NEW HORIZONS
FOUNDATION
A Chance to Grow

Providing Vision and Leadership for the Future of the HVAC and Sheet Metal Industry

PERFORMANCE MEASUREMENT: A GUIDE TO DEVELOPING YOUR MEASURES OF SUCCESS

2025

Prepared By:

Robert Leicht, PhD
Muhammad Amir Hamza Khan

The Pennsylvania State University
College of Engineering

© NEW HORIZONS FOUNDATION • P.O. BOX 222784 • CHANTILLY, VIRGINIA 20153-2784
PHONE: (703) 222-9001 • FACSIMILE: (703) 349-5249 • www.newhorizonsfoundation.org

ACKNOWLEDGMENTS

We wish to thank the New Horizons Foundation Task Force Members for their contributions to this project.

NEW HORIZONS FOUNDATION TASK FORCE MEMBERS

- Guy Gast (industry champion)
  Waldinger Corporation
  Des Moines, IA
- Joseph Lansdell
  Poynter Sheet Metal
  Indianapolis, IN
- Roeland Hoeke
  HT Lyons
  Allentown, PA
- Bernie Antchak
  Northwest Sheetmetal
  Surry, British Columbia, CA
- Kevin Gill, Jr.
  McCusker-Gill, Inc.
  Hingham, MA
- Jay Rohan
  Dynamic Systems, Inc.
  Austin, TX
- Joseph Passante
  Cleats Manufacturing
  Chicago, IL
- Thomas Soles, Jr.
  New Horizons Foundation
  Chantilly, VA

Researchers

- Robert Leicht, Ph.D
  Penn State
  University Park, PA
- Mohammed Amir Hamza Khan
  Penn State
  University Park, PA

TABLE OF CONTENTS

Executive Summary . . . 1

Planning Process Overview . . . 1

- Step 1: Plan . . . 1
- Step 2: Implement . . . 2
- Step 3: Assess . . . 2
- Step 4: Manage . . . 2

Step 1: Plan . . . 2

- Participants . . . 3
- Tactical – Sub-processes and Diagnostics . . . 3
- Operational – Business Processes and Projects . . . 3
- Strategic – Pursuing Company Objectives . . . 4

Step 2: Implement . . . 4

- Data Collection . . . 4
- Pilot your Metrics . . . 5

Step 3: Assess . . . 5

- Leading vs. Lagging Measures . . . 5
- Baselines and Targets . . . 6
- Performance Measure Reviews . . . 7

Step 4: Manage . . . 8

- Planning . . . 8
- Resource Use . . . 8
- Decision-making . . . 8
- Responsibility . . . 8
- Continuous Review . . . 8

Tips for Getting Started . . . 9

- 1. Start Somewhere . . . 9
- 2. Keep it Simple . . . 9
- 3. Training and Support . . . 9
- 4. Create a Dashboard . . . 9
- 5. Use the Data you Have . . . 9
- 6. Involve your People . . . 9

