



United Technologies Corporation
Institute for Advanced Systems Engineering
UNIVERSITY OF CONNECTICUT



INTRODUCTION TO ENERGY STAR PORTFOLIO MANAGER®

June 24, 2020

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Part I

WHY USE ENERGY STAR PORTFOLIO MANAGER?

Portfolio Manager (PM) Capabilities



ENERGY TRACKING. Know how meters match to buildings. Know your total Site Energy kBtu by converting unlike units of energy usage (kWh, ccf, gallons). Know how your total building energy changes over time.

WEATHER NORMALIZATION. Know your Weather-Normalized Site Energy in kBtu. Know if changes in Site Energy are due to weather or performance of building.

GET YOUR BENCHMARK. Know your ENERGY STAR Rating or Energy Benchmark Comparison*

SHARE YOUR DATA. One internal shared database for building and energy information

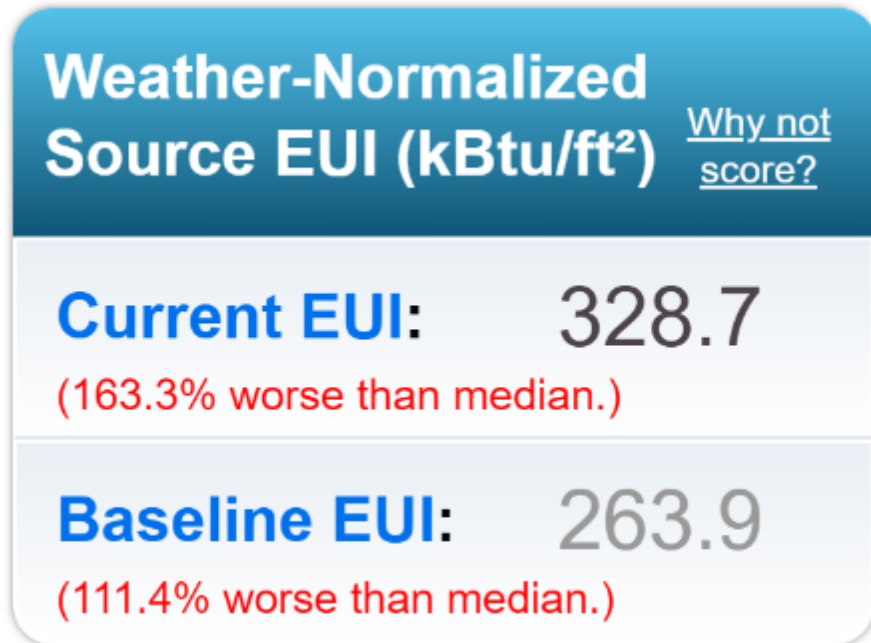
STRATEGIC ENERGY MANAGEMENT SUPPORT. Select and plan projects. Correlate energy changes to projects.

GET RECOGNIZED. Share your achievements.



Example: What you can learn

Your Benchmark







What Can I Learn?

- Do I have a high performing or low performing building?
- Is my building performance improving since my baseline year?
- Should I perform a building audit to find out why my building is performing so poorly?
- I've installed two EE measures, why is my building still performing so poorly?

