

The Weidt Group[®]

The Company for Energy Decision MakersSM

twgi.com

Collaboration



Energy DesignSM

Analysis



Research



Insights in an Election Year



I was brought up to believe that the only thing worth doing was to add to the sum of accurate information in the world.

- *Margaret Mead*

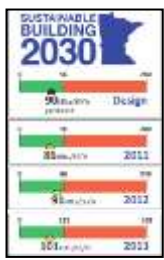
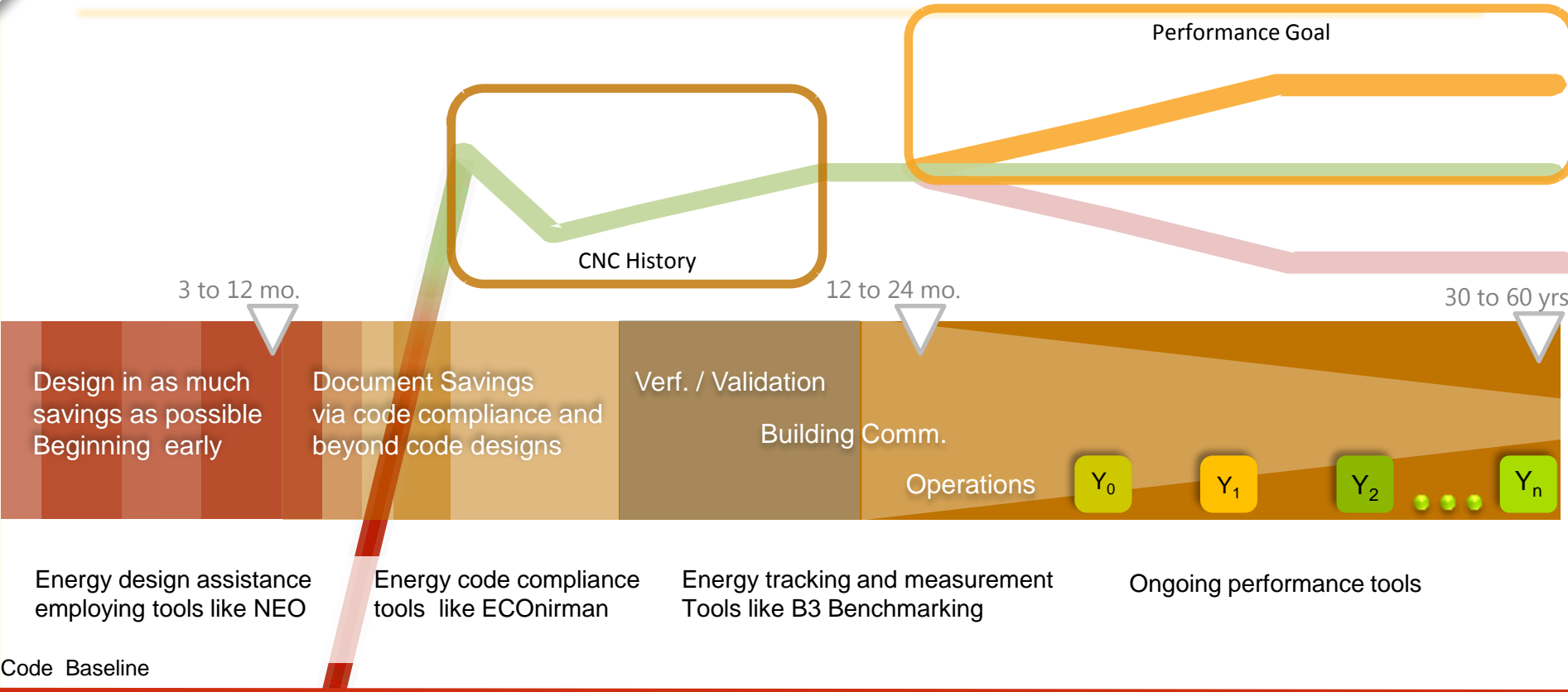


Energy and Software Tools

New and Existing Buildings

- ▲ As state policies are adopted the role of tools and technology grows.
- ▲ Example State Policies:
 - ▲ New Construction Design Guidelines
 - ▲ Existing Building Benchmarking
 - ▲ Code Compliance
 - ▲ Rating, Labeling and Disclosure (Public & Private)
 - ▲ Beyond Code/Reach Codes/Outcome-based Codes
 - ▲ DSM Program Planning
 - ▲ Market and Rate Design that integrates DR

The Big Picture



Facts Made Meaningful

▲ New Construction

- ▲ Use Data to Design in as much energy efficiency as possible
- ▲ Run investment grade simulations to ensure savings are documented and quantified
- ▲ Data warehouse those simulations cataloguing the predicted savings
- ▲ Use for code compliance, DSM programs, on-going performance checks, to feed the RCx and ESCO pipeline and potentially behavioral programs