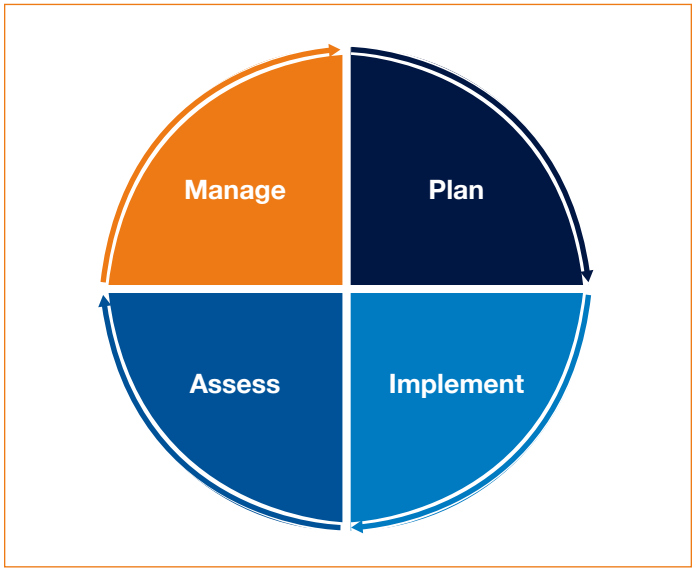
EXECUTIVE SUMMARY

As firms grow, the leadership becomes removed from the day-to-day operations, often relying on their teams to perform the core tasks for fabricating and installing work on projects. The purpose of adopting performance measures and improvement efforts is to allow leadership to 'see' work they are not directly engaged in running. Whether they are called key performance measures, indicators, or other terms, effective measures to track performance enable improvement initiatives, early warning of problems, resource optimization, and data-driven decision-making. The secondary benefit of well-defined measures, as companies grow, is that they allow the teams that are being managed to have understanding and guidance on what is vital to making their projects and the company successful. Pursuing these efforts requires an organized approach to identify the appropriate elements of your business to measure, manage, and implement a system to track and share the resulting information. The purpose of this guide is to support sheet metal and HVAC contractors to organize your performance measurement. Developing a system enables clear communication of company priorities. The principles of aligning the performance measurement with company priorities should persist.

Performance Measurement Plan

A Performance Measurement Plan is a formal approach that outlines the company goals, directions, and how to manage achieving those goals. The Plan lays out the process, metrics, review timeline, and strategy for communicating the performance through the identified metrics. The steps for developing or updating your performance measurement plan are simple. However, the effort to develop or refine your process is not always quick and easy.

Performance Measurement Planning Process:



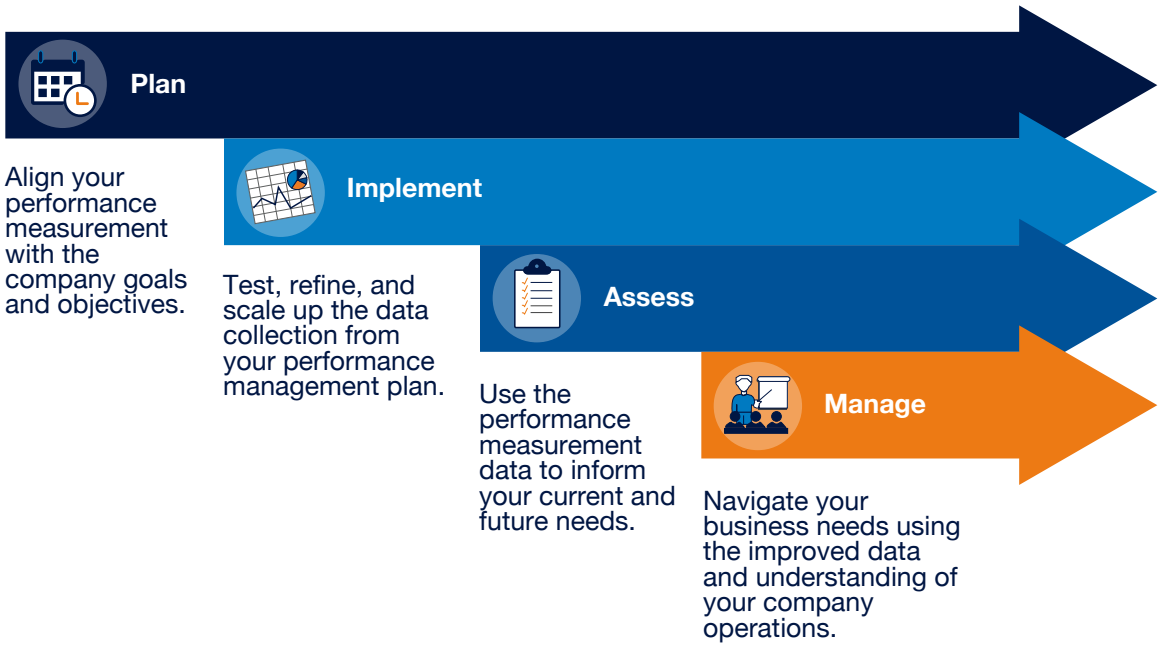
Research in manufacturing has shown that firms that implement well-defined performance management systems see up to 50% improvements in production and a 20% increase in returns or profits. However, approximately 70% of companies fall short when moving from the planning to the implementation steps of the process. The adoption of a performance management system can vary significantly depending on the firm's size and the complexity of the software tools. This document is intended to guide you through the four steps and provide examples to support the process of creating or refining your performance metrics.

PLANNING PROCESS OVERVIEW

Step 1: Plan

The key outcome from the planning step is to clearly define the processes and scope of performance measurement in alignment with the vision and goals of the company. From that scope, the steps for identifying core processes and finding the right measures to implement should have clear direction. The session to plan the process and scope could be a one-time meeting or may need to be held in several small groups for larger organizations that host multiple departments or divisions.