Example: What you can learn

Your Metrics Summary

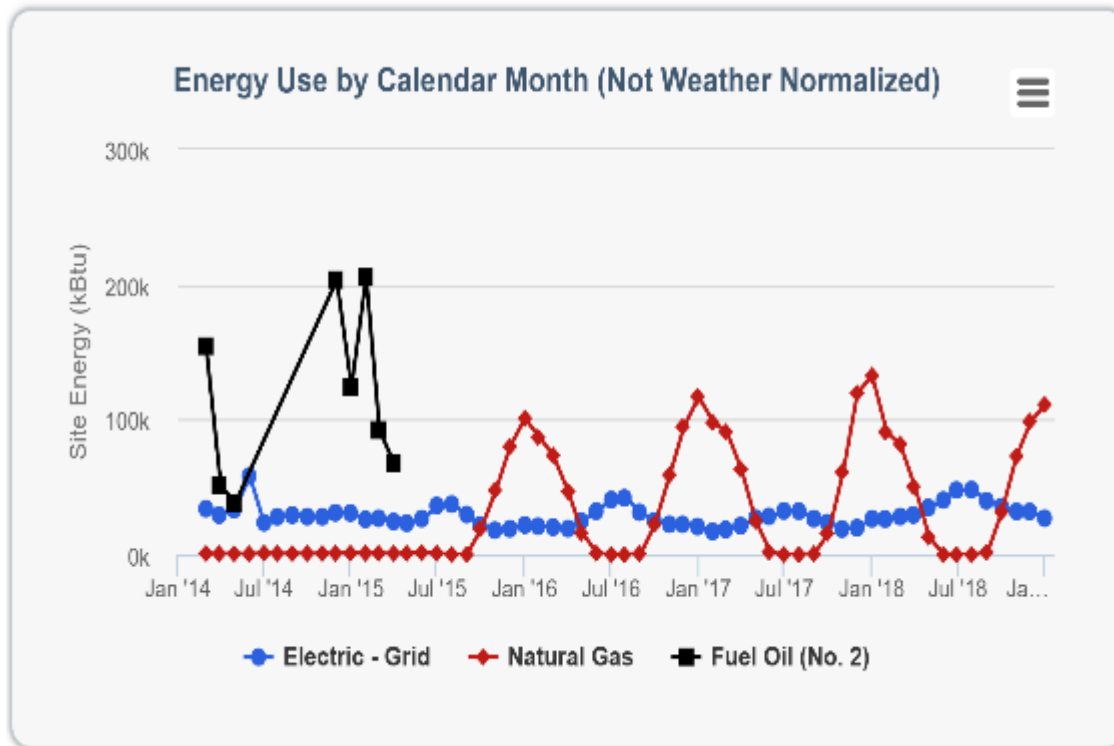
Metrics Summary			
Metric 	Jun 2011 (Energy Baseline) 	Jan 2019 (Energy Current) 	Change 
ENERGY STAR Score (1-100)	43	97	54.00 (125.60%)
Source EUI (kBtu/ft ²)	144.4	63.0	-81.40 (-56.40%)
Site EUI (kBtu/ft ²)	75.0	26.6	-48.40 (-64.50%)
Energy Cost (\$)	722,860.66	339,025.06	-383,835.60 (-53.10%)
Total GHG Emissions Intensity (kgCO ₂ e/ft ²)	5.6	1.8	-3.80 (-67.90%)
Water Use (All Water Sources) (kgal)	Not Available	Not Available	N/A
Total Waste (Disposed and Diverted) (Tons)	Not Available	Not Available	N/A

What Can I Learn?

- Do I have a high performing or low performing building?
- Is my building performance improving since my baseline year?
- How much money am I saving comparing any two years?
- What is my carbon footprint, and is it improving?
- Am I lowering my water and waste usage?

Example: What Can I Learn

Energy Use Trend



What Can I Learn?

- What fuels are used in my building?
- Are my heating and cooling peaks increasing or decreasing over time?
- How large is my cooling peak during the summer?
- Do I have a problem with my heating system?

Example: What Can You Learn?

Understand the Benchmark and Goal Setting

Metrics Comparison for Your Property & Your Target [Change Time Period](#)

Metric	Nov 30 2013 (Energy Baseline)	Jan 31 2019 (Energy Current)	Target*	Median Property*
ENERGY STAR score(1-100)	13	11	75	50
Source EUI(kBtu/ft ²)	164.5	175.0	87.3	113.5
Site EUI(kBtu/ft ²)	69.0	73.0	36.5	47.4
Source Energy Use(kBtu)	8995077.9	9569423.1	4775858.3	6207423.3
Site Energy Use(kBtu)	3773766.4	3994329.5	1993469.5	2591012.6
Energy Cost(\$)	140799.21	154936.81	77325.07	100503.28
Total GHG Emissions(Metric Tons CO ₂ e)	263.2	279.2	139.3	181.1

* To compute the metrics at the target and median levels of performance, we will use the fuel mix associated with your property's current energy use.

