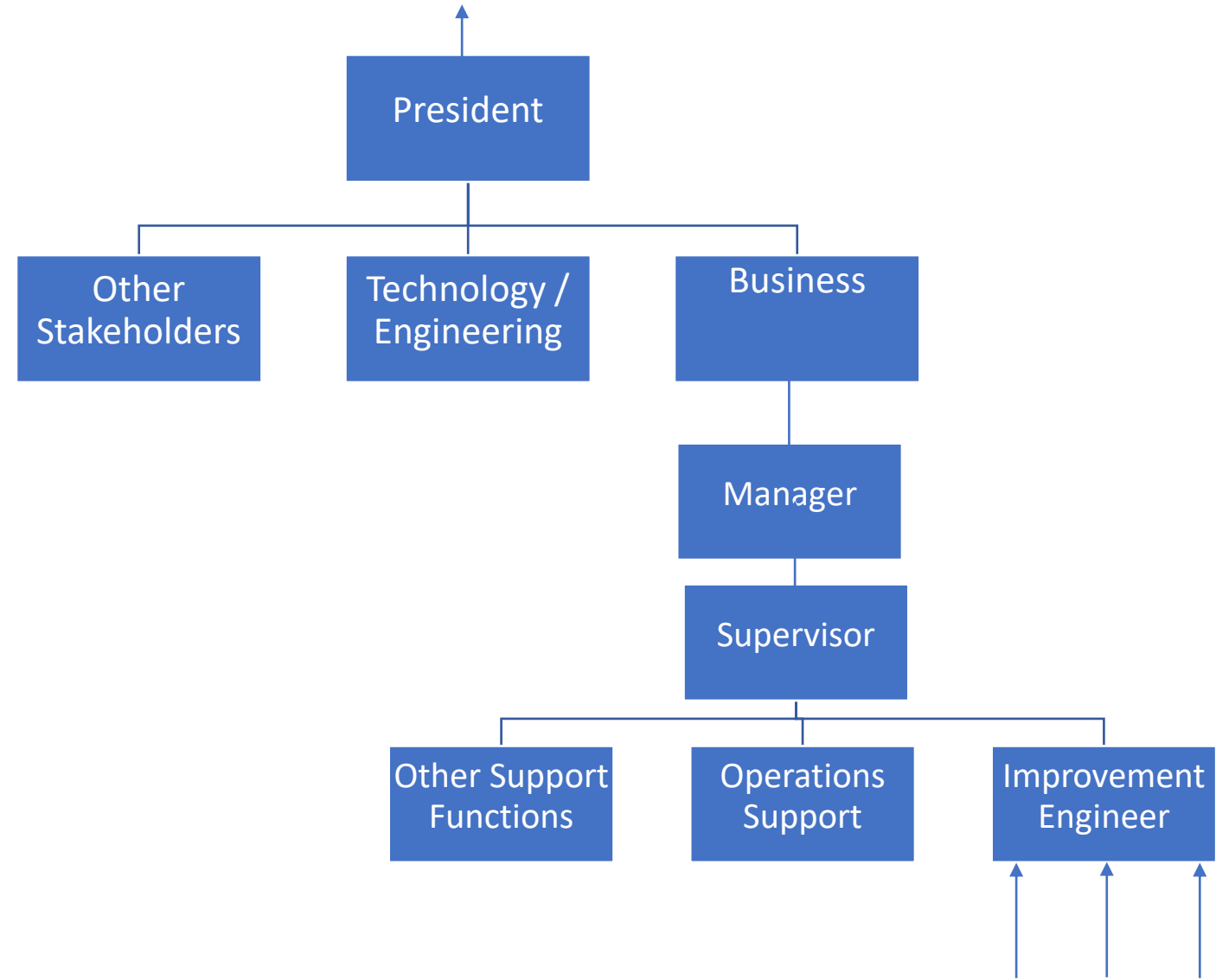
Accurate, Timely Performance **Monitoring**

- **Need to understand deviations from Plan & underlying reasons**
 - **Information Available** to those who can do something with it
 - **Operations/Process: day-to day & hourly adjustments - KPIs**
 - **Technical: identify medium term improvement opportunities - current best**
 - **Technology/Engineering: progress research & pilot programs - ideal best**
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Stewardship & Accountability