Figure 1: The Process for adopting A performance measurement system.



Step 2: Implement

Once the plan and measures are developed to monitor your processes, the next step is to begin implementation. Pilot efforts are encouraged to test the complete process on a small scale, project, or specific process to work through details, refine the steps for gathering information, and begin to create performance benchmarks. These pilot efforts help set the stage for scaling the measures across the rest of the firm.

Step 3: Assess

Once the measures are defined and the process for tracking and collecting data is in place, the incoming metrics must be assessed. The type of information, timing, and past performance need to be understood to interpret what shop, detailing project, or other metrics are telling you about your operations.

Step 4: Manage

Once the plan is developed, piloted, and data is collected, the focus shifts from creating and implementing the metrics to monitoring and oversight. The data coming in should serve as operational information, but the company leadership needs to steer the process and decisions, using the incoming metrics and performance to inform the progress and direction.

STEP 1: PLAN

Performance measurement can be applied to all company processes or operations and at different levels of planning. Planning can be at the tactical level, such as adjusting the layout of shop space to improve efficiency, at the operational level to learn from projects or within divisions, or at the company level, for better understanding which project types or general contractors lead to more profitable work. This guide

does not present how to perform strategic planning but rather translates that plan into measures of company progress and performance to achieve it.

Participants

The performance measurement effort requires the support and buy-in of different company roles and groups. Depending on your company's size and organization, one or several groups may be engaged in developing your performance measurement system. There should be representation from company leadership, operational leads for the departments or divisions that are actively being planned, and people at different levels within each to be able to discuss the details.

Effective Metrics

When measuring and reporting performance, measures need to:

- Be easily understood.
- Measure important things.
- Be easy to collect.
- Encourage the right behavior.
- Support or link to financial goals.

Scope of Measures:

Performance measures should align with the major operations and processes your company is pursuing, from tactical to strategic. Many items can be measured, so one of the first tasks is understanding the critical factors that impact success at each level. In addition, the scope should balance internal activities and processes, financial tracking, customer feedback or insights, and some effort to continue to improve or innovate. The accompanying white paper devotes a section to each of these topics to present an array of measures, highlighting some of the most common tracking items for sheet metal, different ways to measure or track those items, and collecting data, along with some tips and alternative measures that may be helpful.

> The first step towards getting somewhere is to decide you're not going to stay where you are.
>
> – J.P. Morgan

Tactical – Sub-processes and Diagnostics

Tactical measures are necessary to monitor the daily or weekly activities that make up the bulk of work hours. They serve to keep an eye on the more detailed sub-processes that are the output of one person or a small group. They are often used as diagnostic measures - putting up a red flag when they change from the typical performance. The scope of tactical measures in sheet metal and HVAC work cover detailing the components or assemblies for a new project, steps for fabricating duct or fittings in a shop, production information for installing components or equipment for a project, safety indicators and reporting requirements, as well as financial tracking for billing, procuring materials, paying vendors and your workforce. Tactical measures are often the simplest to define and easiest data to collect.

Operational – Business Processes and Projects

Operational measures exist at one or more levels above tactical measures. These tend to evaluate outcomes of processes or project results, such as the accuracy of cost estimates. Where tactical measures track detailed activity, operational measures seek to draw insights that include multiple functions and how they affect each other. They allow you to compare performance to understand what you are good at and where you are the most profitable or may need to improve. Operation objectives are often slower to change and may be tracked at longer intervals, such as monthly or quarterly reporting. They often build from tactical measures to span multiple projects or divisions.

Strategic – Pursuing Company Objectives

Strategic performance relates to advancing the company's vision. It may align with company growth, entering new markets or project types, improving profitability, or adopting key technology. Strategic performance is often used to drive new or evolving initiatives within the firm that are critical to maintaining or improving the company's competitiveness and long-term viability.

Figure 2: Performance Measurement Pyramid

Plan your Performance Measures

The process for developing your measures should use a workshop approach to brainstorming and prioritizing potential measures. The plan should set an agenda for the workshop that includes a review of the scope and departments or processes that are the focus. A coach or facilitator may be helpful to keep the discussion focused. Moving from tactical measures, there is usually a shorter list of operational and strategic metrics.