What Can I Learn?

- Why is my ENERGY STAR rating so low compared to typical properties similar to mine?
- How much energy do I need to save to attain ENERGY STAR certification?
- How much money could I save annually if I achieve a median rating or an ENERGY STAR rating?

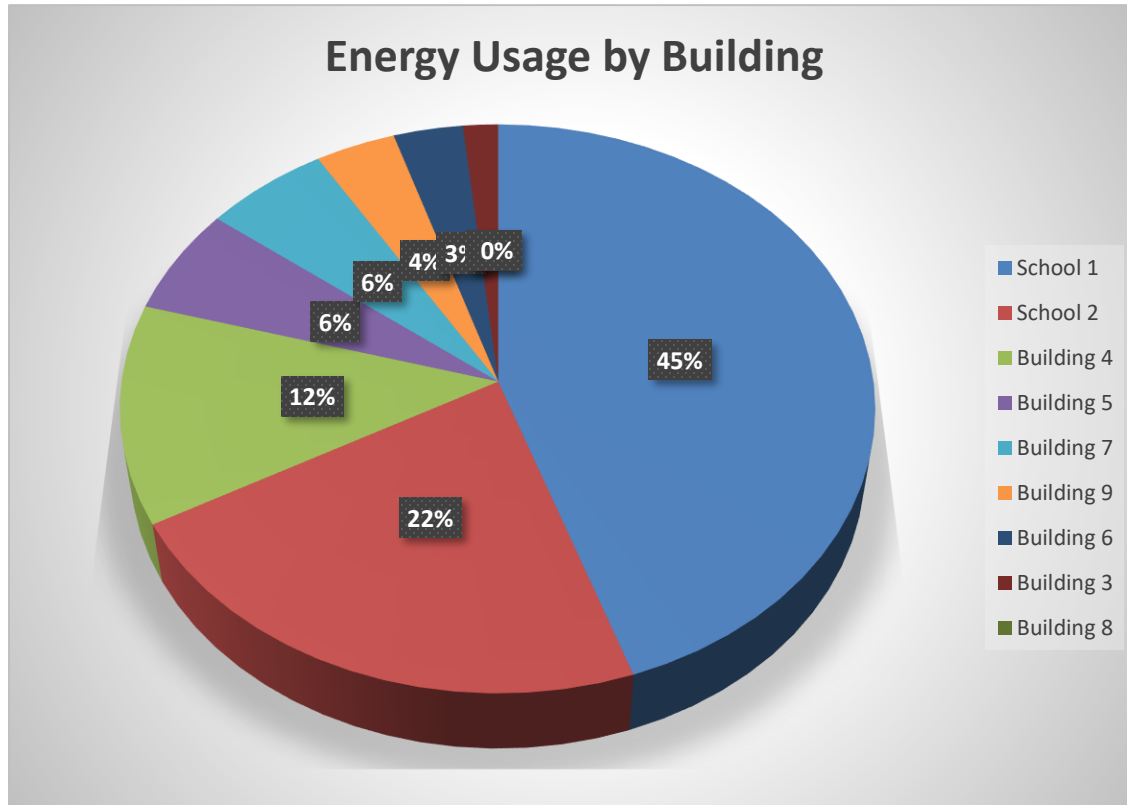


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Example: What Can You Learn?

Energy Usage By Building



What Can I Learn?

- Which buildings are my highest energy users?
- Where should I focus my effort?

Example: What Can You Learn?