▲ Existing Buildings

- ▲ Benchmark building performance against an objective standard, against peers, against Energy Star and against itself
- ▲ Target high ROI opportunities to feed the financing pipeline:
 - ▲ Public/Private
 - ▲ Utility/DSM
- ▲ Track performance over time
- ▲ Warehouse building data performance for MV&E and policy analysis

Benchmarking and Baselining Goals



B3 Benchmarking

Admin
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Iowa energy center

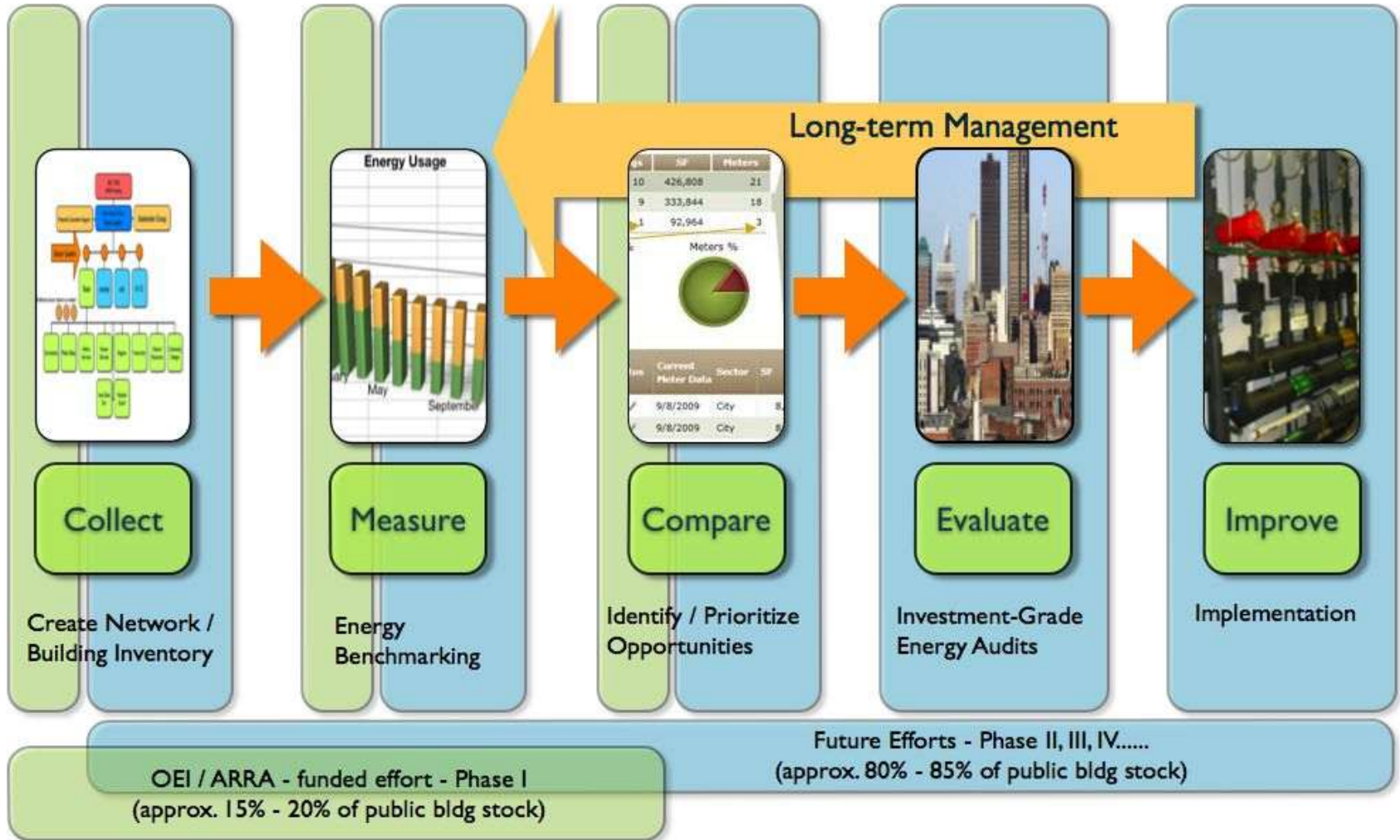
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IOWA B3 Benchmarking

Benchmarking – Data Driven Decisions



Sample Benchmarking

K-12 Public Schools, Marion Independent
Site

Starry Elementary

SUMMARY
BENCHMARK
PEER COMPARISON
ENERGY STAR
BASELINE
TARGETS
REPORTS

Summary of the site is detailed below, along with controls to manage buildings, meters, meter readings and general site attributes. [More Info...](#)

Site **Starry Elementary**

Square Feet **47,829**

Primary Space Usage **Elementary School**

Actual Meter Total **56.85 kBtu/SF/Year**

Contiguous Months **24**

[Site Custom Attributes](#)

Consumption Sep 2010 - Aug 2011 [Export To Excel](#)

Month	Consumption
Sep	1.5
Oct	2.5
Nov	6.0
Dec	9.5
Jan	10.5
Feb	8.5
Mar	7.0
Apr	4.5
May	2.5
Jun	1.5
Jul	1.5
Aug	1.5

B3 Benchmark

★★★★☆

This site is using significantly less energy than the B3 Benchmark.