As implied by the performance measurement pyramid in *Figure 2*, you should have some measures that span all your operations, such as fabrication or installation, at a tactical level. We recommend starting with a small set of measures if you are developing your system for the first time. You can measure everything, but it is not helpful or efficient. As contractors grow, revenue, workforce, and company footprint, it is common for the performance management system to grow to match. Firms should consider revisiting and expanding the metrics as your company evolves.

Participants should come to the workshop ready to discuss the processes you follow, your procedures and needs, and ideas for collecting and sharing information. Brainstorm a long list of metrics, group them to match the processes that are being targeted, and organize ideas to pull together related data, topics, and measures. After the list is organized and grouped, the measures need to be prioritized in terms of the value or insight against the ease of gathering the data on a regular basis.

STEP 2: IMPLEMENT

Once the plan and measures are developed, the next step is to begin implementing them. Identifying who, how, and when are the next steps to moving toward the data collection step. To help document the plan, *Table 1* outlines some key elements that need to be captured about the performance measures, with examples illustrating the type of planning needed. Working out the timing, the sources of information needed for each metric, and the person within the firm or project who has responsibility for reporting the information is critical.

Data Collection

When implementing the process, it is vital to understand the data source used for the metrics. For example, suppose payroll hours are being used for productivity. In that case, ensuring the work is charged to the right project or account code becomes noticeably more important. The person responsible for reporting or tracking the hours may need some training to understand how the information is being used and how cost codes or work breakdown structure are being reported. The measures are only helpful if they report the actual performance and use consistent categories from project to project.

Table 1: Example tactical performance measure frequency and source planning

Measure	Description	Units	Source	Responsibility	Frequency
Shop Labor Productivity	Weight per hour of installed ductwork	Lb/hr	Shop material tracking and payroll	Shop Foreman	Weekly report submissions
Net cash flow	Income received minus project spending	$$	Accounting	Project Manager	Monthly project reviews
Recordables (Safety)	Number of recordable safety incidents	#	Safety reports / Daily reports	Foreman	Daily report of incidents, weekly summary
Field Installation	Length of duct installed	LF	Field tracking reports & payroll hours	Project Foreman	Weekly report submissions

Integrate Data Sources

After your data sources are drafted, the data must be mapped and organized. Many data sources may be used; the results are often raw numbers. You need to determine how the data gets from the source report, spreadsheet, or project management system to the performance measurement tracking. For data requiring calculations, the data must be reported in a standard format, consistent units, and time intervals to allow apples-to-apples reporting and comparisons.

Pilot your Metrics

Small pilot tests to collect data and calculate the measures are encouraged to work through details, refine the steps, and start to develop benchmark data. It is not unusual for data from different sources to be misaligned, whether using different units or other text that will create errors. Once the pilot effort has removed the bumps and ironed out potential the wrinkles in the process, the efforts can be scaled up for monitoring and assessing performance on a rolling basis.

STEP 3: ASSESS

By systemically assessing your measures, you can gain insights into performance and continue to improve. Checking and assessing performance, as well as the usefulness of the measures, is a necessary part of performance improvement following the measurement process.

Leading vs. Lagging Measures

Lagging - measures or indicators that report results *after* an action is taken or a project is complete. They provide a historical perspective that can provide insights into past performance. For example - the safety Recordable Incident Rate measures the past number of workplace incidents per total hours worked.

Leading - measures or indicators that predict future trends or outcomes. They can be proactive, allowing companies to adjust *before* problems arise. For example, safety training hours track the total hours of training or hours per worker but correlate to safer future operations.

While leading indicators sound ideal, they are often inaccurate, difficult to measure, and sensitive to different projects and contexts. Lagging indicators are more precise and consistent but only provide information or outcomes after the fact.