- **Plan Performance Visibility Drives Improvements**

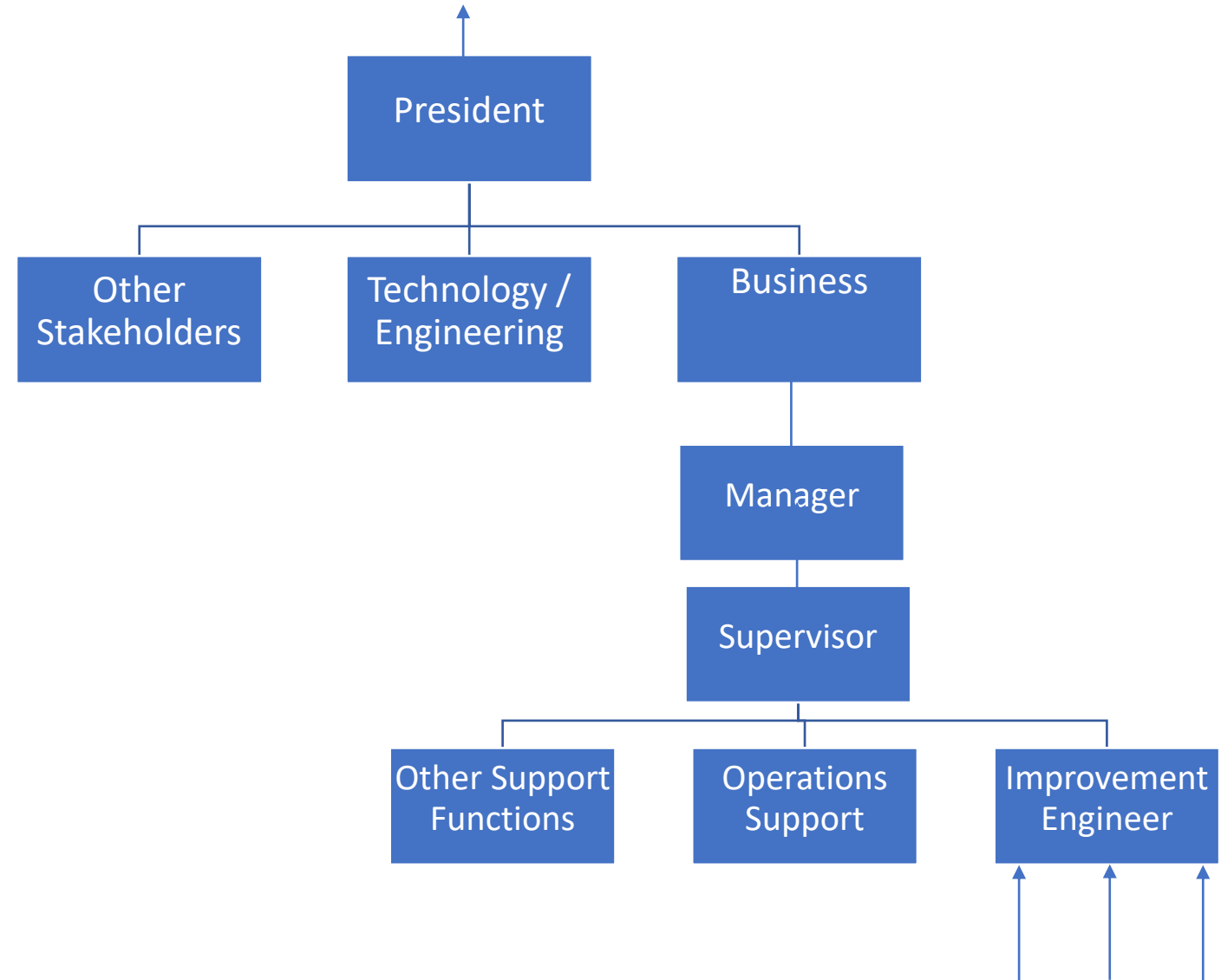
- **Management Reporting one, two or more levels up is a great motivator**
- **Focuses the mind & activities, no matter the frequency**



Stewardship & Accountability

- **Accountability Drives Progress**

- **High Accountability, engenders Progress**
- **Business is responsible for financial performance & other metric commitments**
- **President is responsible to board & shareholders**



Continual Improvement - Updated Goals

- **No Resting**

Once a goal is met, you cannot rest

- **Some say if you can meet the goal, it was set too low**
- **Should be just barely out-of-reach to stretch the organization**
- **If you can continually meet daily performance metrics, then you need better, tighter metrics** _____



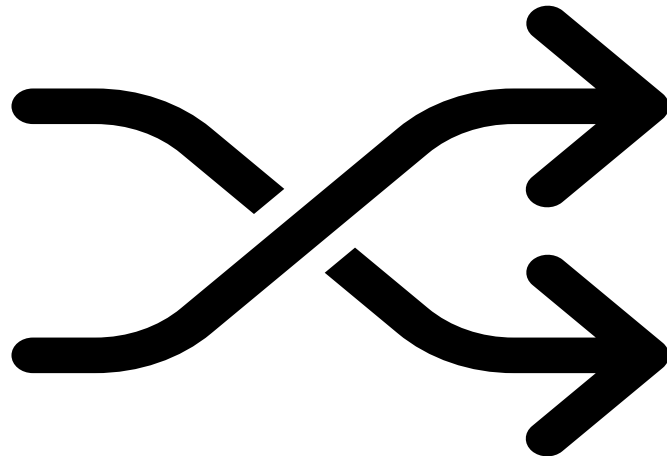
Continual Improvement - Updated Goals

- **Routine Updating** of goals is necessary
 - Ever-challenging, but realistic, is key to being a pacesetter
- **Technology Moves Forward** - take advantage of it
- **Scalability Improves** - be an early adopter
- **Innovate** to stay ahead of competition



Align with Corporate Priorities

- **Can't Compete with Safety** as a Top Priority,
 - but energy efficiency, closely linked to carbon emissions, should be high on the target list, (if not second)
 - Can evolve to become a license to operate
- **Declining Energy Use & Carbon Emissions**
 - lead to societal contributions
 - company longevity
 - greater profits



Next Steps

- **Repeat**

- **Return to Slide 4 – Management Engagement**
- **Sustained Management Commitment Essential**
 - **Cannot be flavor of the month**
- **More Challenging Targets**
- **Keep stretching the envelope in applications**
 - **Proven**
 - **Lean-In**
 - **Step-Out**

- **Repeat**

- **Repeat**

It's HARD WORK
It's Not MAGIC



Thank You

**Energy Management Principles
For Carbon Reduction**

Questions?

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