B3 Peer Rating

81%

This site is ranked in the 81st percentile amongst 86 similar sites.

ENERGY STAR Rating

91

This site may be eligible to apply for the ENERGY STAR.

Baseline

↑ 3.03%

This site is operating above the baseline period based on energy.

Buildings [+ Add New Building](#)

Name	Status	Primary Space Usage	Address	City	State	Zip	SF	Occupancy	
Starry Elementary	✓	Elementary School	655 S 15th Street	Marion	IA	52302	47,829	8/1/1954	🌐 📄 🗑️

Meters [+ Add New Meter](#)

Name	Status	Type	Utility Company	Meter #	Account #	Rdgs	First Reading	Last Reading	
Starry Elementa	✓	Natural Gas	Seminole Energy Servi	T97182789	6750083012	37	11/1/2008	10/18/2011	📄 🗑️
Starry Elementa	✓	Electric	Alliant Energy - IPL	78201575	24-38-112-3070-01	24	9/1/2009	9/1/2011	📄 🗑️
Starry Elementa	✓	Electric	Alliant Energy - IPL	56819667	24-38-112-3070-01	24	9/1/2009	9/1/2011	📄 🗑️

B3 Framework v3.0.0.3192 | Copyright © 2012

MN B3 Benchmarking Program

Successes to Date

- ▲ Participant response has been highly positive
 - ▲ Nearly 6,400 public buildings have submitted information and are now tracking data
 - ▲ Over 90% of the estimated population of public buildings in MN
- ▲ Over \$ 23 million in energy savings has been identified by sector

Sector	Total SF	Total Bldgs	Potential Improvement Bldgs	Bldg %	Potential Improvement SF	SF %	Potential Savings (MMBTU/YR)	Potential Annual Dollar Savings
City	42,780,824	1,571	395	25%	8,590,301	20%	367,516	\$4,777,714
County	23,542,068	578	150	26%	5,122,853	22%	210,055	\$2,730,721
Higher Ed	52,861,418	1,163	145	12%	12,536,495	24%	765,758	\$9,954,850
Public Schools	142,769,878	1,320	121	9%	11,289,255	8%	235,274	\$3,058,563
State	22,253,131	1,853	395	21%	8,422,214	38%	197,916	\$2,572,902
Total:	284,207,319	6,485	1,206	19%	45,961,118	16%	1,776,519	\$23,094,747



MN B3 Benchmarking Program

Successes to Date

- ▲ The B3 program is doing what it was designed to do
 - ▲ Find buildings with high ROI
 - ▲ Serve as a feeder tool for various state, local, and utility programs
 - ▲ Linking to various tools like Energy Star to provide added-value
 - ▲ Database may allow for varying policy baseline comparisons and EMV/potential study inputs
- ▲ Of the 6,400 buildings in the MN database we know
 - ▲ 1600+ are located in a specific service territory
 - ▲ Of those 1600 buildings, 400+ exceed their expected benchmark
 - ▲ The next time that utility has to hit a 1.5% savings target, they have a captive population of buildings to target

ROI of Project & ROI of Program

- ▲ This study used a targeted benchmarking portfolio approach and a random approach to select projects and predict savings. Benchmarking resulted in 2 million dollars in additional annual savings as compared to selecting and improving buildings on a random basis.
- ▲ Assuming the annual cost of maintaining and operating a benchmarking system is \$250,000 per year for a portfolio of this size, the benefit is over 8 times the cost just by using the benchmarking program to intelligently target the buildings with the most potential in energy savings.

Improvement Characteristics	Selection Method Comparison		
	Targeted Benchmark approach	Random approach	Targeted Benchmark approach savings benefit
Number of Building Sites	200	200	
Floor Area (SF)	11,826,348	11,968,125	
Annual Energy Savings Potential (kBTU)	301,068,030	133,004,076	168,063,954
Annual Estimated Energy Cost Savings (US \$)	\$3,913,884	\$1,729,053	\$2,184,831



Larger Vision

- ▲ Regional Existing Public Buildings Database
 - ▲ 7,500 Public Facilities across 80+ Bldg Types
 - ▲ Currently a larger sample size than CBECS
 - ▲ Currently a broader sample, 70% of which is not represented in CBECS
 - ▲ Possible expansion into other MW states will only make the data more robust and allow broader regional comparisons
 - ▲ Possible expansion into other states nationally in discussion
- ▲ A comprehensive database that takes detailed new construction data, provides an ongoing opportunity for entering operational performance, and then publicly discloses that information via a label



Thank You

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