Baselines and Targets

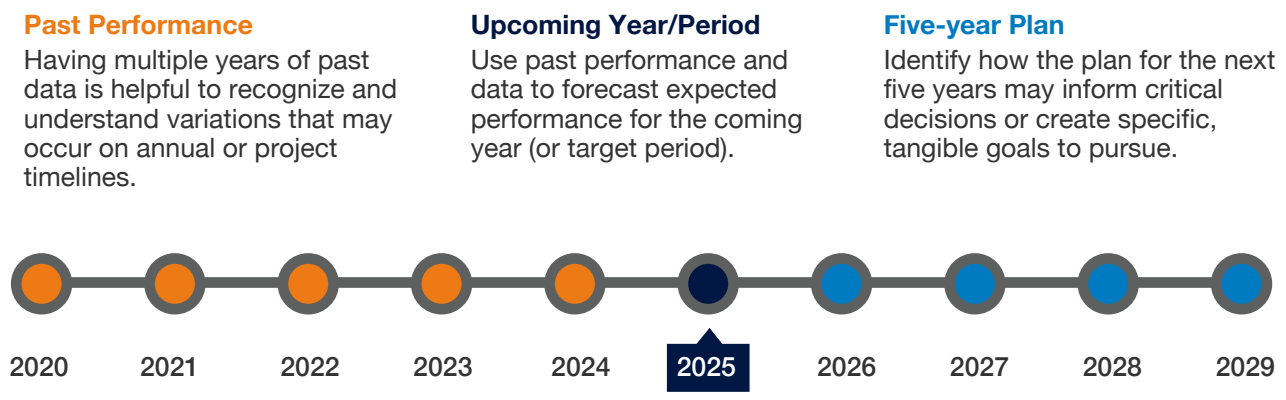
Measures are only helpful when evaluated against a target. To understand how well you perform, you need to set performance targets that serve as your control or comparison. Targets and measures can be reported in raw numbers, progress as a percentage of a target or measure, or improvement.

Setting Targets

Using past years' information, performance targets should be set to encourage desired behavior and challenge your firm to improve. Remember to consider targets not only as direct measurements but as progress against your goal or a level of improvement over past performance. As an example – perhaps your goal is to win more projects as negotiated work:

	Direct	Progress	Improve
Measure	Number of negotiated projects	% new projects that are negotiated	% Increase of last year
Target	10 projects	40% negotiated	20% more negotiated
Frequency	Monthly	Monthly	Monthly
Source	Project lead tracking spreadsheet		