Advanced Reporting 1000+ Metrics

Year Ending	Electricity Use - Grid Purchase and Generated from Onsite Renewable Systems (kWh)	Electricity Use - Grid Purchase and Generated from Onsite Renewable Systems (kBtu)	Natural Gas Use (kBtu)	Site Energy Use (kBtu)	Weather Normalized Site Energy Use (kBtu)	Total GHG Emissions (Metric Tons CO2e)	Site EUI (kBtu/ft ²)
1/31/2019	3,321,300	11,332,276	9,816,860	21,149,136	21,534,342	1,371	141

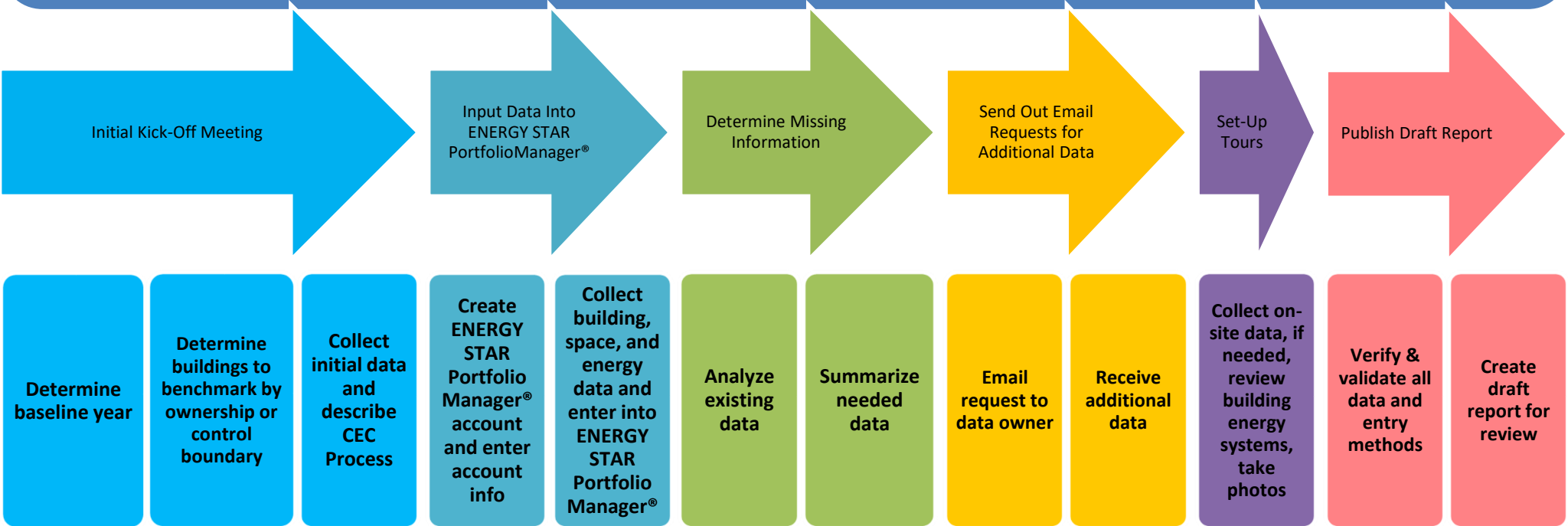
Year Ending	Energy Cost (\$)	Electricity (Grid Purchase) Cost (\$)	Natural Gas Cost (\$)	Energy Cost Intensity (\$/ft ²)
1/31/2019	580,582.57	554,207.72	26,374.85	3.87

What Can I Learn?

- What is the breakdown of my annual energy usage by fuel type in kBtu?
- What is the difference or change in any metric from one year to the next?
- What is the breakdown of my total energy cost by fuel by building?



Building Energy Benchmarking Process



Thank You!

- The US EPA, Linda Darveau
- ENERGIZE CT and the Connecticut Energy Efficiency Fund
- UI, SCG, CNG, and Eversource

Questions?