Figure 3: Timeline of assessing and benchmarking your performance measures



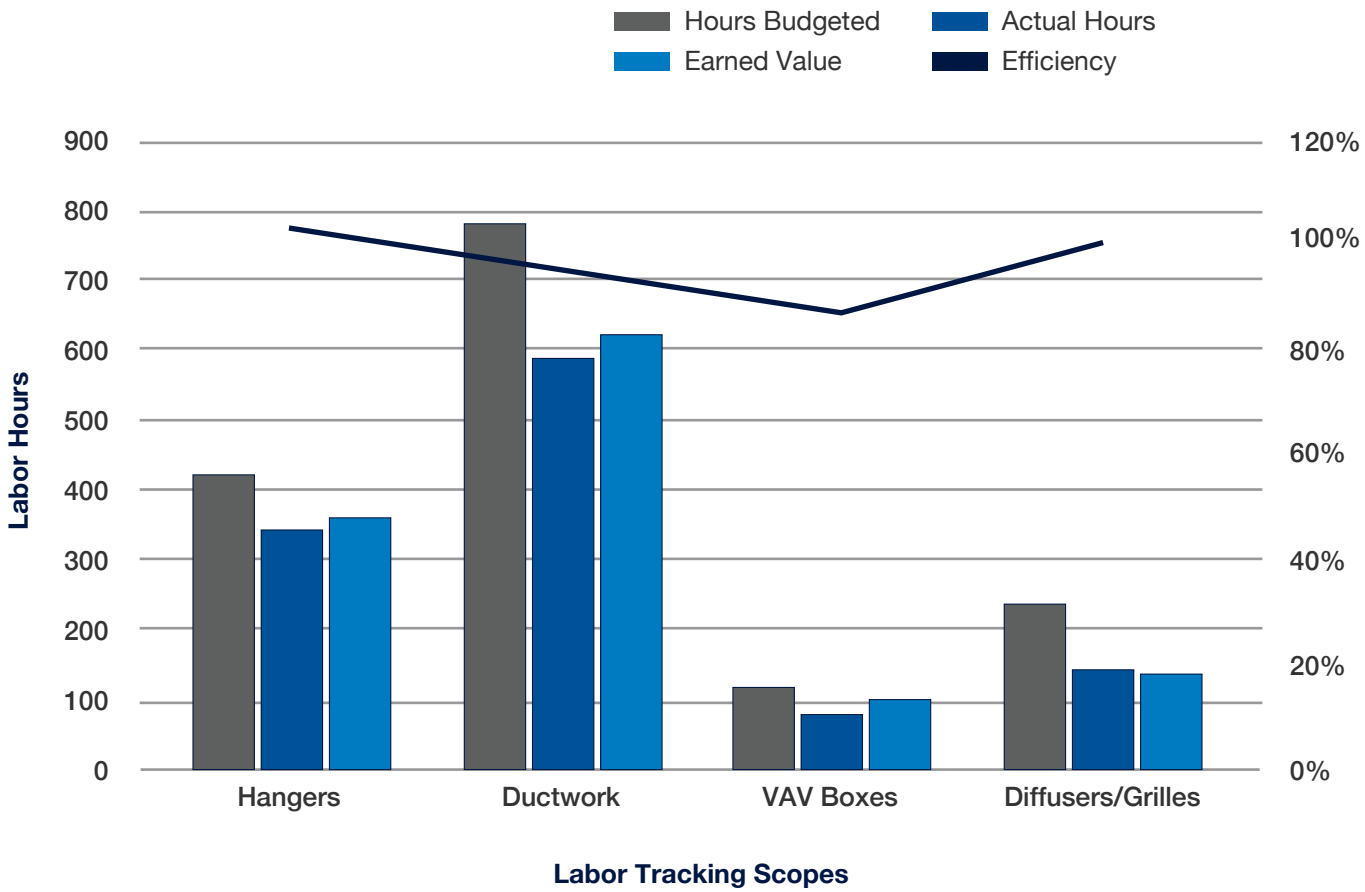
Performance Measure Reviews

Reviews should be planned at consistent times or intervals to align with the timing and cycles identified in the Implement Step. They should be built into meetings and agendas to become a standard activity. The timing should be planned and adjusted to ensure you can best use the information to identify problems early, provide timely resources or feedback, and support effective company decisions. These may be monthly or quarterly review meetings or early project reviews to ensure problems are caught promptly.

Review Tasks

Use figures and graphs or key targets to look for trends in the data over time. These could be upward trajectories, seasonal or project cycles, or concerns about downward trends in performance.

Figure 4: Productivity Tracking Monitoring example.



In addition to trends, data that appears out of the normal range of performance should serve as a red flag to dig deeper into the process or project to understand why. Relationships between metrics should also be sought to identify potential upstream problems. For example, production delays in the field might result from delays or quality issues from the shop.

Review Questions to ask:

1. How well do the measures align with the process or business objectives being monitored?
2. How might external factors (market, labor, weather) impact performance?
3. Is the data being collected measuring what we expect?
4. How is performance changing over time?

STEP 4: MANAGE

Once the plan is developed, piloted, and data is collected, the focus must shift to managing the process, results, and adjustments. Changes may be needed in the process or measures to ensure the focus is on monitoring and improving the core activities needed in the sheet metal and HVAC contractor business.

Planning

Performance data is used to make information more readily available, empowering the workforce to make the best decisions, and helping company leadership set clear targets and develop strategies to reach the company's goals.

Perfection is not attainable, but if we chase perfection, we can catch excellence.

– Vince Lombardi

Resource Use

One key insight that performance measurement helps us understand is how well resources are being used. The feedback from measurement data should help ensure sufficient resources are available in terms of workforce, finances, and technology or equipment. Further, these resources must be coordinated and allocated to maximize their use and support productivity.

Decision-making

Management is responsible for making appropriate and timely decisions. Having information readily available makes it easier for leaders to identify the needs, take corrective actions, and allocate resources.

Responsibility

Tracking and improving performance are more likely to occur if someone is responsible for each metric you track. The person should be able to influence the process and measures they address. If the person managing the metric must report on it to the leadership, they are more likely to want to report success in meeting targets and improving performance.

Continuous Review

While focusing on performance, it is important to keep checking your metrics to ensure you are not missing an important aspect of your business. Markets change, and worker behavior changes as well. While core metrics will likely stay helpful for years, it is important to refresh your metrics with your annual and 5-year planning to capture new directions or areas of growth that need to be monitored.

TIPS FOR GETTING STARTED

While the process is intended to be comprehensive, here are a few tips for getting started:

1. Start Somewhere

You may not be able to perform whole company planning and performance measurement - that's fine. Start with the scope and sphere of influence you have right in front of you. Identify metrics and targets for the processes you manage, start collecting data, and analyze how you are doing. See what your colleagues track and compare what you collect and how you manage it.

2. Keep it Simple

You can measure everything, but most of it won't be helpful or help you make decisions. Keep the metrics simple and easy to collect and be sure they inform us how the process supports company success.

3. Training and Support

Many people in our industry are not trained in business analytics. You will need to find help to provide training and support to others as this process is implemented. Remember to focus on metrics supporting the core business and company direction and make this a resource for your team, not a burden.

4. Create a Dashboard

The information is not helpful if no one can see it. Find a way to make a dashboard or visual tracker, hang it in a job trailer or the office, and email updates or summaries to everyone before meetings. While no one enjoys poor performance, more eyes will lead to more potential feedback and improvements.

> That which is measured improves. That which is measured and shared improves exponentially.
>
> – Karl Pearson

5. Use the Data you Have

There may be a desire to invest in new software or buy some type of tracking technology. Before spending money to track your measures, start with the systems you have and figure out what works and what is really needed. If you have a good start on tracking, you will be better positioned when reviewing software tools.

6. Involve your People

You probably already have ideas on what you want to track but engage your team to get their insights and buy-in. They are more likely to support adopting measures they had a say in identifying and developing. Also, reach out to your customers to ensure you continue delivering what they value.

NEW HORIZONS FOUNDATION 2024-2025 BOARD OF DIRECTORS

Guy Gast, Chair
The Waldinger Corporation
Des Moines, IA

Angela Simon, Vice Chair
Menlo Park, CA

Ron Rodgers, Chair Emeritus
R3 Investments, Inc.
Peoria, AZ

Thomas J. Soles, Executive Director
New Horizons Foundation
Chantilly, VA

Chad Bunting
Schoppe Company, Inc.
Salt Lake City, UT

Carol Duncan
General Sheet Metal
Clackamas, OR

Kevin R. Gill, Jr.
McCusker-Gill, Inc.
Hingham, MA

Aaron Hilger
SMACNA National
Chantilly, VA

Todd Hill
Ventcon, Inc.
Allen Park, MI

Carmen Koo
Applied Air Conditioning, Inc.
Fullerton, CA

Tom Martin
T.H. Martin, Inc.
Cleveland, OH

Ernie P. Menold
Ernest D. Menold, Inc.
Lester, PA

Julie A. Muller, Esq.
SMACNA - Western Washington, Inc.
Bellevue, WA

Joseph Samia
Central Consolidated, Inc.
Wichita, KS

A. Scott Vidimos
Vidimos, Inc.
East Chicago, IN

NEW HORIZONS FOUNDATION CONTRIBUTORS

SUMMIT COUNCIL (MEMBERSHIPS AS OF OCTOBER 2024)

PREMIER - $300,000 AND UP

ACCO Engineered Systems
Peter Fortin, California

Bay Area SMACNA Chapter
Sean O'Donoghue, Executive Vice President

Sheet Metal and Air Conditioning Contractors' National Association, Inc.
Represented by Aaron Hilger, CEO

CHAMPION - $200,000 AND UP

McCusker-Gill, Inc.
Kevin R. Gill, Sr., Massachusetts

Sheet Metal Connectors, Inc.
James R. Myers, Minnesota

SMACNA - St. Louis Chapter
Represented by Ryan Corrigan

SMACNA - Western Washington, Inc.
Represented by Russ Kimball

SMACNA Greater Chicago
Represented by Jim Cesak

SMACNA Southern California
Represented by Richard Rivera

Streimer Sheet Metal Works, Inc.
Frederick L. Streimer, Oregon

SUMMIT COUNSELOR - $100,000 AND UP

AABCO Sheet Metal Co., Inc.
Ronald J. Palmerick, New York

Bright Sheet Metal Co., Inc.
Hank Meyers, Indiana

C & R Mechanical Company
E. Timothy Decker, Missouri

Climate Engineers
Peter Watson, Iowa

Holaday-Parks, Inc.
Grace Pizzey, Washington

Lennox Industries, Inc.
Texas

Marelich Mechanical Co., Inc.
Keith Atteberry, California

NYC SMACNA
Represented by John Contrubis

Ron and Cindy Rodgers
Arizona

Sheet Metal Contractors Association of Philadelphia & Vicinity
Represented by Ernest J. Menold

Sheet Metal Contractors of Iowa, Inc.
Represented by John Ilten

SMACNA Boston, Inc.
Represented by James M. Morgan

SMACNA Oregon & SW Washington
Represented by Chris Schneider

NEW HORIZONS FOUNDATION CONTRIBUTORS, CONTINUED

SUMMIT COUNSELOR - $100,000 AND UP, CONTINUED

Stanley Black & Decker
Representative TBD

Therma Corporation
Joseph Parisi, California

Welsch Heating & Cooling Company
George L. "Butch" Welsch, Missouri

Yearout Mechanical, Inc.
Kevin Yearout, New Mexico

SUMMIT CIRCLE - $50,000 AND UP

Angie and Michael Simon
California

Charles E. Jarrell Contracting Co.
Howard Stine, Missouri

Felhaber Larson
Daniel Kelly, Minnesota

General Sheet Metal
Carol Duncan, Oregon

Guy and Deana Gast
Iowa, Field of Dreams

Key Air Conditioning Contractors, Inc.
Richard Rivera, California

Melrose Metal Products, Inc.
Mitchell Hoppe, California

Miller Bonded, Inc.
Keith E. Wilson, New Mexico

New England Sheet Metal and Mechanical Co.
John Sloan, California

SMACNA - Cleveland
Represented by Tom Martin

SMACNA - New Mexico
Represented by Ronda Gilliland-Lopez

SMACNA Metropolitan Detroit Chapter
Represented by Phil McShane

SSM Industries, Inc.
Thomas A. Szymczak, Pennsylvania

Stromberg Metal Works, Inc.
William Gawne, Maryland

Walsh Mechanical Contractors
Paul M. Le Bel, Sr., Massachusetts

NEW HORIZONS FOUNDATION CONTRIBUTORS, CONTINUED

INDUSTRY MENTORS, CONTRACTORS LOOKING TO THE FUTURE - PERSONAL PLEDGES OF $50,000

Guy Gast
Des Moines, IA

Ron Rodgers
Peoria, AZ

Angie & Michael Simon
Menlo Park, CA

Mark Watson
Hiawatha, IA

Keith Wilson
Albuquerque, NM

PATRON - $25,000 AND UP

ACP Sheet Metal Co., Inc.
Nathan Dills, Oklahoma

Cox Engineering Company
Jon Desmond, Massachusetts

D.D.S. Industries, Inc.
Dwight D. Silvia, Massachusetts

Dee Cramer, Inc.
Matt Cramer, Michigan

J.C. Cannistraro, LLC
David Cannistraro, Massachusetts

Lyon Sheet Metal, Inc.
Michael C. Corrigan, Sr., Missouri

Matrix Group International, Inc.
Joanna Pineda, Virginia

Novak Heating & Air Conditioning, Inc.
Randy Novak, Iowa

Sheet Metal Contractors Association of Central Pennsylvania
Lori A. Eshenaur

SMACNA - Sacramento Valley Chapter
Cheryl Sprague

SMACNA Mid-Atlantic
Kurt Snyder

SMACNA of Oklahoma, Inc.
Darlene Schiffli

Viewpoint Construction Software
Karl Rajotte, Pennsylvania

STATESMAN - $10,000 AND UP

McKamish, Inc.
David McKamish, Pennsylvania

SMACNA - Kansas City Chapter
Stacey Smyly

SMACNA of Long Island, Inc.
TBD

U.S. Sheet Metal, Inc.
Bruce J. Stockwell, Michigan

W.E. Bowers.
Dale Sheppard, Maryland

NEW HORIZONS FOUNDATION CONTRIBUTORS, CONTINUED

AMBASSADOR - $5,000 AND UP

Emcor Services Scalise Industries
Mark Malencia, Pennsylvania

Enterprise Holdings Foundation
Missouri

Florida SMACNA, Inc.
Lisa Falk

Jack's Mechanical Solutions, Inc.
Gabe Martinez, New Mexico

Murphy Company
Mark Bengard, Missouri

Tri-Metal Fabricators
Joe Toso, British Columbia, Canada

Wm. J. Donovan Co.
Edmund J. Bransfield, Pennsylvania

DIPLOMAT - $2,500 AND UP

CMF, Inc.
David Duclett, California

Houston Sheet Metal Contractors Association
Glenn Rex

Kinetics
Arizona

SMACNA Utah
Shelley Lester

DELEGATE - $100 AND UP

Architectural Sheet Metal Systems, Inc.
James Van Becelaere, Missouri

Blue Diamond Sheet Metal, Inc.
Al LaBella, New York

Boston Air Systems, Inc.
Barry Dwyer, Massachusetts

Energy Labs, Inc.
Ray Irani, California

LADCO, Inc.
Doug Hamilton, Iowa

MCA-SMACNA of San Antonio, Inc.
Sandee Morgan

SMACNA Arizona
Carol Goguen